



Commonwealth Edison

Zion Generating Station
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Zion, Illinois 60099
Telephone 708 / 746-2084

January 7, 1993

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

Dear Sir:

The enclosed supplemental Licensee Event Report number 92-009-01, Docket No. 50-295/DPR-39 from Zion Generating Station is being transmitted to you to convey results of the analysis of the rubber-like substance found in the valve.

Very truly yours,

T. P. Joyce
Station Manager
Zion Generating Station

TPJ/SG/dmg

Enclosure: Licensee Event Report

cc: NRC Region III Administrator
NRC Resident Inspector
INPO Record Center
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ZDVRLE-566(8)

LICENSEE EVENT REPORT (LER)															Form Rev 2.0									
Facility Name (1) Zion Unit 1*										Docket Number (2) 0 5 0 0 0 2 9 5					Page (3) 1 of 0 5									
Title (4) Failure to Meet "As Found" Requirements for the Integrated Leak Rate Test																								
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	5	2	6	9	2	9	2	0	0	9	0	1	0	1	0	7	9	3						
OPERATING MODE (9)			THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10CFR (Check one or more of the following) (11)																					
POWER LEVEL (10) 0 0 0			<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)				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)													
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LICENSEE CONTACT FOR THIS LER (12)																								
Name Sandeep Gupta, Technical Staff Engineer										ext. 2854					TELEPHONE NUMBER AREA CODE 7 0 8 7 4 6 - 2 0 8 4									
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	B	D	V A 3 9 1	Y																				
SUPPLEMENTAL REPORT EXPECTED (14)																								
<input type="checkbox"/> YES (If yes, complete EXPECTED SUBMISSION DATE)										<input checked="" type="checkbox"/> NO					Expected Submission Date (15)									
ABSTRACT (Limit to 1400 spaces, i.e. approximately fifteen single-space typewritten lines) (16)																								

On May 22, 1992 Zion Technical Staff performed a Type "C" Local Leak Rate Test (LLRT) for penetration P-80 on valve 1RC8079. This was the initial LLRT performed following a modification to the penetration to allow such a test. The "As Found" Type "C" test failed to meet the leak rate acceptance criteria for this penetration. Adding the results of this Type "C" test to the previous results of the "As Found" Type "A" Integrated Leak Rate Test (ILRT) resulted in ILRT failure.

The cause of the Type "C" LLRT failure was determined to be component failure. A rubber-like substance was discovered on the seat and disk of valve 1RC8079 preventing the valve from properly seating. This substance was later identified as tobacco.

There was no significant increase in risk to the health and safety of the public.

Corrective actions included removal of the rubber-like substance from the valve seat area, inspecting and retesting of the penetration successfully.

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

A. CONDITION PRIOR TO EVENT

MODE 6 - Refueling RX Power 0% RCS [AB] Temperature/ Pressure 0 °F/ 0 psig

B. DESCRIPTION OF EVENT

On May 22, 1992 at approximately 1100 hours, Technical Staff Special Procedure (TSSP) 018-92, "Type C Local Leak Rate Test (LLRT) of penetration P-80", was being performed on valve 1RC8079 [BD], the Emergency Core Cooling System (ECCS) Relief Line to the Pressurizer Relief Tank. This LLRT was being performed as a modification test following the installation of modification M22-1-91-017C. The purpose of the modification was to install spectacle blinds and test taps to allow for Type "C" testing of this penetration.

During a Commonwealth Edison Corporate 10CFR50 Appendix J review, this check valve was identified as requiring Type "C" testing. On February 15, 1991, Emergency Technical Specification Amendment 121/110 to Technical Specification 3.10.1.A, Containment Structural Integrity, was granted to Zion Units 1 and 2. This Emergency Technical Specification Amendment allowed Type "C" testing of this penetration to be delayed until prior to startup following Zion Refueling Outages Z1R12 and Z2R12 respectively. Modification M22-1-91-017C was installed during the Z1R12 refueling outage. The modification installed spectacle blinds and test taps to allow for Type "C" testing of this penetration, and did not affect the "As-Found" condition of check valve 1RC8079.

M22-1-91-017C was installed following the performance of the containment Type "A" Integrated Leak Rate Test (ILRT) at the beginning of the Z1R12 refueling outage. This pathway could not be properly vented during the performance of the Type "A" test so a Type "C" LLRT was required following the installation of the modification. The results of the LLRT were required to be added to the Type "A" test results. The Type "A" test measured a containment leakage rate of 0.01461 weight percent per day employing the Mass-Plot Statistical Leak Rate Test methodology. The 95 percent Upper Confidence Limit (UCL) was measured to be 0.01578 weight percent per day.

The performance of the Type "C" LLRT test revealed that P-80 had an uncorrected leakage rate of 270 SCFH at a test pressure of 51.5 PSIG and a temperature of 67°F. Calculations were performed on May 26, 1992 to correct the above measured leakage rate for pressure and temperature calibration differences of the rotometer discharge versus the Type "C" test pressure and temperature. These corrections determined that the corrected leakage rate for P-80 was 580.77 SCFH. This leakage rate resulted in a failure of the "As-Found" Type "C" LLRT for this penetration, a failure of the "As-Found" Maximum Pathway Leak Rate (MXPLR) for Zion Unit 1, and a failure of the "As-Found" Unit 1 Type "A" ILRT. A Problem Identification Form (PIF) was written on May 26, 1992 after determining that the leakage rate from P-80 exceeded the acceptance criteria. Shift personnel made a four hour red phone call based on the fact that the Zion Unit 1 ILRT had failed. Work request Z22675 was written to investigate the condition and repair the valve.

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

B. DESCRIPTION OF EVENT (Continued)

The corrected measured leakage rate of 580.77 SCFH from check valve 1RC8079 is equivalent to 0.1155 weight percent per day of containment leakage. Adding this test penalty to the various other penalties resulted in a total test penalty of 0.1157 weight percent per day that was required to be added to the final measured Type "A" leakage rate. Adding the total penalty to the 95 percent UCL of 0.01578 weight percent per day, resulted in a final corrected measured containment leakage rate of 0.1315 weight percent per day. This leakage rate is well above the 0.075 weight percent per day limit for an acceptable Type "A" test, and is also above the allowable 0.1 weight percent per day for containment leakage. Therefore, the Zion Unit 1 Type "A" ILRT test resulted in an "As-Found" failure. In addition, the leakage of penetration P-80 causes Zion Unit 1's MXPLR to be an "As-Found" failure, exceeding the 0.6L_a limit (0.6L_a=285 SCFH). The total "As-Found" MXPLR for Zion Unit 1 has been equated to be approximately 686.20 SCFH. The majority of this leakage has been attributed to 1RC8079.

C. APPARENT CAUSE OF EVENT

The cause of this event was a component failure. When check valve 1RC8079 was taken apart to investigate its condition, a rubber-like material was found on the seating surface of the valve disk and seat. It was determined that this material prevented the valve from seating properly, thus resulting in the penetration failing its "As-Found" Type "C" test.

The material substance found in check valve 1RC8079 was sent to TMA/Norcal for analysis. The purpose of the analysis was to determine the material content of the sample found in the check valve, and possibly its age. A microscopy analysis and an inductively coupled plasma (ICP) analysis were performed on the material. The microscopy analysis was performed to determine if there was any silica dust (quartz, sand or regular dust), and to identify any organic material present. The ICP analysis was to determine the actual amounts and kinds of metals in the sample.

The microscopic examination was performed under polarized light at up to 400 times magnification. This examination did not show any quartz, sand or other observable dust particles. Further observation showed that the material was primarily organic. Amber fibers were observed in the material. The fibers displayed blackness on one end and a translucent amber color on the other end. Using a "McCrone Particle Atlas," the material was identified to be tobacco.

Based on this analysis, it is assumed that this material has been in the system since original plant construction, since this is the only time any type of smoking or chewing would have been permitted in the auxiliary building. Additionally, this ECCS pump relief header has seen minimal or no flow since its installation which would cause this material to be washed away from the seat of the check valve, or would cause the material to be washed up against the seat of the valve from another area upstream. Also, maintenance history indicates that no work had been performed on this valve since construction. As previously stated, the check valve was cleaned of this material under Work Request Z22675, and an "As-Left" Type "C" Leak Rate Test was performed on the check valve to insure that the problem had been corrected. The "As-Left" Type "C" test showed that the valve had a measured corrected leakage rate of 1.69 SCFH.

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D. SAFETY ANALYSIS OF EVENT

The safety of the public was not jeopardized by this event. Penetration P-80 is associated with the relief valve header which routes the discharge lines for the Emergency Core Cooling System (ECCS) Pump relief valves to the Pressurizer Relief Tank (PRT). The majority of the relief lines are located outside of the containment and discharge into this relief header to the PRT, penetrating the containment at penetration P-80. The relief lines for the various ECCS valves do not directly communicate with the atmosphere outside of the containment.

The subject containment isolation valve, 1RCB079, is located inside containment in a missile protected area. This check valve is the only containment isolation valve for this penetration. In order for radioactivity to be released from the containment atmosphere through this pathway, the following combination of events needed to occur:

- 1) Loss Of Coolant Accident (LOCA); AND
- 2) a. Rupture of piping inside containment connected to P-80
 -OR-
 b. Rupture of a PRT rupture disk
 -OR-
 c. Body to bonnet leakage of 1RCB079; AND
- 3) Seat leakage through 1RCB079; AND
- 4) Leakage out of ECCS relief line piping to the auxiliary building atmosphere.

As a worst case, in the unlikely event of a LOCA, the containment atmosphere would have been isolated from the environment by the intact piping outside of the containment. In addition, no leakage was identified from the relief valve discharge piping during the Type "A" test which was performed at the beginning of ZIR12. With these items taken into consideration, there was no significant increase in risk to the health and safety of the public.

E. CORRECTIVE ACTIONS

1. Work Request Z2273 was written immediately after the performance of the Type "C" test on P-80 to facilitate repairs to check valve 1RCB079. During the repair, a rubber-like substance was found on the seat of the check valve. The check valve was cleaned, the valve seat and disk were visually examined and a "light test" and "blue check" were performed after disk reassembly. It was concluded that the check valve was acceptable.
2. A sample of the rubber-like substance found in the check valve has been collected, and was analyzed to determine its origin and possibly its age. The substance was identified as tobacco.

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E. CORRECTIVE ACTIONS (Continued)

3. An "As-Left" Type "C" test was performed on this check valve on June 9, 1992. The performance of this Type "C" measured a corrected leakage rate of 1.69 SCFH. This leakage is well within the defined 30 SCFH acceptance criteria for containment isolation valves, as defined by the current program at Zion Station. In addition, this leakage rate combined with the 95 percent UCL of 0.01578 weight percent per day and the various other respective penalties results in an "As-Left" Type "A" leakage rate of 0.0162 weight percent per day. This is well below the acceptance limit of 0.075 weight per day for the Type "A" test. Therefore, the "As-Left" Type "A" ILRT test for Zion Unit 1 is considered to be acceptable after the corrective actions were performed.
4. The "As-Left" MXPLR for Zion Unit 1 as of 07/16/92 is 138.72 SCFH. This is well below the maximum allowable leakage rate of 0.6L_a or 285 SCFH.

F. PREVIOUS EVENTS

A search was conducted of the LER/DVR data base. Three events associated with containment isolation testing were found. LER 1-85-018 involved a containment isolation valve leakage exceeding 0.6L_a. LER 1-85-026 involved the removal of penetration pressurization from containment isolation valves and the subsequent failure to perform Type "C" testing required by the Confirmatory Order. LER 1-91-001 involved the identification of various untested pathways in 1991. Corrective actions for these three events would not have prevented this event.

G. COMPONENT FAILURE DATA

MANUFACTURER	NOMENCLATURE	MODEL
Anchor Darling	Check Valve	4C42