

LICENSEE EVENT REPORT (LER)

Facility Name (1) Zion, Unit 1 Docket Number (2) 05000295 Page (3) 1 of 03

Title (4) Reactor Coolant system Leakage in Excess of Technical Specifications due to valve packing failure

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)		
05	16	86	86	021	01	10	27	86			05000295		

OPERATING MODE (9) 3 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 J. A. Tiemann, Technical Staff Engineer, X327 TELEPHONE NUMBER 312-746-2084

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	A B	F C V	F I 3 0	N							
X	A B	I S V	W 1 2 0	N							

SUPPLEMENTAL REPORT EXPECTED (14)

Yes (If yes, complete EXPECTED SUBMISSION DATE) NO

Expected Submission Date (15) _____

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

At 0440 on 5/16/86 the Radwaste Foreman notified the control room that the Ur : 1 Containment Sump Pump was experiencing an abnormally high number of pump runs. This pump autostarts on high level in the containment sump. Unit 1 was in hot shutdown at normal operating pressure and temperature and was being diluted to reduce boron concentration prior to going critical. A containment entry was made and the water was found to be coming from a blown rupture disc on the Pressurizer Relief Tank. The rupture disc is located atop the tank and approximately 20 gpm leakage was coming from it. The PRT is designed to accept leakage from various valve packing leakoff lines and the discharge of the Pressurizer safety and relief valves. The dilution was secured and Reactor Coolant System leakage was verified to be approximately 20 gpm. Although this is within the charging system capability, Technical Specification 3.3.3.D requires the unit to be placed in cold shutdown within 24 hours when uncontrolled leakage exceeds 10 gpm.

The source of the leakage was the packing leakoff line from the loop B Pressurizer Spray Line. During the subsequent refueling outage it was determined to be coming from one of the Pressurizer Spray Valves (1PCV-RC06). The valve packing has been replaced.

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TEXT								

At 2315 on 5/15/86 a high level alarm (90% full) for the Unit 1 Pressurizer Relief Tank (PRI) was received in the control room. Unit 1 was in hot shutdown with the Reactor Coolant System (RCS) at normal operating temperature (54°F) and normal operating pressure (2235 psig) and was being diluted to lower boron concentration prior to going critical. The alarm was noted, but no immediate action was taken at this time because excessive primary system leakage is difficult to identify during dilution operations.

The PRI collects leakoff from various valve packing leakoff lines and the discharge from the Pressurizer safety and relief valves. At no time did the PRI level rise above an indicated 96 percent level. It was later determined that the level instrument was reading four percent low.

At 0440 the Radwaste Foreman notified the control room that the Unit 1 containment sump pump was experiencing an abnormally high number of runs. The pump autostarts on high level in the containment sump and pumps approximately 60 gallons before securing. The pump had started 4 times in an hour and fifteen minutes.

At 0500 a containment entry was made to determine the source of leakage to the containment sump. One of the PRI rupture discs (nominal setpoint of 100 psig) was found to have blown. The PRI was overflowing and the water was draining to the containment sump.

The Reactor Coolant System (RCS, E11S Code AB) Leakrate was determined to be approximately 20 gpm. Although the leakage was within charging system capability, Technical Specification 3.3.3.D states that uncontrolled leakage in excess of 10 gpm requires placing the unit in cold shutdown within 24 hours.

The dilution to reduce boron concentration was secured at 0525 and a GSEP unusual event was declared at 0530. By 0630 the leakage had been traced to the Pressurizer (PZR) spray line coming off loop B cold leg. There are packing leakoff lines to the PRI from the spray valve (IPCV-RC06) and from the upstream and downstream manual isolation valves (IRCO020 and IRC0021). The leakoff lines are equipped with sight glasses and the sight glasses from the two manual isolation valves were found to be broken. This allowed a direct path for the leakoff to the containment atmosphere as steam. Condensing steam would drain to the Containment Sump.

Due to the adverse environment around the valves as a result of the broken sight glasses the leak could not be isolated until after cooldown and depressurization. The cooldown was commenced at 0715 and depressurization was started at 0950. At 1713 the leak was isolated by shutting IRC0020 and IRC0021, and the GSEP was secured.

The PRI rupture disc and the broken sight glasses were replaced. The pressurizer is equipped with two spray lines off of loops B and D. By using the loop D spray line, normal plant pressure control may be accomplished even though IPCV-RC06 remains isolated.

The precise time of the event is difficult to determine. Excessive primary makeup rates would be masked by the fact that the RCS was being diluted to establish startup conditions. Significant packing leakage would have occurred around the time of the PRI high level alarm and it may have started as a smaller leak and grown in magnitude.

During the refueling outage it was determined that IPCV-RC06 had been leaking due to normal wear. The packing of this valve has been replaced.

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TEXT									

High RCS leakrates due to packing leaks were reported in Zion Station Deviation Reports (DVR's) 22-1-83-91, 22-1-85-140, and 22-1-77-117. Instances of blown PRT rupture discs are reported in DVR's 22-2-74-129 and 22-2-76-135.

The Pressurizer Spray Valve is a 4" Fisher Controls Type SS-84 Vee-Ball valve.



Commonwealth Edison

Zion Generating Station
101 Shiloh Blvd.
Zion, Illinois 60099
Telephone 312/746-2084

December 4, 1986

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

Dear Sir:

The enclosed Licensee Event Report number 86-021-01, Docket No. 50-295/DPR-39 from Zion Generating Station is being transmitted to you to update you on the root cause of the event.

Very truly yours,

G. J. Pliml
for G. J. Pliml
Station Manager
Zion Generating Station

GJP/gn

Enclosure: Licensee Event Report

cc: NRC Region III Administrator
NRC Resident Inspector
INPO Record Center
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