LICENSEE EVENT REPORT (LER)

Facility Name (1)	Docket Number (2)	Page (3)
Zion, Unit 1	0 5 0 0 0 2 9 5	1 of 0 3

Title (4) Reactor Trip on Low-Low Steam Generator Level caused by Opening of Main Steam Isolation Valve Bypass due to Personnel Error in communications

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 0 0 0
0 2	2 7	8 7	8 7		0 0 5	0 0	0 3	3 0	8 7		0 5 0 0 0

OPERATING MODE (9)		THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10CFR (Check one or more of the following) (11)					
3		20.402(b)	20.405(c)	X	50.73(a)(2)(iv)		73.71(b)
POWER LEVEL (10)	0 0 0	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 (Specify in Abstract below and in Text)
		20.405(a)(1)(iii)	50.73(a)(2)(i)	X	50.73(a)(2)(viii)(A)		
		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)

Name	TELEPHONE NUMBER
	AREA CODE
Adam Bless, Regulatory Assurance Staff Ext. 361	3 1 2 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	
				No							

SUPPLEMENTAL REPORT EXPECTED (14)		Expected Submission Date (15)	Month	Day	Year
	X NO				
Yes (If yes, complete EXPECTED SUBMISSION DATE)					

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

On 2/27/87 at 0230, a reactor trip signal on "1D" steam generator low-low level was generated. The unit was in hot shutdown with all control rods fully inserted, reactor trip breakers closed, and Main Steam Isolation Valves (MSIV's) and bypasses closed. The trip breakers opened and the 1B auxiliary feedwater pump auto started. The event was caused by inadvertent opening of the loop D MSIV bypass valve while replacing the valve diaphragm. The licensed shift supervisor had authorized this job, but was not aware that the Masoneillian Vendor Technical Manual contained steps requiring removal of the spring which holds the valve in its failed-closed position. The spring was removed at 0200 hours allowing the valve to open which resulted in steam flow from the steam generator into the depressurized main steam header. "1D" steam generator level declined to the trip setpoint by 0230. The unit operator started 1C auxiliary feedwater pump at 0220 in an attempt to restore steam generator level. The valve was reclosed manually at 0255. Reactor coolant temperature declined 25 degrees. There was no damage to the main steam system.

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A. PLANT CONDITIONS PRIOR TO EVENT:

On 02-27-87 at 0000 hours, Unit 1 was in hot shutdown with Main Steam Isolation Valves (MSIV's) [SB] and bypasses closed, reactor trip breakers [AA] open, and plant parameters as follows:

a. Reactor Coolant (RCS), [AB] at 2241 psig and 540 degrees
b. Steam Generator D level approximately 60%
c. Steam Header Pressure at 58 psig

Tech Staff Nuclear Group was preparing to do preliminary control rod [AA] tests.

B. DESCRIPTION OF EVENT:

At 0000 hours on February 27, 1987, the Mechanical Maintenance Dept. received authorization from the licensed Shift Supervisor to start work on scheduled replacement of the diaphragm for loop D Main Steam Isolation Valve bypass valve. This is a fail-closed valve and was out of service and closed at the time. The work package referenced a Masoneillian vendor technical manual section for diaphragm replacement. The Shift Supervisor was aware that the MSIV bypass was failed closed, but he did not know that the vendor-supplied instructions contained steps requiring removal of the hold down spring which holds that valve in the failed-closed position.

After receiving authorization, the mechanic began to work on the valve. Since the MSIV's and bypasses were closed, plant cooling was through the atmospheric relief valves at this time. Working conditions at the bypass valve were very noisy, and the mechanic was wearing hearing protection. At approximately 0200 hours, the mechanic reached the step in his procedure requiring removal of the hold down spring.

With the hold-down spring removed, steam pressure immediately forced the bypass valve open but due to the high background noise the mechanic did not notice the steam flow through the valve. Steam header pressure began to increase immediately, and 1D steam generator (S/G) level began to decrease.

At 0220 hours, the unit operator (NSO) noticed the decline in S/G level. At this time, he had not been informed about work being done on the MSIV bypass. He started 1C Auxiliary Feed Pump [BA] to try and regain level.

At 0222, the Technical Staff Nuclear Group was ready to begin control rod tests. At their request, the reactor trip breakers were closed. At 0230, the S/G low-low level alarm annunciated on the control board. The NSO manually opened the reactor trip breakers. A review of the process computer later showed that the unit had automatically tripped on low-low S/G level approximately .7 seconds before the manual trip. At this time, the 1B auxiliary feed pump autostarted.

A second NSO came to assist with unit 1. At this time, the NSO's were still not informed that work was being done on the MSIV bypass valve. At 0235, the second NSO noticed the MSIV bypass valve position indication indicating open on the control board. At this time, the Shift Supervisor informed the NSO that he had authorized work on that valve. The shift sent a man to isolate two steam dumps which were known to be leaking. Steam generator level stabilized at its minimum value of 8%. By 0255, the mechanics had manually reclosed the valve. Steam header pressure immediately began decreasing, and RCS temperature and S/G level were recovering.

C. CAUSE OF EVENT:

The event was caused by lack of communication between the Shift Supervisor who authorized the work request and the Mechanical Maintenance personnel doing the job. The Shift Supervisor was aware that all MSIV bypasses must remain closed, and that the valve to be worked on was out of service in the fail-closed position. He was not aware that the mechanic's procedure for replacing the diaphragm included removal of the hold down spring. Mechanical Maintenance was familiar with the details of the job, but did not know that the unit was in a condition which required the bypass valves to remain shut. If either had realized the full scope before the job was performed, the job could have been rescheduled, or special provisions would have been taken mechanically to hold the valve shut during this job.

D. ANALYSIS OF EVENT:

This event placed the unit in a condition prohibited by Technical Specification 3.9.4, which requires that MSIV bypasses be operable or shut unless the unit is in cold shutdown. Safety effect was minimal, however, because the bypass valves are sized so that the reactor will remain subcritical after reactor trip for spurious opening of a bypass line. As shown on figure 1, the RCS cooled down only 25 degrees during the entire event, so that there was no adverse effect on the primary system. All control rods were fully inserted throughout the event. Figure 2 is a graph showing steam header pressure and "1D" S/G level versus time.

As soon as conditions stabilized, the main steamline, hangers, pipes, and snubbers were inspected. No damage was found. The station's Technical Staff analyzed the thermal transient and concluded that there was no concern from waterhammer, or from the thermal and pressure transient.

E. CORRECTIVE ACTIONS:

Corrective actions will include discussing this event with all shift personnel. A training session will be conducted for all licensed shift personnel on the configuration of fail-open and fail-closed air operated valves to familiarize them with the effects of diaphragm replacement.

In addition, an entry was added to the Maintenance Department's computerized work instruction system, notifying the Maintenance Work Analyst of the Technical Specification requirements on these valves, and instructing him not to schedule work which would defeat the valves' fail-closed ability unless the unit is in cold shutdown or measures are taken to mechanically hold the valve shut.

F. PREVIOUS OCCURRENCES:

This event has not occurred before at Zion Station.

G. COMPONENT FAILURE DATA:

Not applicable.

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

March 30, 1987

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

Dear Sir:

The enclosed Licensee Event Report number 87-005-00, Docket No. 50-295/DPR-39 from Zion Generating Station is being transmitted to you in accordance with the requirements of 10CFR50.73 (a)(2)(iv), which requires a 30 day written report when there has been an actuation of any Engineered Safety Feature.

Very truly yours,

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
CECo Distribution List

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