Commonwealth Edison
LaSalle County Nuclear Station
2601 N. 21st. Rd.
Marseilles, Illinois 61341
Telephone 815/357-6761

March 27, 1992

Director of Nuclear Reactor Regulation
U.S. Nuclear Regulatory Commission
Mail Station P1-137
Washington, D.C. 20555

Dear Sir:

Licensee Event Report #92-002-00, Docket #050-374 is being submitted to your office in accordance with 10CFR50.73(a)(2)(iv).

fo/ G. J. Diederich
Station Manager
LaSalle County Station

GJD/JEB/mkl

Enclosure

xc: Nuclear Licensing Administrator
NRC Resident Inspector
NRC Region III Administrator
INPO - Records Center
IDNS Resident Inspector

IE22

LICENSEE EVENT REPORT (LER)

Form Rev 2.0

Facility Name (1)	Docket Number (2)	Page (3)
LaSalle County Station Unit 2	0 5 0 0 0 3 7 4	1 of 0 4

Title (4)

Spurious Division 1 ECCS Initiation Due To Air Trapped In Reference Piping

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 6	9 2	9 2	---	0 0 2	--- 0 0	0 3	2 7	9 2		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)					
	D	___ 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		
		___ 20.405(a)(1)(iii)	___ 50.73(a)(2)(i)	___ 50.73(a)(2)(viii)(A)	in Abstract		
		___ 20.405(a)(1)(iv)	___ 50.73(a)(2)(ii)	___ 50.73(a)(2)(viii)(B)	below and in		
		___ 20.405(a)(1)(v)	___ 50.73(a)(2)(iii)	___ 50.73(a)(2)(x)	Text)		

LICENSEE CONTACT FOR THIS LER (12)

Name	TELEPHONE NUMBER
	AREA CODE
Jeffrey E. Bryant, Technical Staff Engineer, Extension 2319	8 1 5 3 5 7 - 6 7 6 1

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	
D	B M			No							

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

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

On February 26, 1992 at 2019 hours a spurious Division 1 Emergency Core Cooling Systems initiation signal was received.

The initiation occurred when a "freeze seal" the Mechanical Maintenance Department employed to isolate the instrument stop valves for instrument 2B21-N413A, "Reactor Pressure Injection Line Valve Open Permissive Switch" melted and isolation was lost. The freeze seal was used to isolate the instrument stop valves from the remainder of the instrumentation on instrument rack 2H22-P026. The piping is part of the instrument rack's common reference line, 2NB25B.

Air was trapped on the maintenance side of the freeze seal after replacing the instrument stop valves and associated piping. When the freeze seal lost isolation, this air was able to escape and cause a pressure transient on the reference line. The transient was large enough to cause the associated reactor vessel level instrumentation to trip on low level 1 (-129" Rx water level).

The root cause of the event can be attributed to a procedure deficiency in LaSalle Maintenance Procedure LMP-GM-14 "Use of Freeze Seals" in that it did not specify the requirements of backfilling the instrument reference line. The corrective action is to revise LMP-GM-14.

The "D" Diesel Generator automatically started as expected. The Low Pressure Core Spray System received an automatic initiation signal but did not initiate, the pump control switch was in the "pull to lock" position. The "A" Residual Heat Removal System received valve movement signals, but did not auto initiate due to the spurious nature of the signal. No injection occurred.

PLANT AND SYSTEM IDENTIFICATION

General Electric - Boiling Water Reactor

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

A. CONDITION PRIOR TO EVENT

Unit(s): 2 Event Date: 02/26/92 Event Time: 2019 Hours

Reactor Mode(s): N/A Mode(s) Name: N/A Power Level(s): 0%

B. DESCRIPTION OF EVENT

On February 26, 1992 at 2019 hours with Unit 2 Defueled at 0% power, a spurious Division 1 Emergency Core Cooling System (ECCS) initiation signal was received. The initiation signal was the result of a pressure transient on a common reference leg for instruments located on instrument rack 2H22-P026. The Mechanical Maintenance Department had been replacing leaking instrument stop and vent valves on pressure switch 2B21-N413A "Reactor Vessel Low Pressure Injection Line Valve Open Permissive Switch". To isolate the area of maintenance from the instrument rack, a freeze seal was employed. The freeze seal uses liquid nitrogen to create an ice plug in the affected piping, creating an effective boundary between the process system and the area of maintenance. In accordance with the procedure, the liquid nitrogen was stopped to the freeze seal after the valves and piping were replaced to achieve a leak tight fit. The rest of the work did not require the seal. Approximately 90 minutes later the mechanics returned to finish their work. As they restarted work the thawing freeze seal gave in to pressure on the process side of the seal. Air trapped in the new valves and piping was able to now escape and work its way to the reactor vessel, the high point of the piping configuration. As the air escaped it caused a pressure transient on other water level and pressure instruments sharing the common reference leg. The volume of air was sufficient to cause a false Reactor Vessel Low Water Level 1 (-129" water level) signal causing the Division 1 ECCS initiation.

The "0" Emergency Diesel Generator (DG) [EK] auto started as expected. The Low Pressure Core Spray (LPCS) [BM] system received an auto initiation signal but did not initiate due to the pump control switch position in "pull to lock". The "A" Residual Heat Removal (RHR) [BO] system received an auto initiation signal, but the signal did not stay energized long enough for the 2E12-K70A "RHR Pump Control 2E12-C002A Start Control Relay" relay to cause an auto initiation of the A pump. However, the A RHR pump would not have initiated, since, the pump control switch was in the "pull to lock" position. No ECCS injection took place.

The instrumentation involved in this event are transmitters 2B21-N402D "Reactor Vessel Level (MSIV)", 2B21-N405A "RCIC Hi Level Trip", 2B21-N407A and 2B21-N407C "ECCS Level 1 Initiation", and 2B21-N408A "ADS Level 3 Initiation". All of these transmitters share 2NB25B as a common reference leg for measuring reactor water level and provide level indication for the Division 1 ECCS systems. All of these transmitters were affected by the pressure spike. Transmitters 2B21-N407A and 2B21-N407C together triggered the Reactor Vessel Water Low Level alarm and initiated the LPCS [BM] pump control circuitry. These two transmitters also initiated the "Reactor Low Level or High Drywell Pressure" relays, which in turn

B. DESCRIPTION OF EVENT (CONTINUED)

provided the signals for A RHR auto start, valve operation and the 0 Diesel Auto start. Transmitter 2B21-N405A caused the high level clearing of alarms for Reactor Core Isolation Cooling (RI) [BN]. Transmitter 2B21-N408A provided the Reactor Low Water Level 3 confirm alarm. Transmitter 2B21-N402D provided the alarm for Reactor Low Water Level 2 and Primary Containment Isolation System (PC) [JM]. There were no PC isolations because only one of the necessary two logic channels were tripped.

This event is reportable to the NRC pursuant to the requirements of 10CFR50.73(a)(2)(iv) due to the actuation of an Engineered Safety Feature (ESF) system.

C. APPARENT CAUSE OF EVENT

This event can be attributed to the pressure transient on the reference leg (2NB25B) of the instrumentation causing the Division 1 initiation. The pressure transient was caused by air trapped in reference piping following maintenance on 2B21-N413A, Rx Vessel Lo Press Injection Line Valve Open Permissive Switch.

The root cause of the event was a procedure deficiency in LaSalle Maintenance Procedure LMP-GM-14 "Use of Freeze Seals" in that it did not specify the requirements of backfilling instrument sensing lines. This would have prevented air from being trapped in the sensing line. The method of backfilling the lines to prevent the transient proved successful on March 3, 1992. The replacement valves proved to be difficult to operate, and Mechanical Maintenance was asked to replace them. Again a freeze seal was employed, with the exception that after the work was complete the lines were backfilled. When the freeze seal was removed there was no transient.

D. SAFETY ANALYSIS OF EVENT

The safety consequences of this event were minimal. All ECCS systems actuated as designed given the actuation signals present. No ECCS system was required to be operational in the existing plant condition.

A conscious decision was made to work on the instrument rack without taking the affected instruments out of service. Due to plant conditions, taking this instrument rack out of service was not a practical alternative. The freeze seal was employed as an alternative to taking the instruments out of service. The possibility of this event happening was considered and its effects were understood. This type of work is not typically performed when the plant is in Operational Condition 1 (Run), 2 (Startup), or 3 (Hot Shutdown).

E. CORRECTIVE ACTIONS

The root cause of the transient was failure to backfill the instrument reference line after maintenance but before the freeze seal was removed. Action Item Report 374-180-92-02001 will track a revision to LMP-GM-14 to give direction to Mechanical Maintenance personnel to backfill piping after maintenance, when it is physically possible, activities involving freeze seals. The procedure should state that prior to terminating the freeze seal the shift engineer is to be notified by MMD. Assistance may be required by operations, IMD or other work groups to minimize hydraulic transients which could affect plant equipment during operations. Emphasis on instrumentation lines will be made.

F. PREVIOUS EVENTS

Parameters used to search for previous events were the description of the event, cause of the event, and system. No previous events could be found.

G. COMPONENT FAILURE DATA

None.