Commonwealth Edison
LaSalle County Nuclear Station
Rural Route #1, Box 220
Marseilles, Illinois 61341
Telephone 815/357-6761

December 13, 1989

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

Dear Sir:

Licensee Event Report #89-027-00, Docket #050-373 is being submitted to your office in accordance with 10CFR50.73(a)(2)(iv).

WRo

G. J. Diederich
for Station Manager
LaSalle County Station

GJD/DAC/kg

Enclosure

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

IE22
1/1

LICENSEE EVENT REPORT (LER) Form Rev 2.0

Facility Name (1)	Docket Number (2)	Page (3)
LaSalle County Station Unit 1	0 5 0 0 0 3 7 3	1 of 0 6

Title (4) Primary Containment Isolation During Surveillance Testing Due to Burned Out Annunciator Window Light Bulbs

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)
1 1	1 3	8 9	8 9	0 2 7	0 0	1 2	1 2	8 9		0 5 0 0 0
										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)			
		20.402(b)	20.405(c)	X 50.73(a)(2)(iv)	73.71(b)
		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)
POWER LEVEL (10)	0 0 0	20.405(a)(1)(iii)	50.73(a)(2)(i)	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
Don Crowl, Regulatory Assurance, extension 2860	Area Code 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				N						

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 November 13, 1989 at 1823 hours with Unit 1 defueled, a Primary Containment Isolation System (PCIS) Group 1 isolation occurred while performing LaSalle Instrument Surveillance LIS-MS-107B, "Unit 1 Reactor Vessel Low Water Level 1 and Level 2 Isolation Instrument Channels B and D Refuel Calibration." A full PCIS Group 1 isolation occurred because the other half of the isolation logic was tripped due to the loss of leak detection power from the AC electrical bus 135X and 135Y outage. No valve movement occurred because all the Main Steam system isolation valves were previously deenergized due to other scheduled refuel outage work.

The alarm windows were extinguished and the light bulbs for alarm windows F504, "CHAN A1/A2 MSIV ISOL TRIP," and E504, "CHAN B1/B2 MSIV ISOL TRIP," on the Control Room panel 1H13-P601 were later determined to be burnt out when testing was done. This prevented both the Unit 1 Nuclear Station Operator (NSO, licensed Reactor Operator) and the Instrument Maintenance Technician from detecting that half of the isolation logic was initiated when the AC electrical bus 135X was deenergized.

A review of the guidance for what an alarm window test requires will be performed.

This event is being submitted pursuant to the requirements of 10CFR50.73(a)(2)(iv) due to the actuation of an Engineered Safety Feature System.

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): 1 Event Date: 11/13/89 Event Time: 1823 Hours

Reactor Mode(s): Defueled Mode(s) Name: Defueled Power Level(s): 0%

B. DESCRIPTION OF EVENT

On November 13, 1989 at 1823 hours with Unit 1 defueled, a Primary Containment Isolation System (PCIS, PC) [JM] Group 1 isolation occurred while performing LaSalle Instrument Surveillance LIS-MS-107B, "Unit 1 Reactor Vessel Low Water Level 1 and Level 2 Isolation Instrument Channels B and D Refuel Calibration." Both Inboard and Outboard Main Steam Line Isolation valves (MSIV, MS) [SB] and Main Steam line drain valves were deenergized prior to the isolation due to planned refuel outage work. No valve motion took place during this event. The PCIS Group 1 isolation only resulted in relay and alarm actions.

At 0715 hours on November 13, 1989 the "A" channel calibration was completed in accordance with LaSalle Instrument Surveillance LIS-MS-107A, "Unit 1 Reactor Vessel Low Water Level 1 and Level 2 Isolation Instrument Channels A and C Refuel Calibration."

At 0725 hours "C" channel calibration was started in accordance with LIS-MS-107A.

At 1305 hours the Division 1 AC Electrical Distribution Buses 135X and 135Y (AP) [ED] were deenergized and taken out-of-service in accordance with LaSalle Administrative Procedure LAP-900-4, "Equipment Out-of-Service Procedure," for scheduled refuel outage work. The bus 135X and 135Y outage deenergized the Division 1 Leak Detection logic (LD/E31) [IJ]. (Relays 1E31A-K3A and 1E31A-K3C deenergized.)

Relays 1E31A-K3A and 1E31A-K3C cause relays 1B21H-K7A and 1B21H-K7C to deenergize on loss of power, high area ambient temperature or high differential temperature signal. When relays 1B21H-K7A and 1B21H-K7C deenergize, a channel A1 and A2 MSIV isolation signal occurs. This occurred during the day shift and caused no consequence to testing the Division 1 logic per LIS-MS-107A. (Only half of the isolation logic was made up at this time.)

At 1430 hours the calibration of the "C" channel per LIS-MS-107A was stopped for the shift to allow shift turnovers (the exchange of day shift personnel with afternoon shift personnel) to take place.

At 1540 hours the calibration of the "C" channel was resumed per LIS-MS-107A.

B. DESCRIPTION OF EVENT (Continued)

At 1600 hours the Instrument Maintenance (IM) personnel completed the calibration of the "C" channel per LIS-MS-107A.

At 1630 hours the calibration of "B" channel was started in accordance with LIS-MS-107B. The surveillance test was authorized by the Shift Engineer (SE, licensed Senior Reactor Operator), Shift Control Room Engineer (SCRE, licensed Senior Reactor Operator) and Unit 1 Nuclear Station Operator (NSO, licensed Reactor Operator) prior to beginning the surveillance test.

At the beginning of the surveillance test, the computer points (CX/C91) [LD] were verified to indicate as follows:

a. D997, "LO LO RX WTR LVL DIV B1 -N-LO"
b. C580, "VERY LO RX WTR LVL DIV B1 - N-LO"
c. C581, "RPS CH B1 INSTR GROSS FAIL - AVAIL"
d. C582, "RPS CH B1 INSTR POWER LOSS - AVAIL"
e. C584, "RPS CH B2 INSTR GROSS FAIL - AVAIL"
f. C585, "RPS CH B2 INSTR POWER LOSS - AVAIL"

At the Control Room panel 1H13-P603 the following alarms (AN) [IB] were verified reset or clear (slow flash or extinguished):

a. B401, "DIV 1 RX VESSEL WTR LVL 2 LO"
b. B412, "DIV 2 RX VESSEL WTR LVL 2 LO"
c. B405, "CHAN A1/B1 PRI CNMT PRESS HI"
d. B409, "CHAN A2/B2 PRI CNMT PRESS HI"
e. A210, "CHAN A1/B1 RX VESSEL WTR LVL 1 LO-LO-LO"

At the Control Room panel 1H13-P601 alarm E504, "CHAN B1/B2 MSIV ISOL TRIP," was verified reset or clear (slow flash or extinguished).

LIS-MS-107B did not require the IM's to check the Auxiliary Electric Room panels 1H13-P622 and 1H13-P623 Main Steam Isolation Valve (MSIV, MS) solenoid valve status lights if the MSIV's were closed. The solenoid status lights are normally energized when no isolation signal is present.

The alarm windows were extinguished and the light bulbs for alarm windows F504, "CHAN A1/A2 MSIV ISOL TRIP," and E504, "CHAN B1/B2 MSIV ISOL TRIP," on the Control Room panel 1H13-P601 were later determined to be burnt out when testing was done.

When the test switch 1B21-S208, "MSL DRN ISOL LOGIC," was turned to test in accordance with LIS-MS-107B a full PCIS Group 1 isolation occurred because the other half of the isolation logic was tripped due to the loss of leak detection power from the AC electrical bus 135X and 135Y outage. No valve movement occurred because all the Main Steam system isolation valves were previously closed due to other scheduled refuel outage work. Both the Unit 1 NSO and the IM did not realize a full Group 1 isolation had occurred at this time because the annunciator light bulbs were burnt out for alarm windows E504 and F504, and no valve motion took place.

B. DESCRIPTION OF EVENT (Continued)

The Instrument Maintenance personnel proceeded to the field and isolated 1B21-N402B Division II reactor level transmitter and attached the test equipment to simulate lowering reactor water vessel level. When the trip setpoint was reached, the Division II reactor water level trip unit opened contacts in the logic which deenergized the 1B21H-K7B relay. The Division II reactor vessel water level trip indicator unit trip light and alarm window A210, "A1/B1 LVL 2 LO LVL," illuminated. The alarm window E504 did not illuminate at this point. The IM's stopped testing to investigate why the alarm window E504, "CHAN B1/B2 MSIV ISOL TRIP," did not illuminate. The IM's requested the NSO to make an annunciator check and it was discovered that both alarm window E504 and F504 had no indication because the window light bulbs were burnt out. At this point the IM's notified the IM foreman of the problem.

The IM personnel were requested to return reactor level transmitter 1B21-N402B to service and the Division II isolation was reset. The light bulbs were replaced for alarm windows E504 and F504 and the Operating Department requested the IM's to jumper the 1E31A-K3A and 1E31A-K3C relays for Division I to allow testing of Division II logic to continue. This was done in accordance with LaSalle Administrative Procedure LAP-240-6, "Temporary System Change," and testing was completed without any further event.

This event is being submitted pursuant to the requirements of 10CFR50.73(a)(2)(iv) due to the actuation of an Engineered Safety Feature System.

C. APPARENT CAUSE OF EVENT

Both alarm windows E504, "CHAN B1/B2 MSIV ISOL TRIP," and F504, "CHAN A1/A2 MSIV ISOL TRIP," had no indication because the window light bulbs were burnt out. This caused both the Unit 1 NSO and the IM to proceed with LIS-MS-107B believing that no other isolation signal was present at this time. When the test switch 1B21-S20B, "MSL DRN ISOL LOGIC," was turned to test in accordance with LIS-MS-107B, a full PCIS Group 1 isolation occurred.

When AC electrical bus 135X was deenergized for planned outage work, a Division I PCIS Group 1 isolation signal resulted (Only half of the isolation logic was made up at this time.) due to the loss of power to the Leak Detection system logic which inputs to the PCIS logic. This was done during the day shift (0700-1500 hours). After shift change the afternoon shift (1500-2300 hours) Unit 1 NSO checked the Main Control Room panel alarms per LaSalle Operating Surveillance LOS-AA-S1, "Shiftly Surveillance," and did not notice any extinguished alarm window light bulbs. The Unit 1 NSO demanded an alarm summary to print out on the Sequential Event Recorder typer (alarm typer, AN) [IQ]. A detailed review of the printout wasn't performed due to the work load during the shift and the numerous amount of alarms listed on the typer. Many alarms were caused from the amount of work requiring systems to be in an off-normal condition during a refueling outage.

The LaSalle Instrument Surveillance procedure did not require verification of the alarms printed out by the Sequential Event Recorder summary. This procedure also did not require the IM to verify the MSIV solenoid status lights energized in the Auxiliary Electric Room if the MSIV's are closed. The MSIV's were closed due to planned refuel outage work and were deenergized to allow work to continue. Checking the alarm summary printout may have allowed the NSO or IM to identify that an isolation signal was present. Checking the solenoid status lights for the MSIV's would not have helped in this event because the MSIV's were out of service and the solenoids deenergized to support planned outage work.

C. APPARENT CAUSE OF EVENT (Continued)

When AC electrical bus 135X was deenergized the Unit 1 NSO on the afternoon shift did not realize that power was also lost to the Division 1 Leak Detection system which inputs to the PCIS system to provide isolations. Normally the NSO would be aware of the condition of the system by the indication of Control Room alarms. There are no specific procedures or lists (outside design drawings) which identify every effect a bus outage has.

The SCRE who prepared and reviewed the AC electrical bus 135X and 135Y outage knew that the valves associated with the PCIS Group 1 isolation logic were all out of service closed or in their isolated position. The SCRE felt that it would not be a concern during subsequent testing that would cause an isolation because no actual valve movement would take place, only relay actuation. The SCRE used LaSalle Emergency Plan implementing procedure LZP-1310-1, "Notifications," as a reference for making this interpretation. This evaluation was not communicated to afternoon shift personnel.

D. SAFETY ANALYSIS OF EVENT

Bus outages are performed for modification work during planned unit outages. A loss of power to the Leak Detection system provided a Division 1 primary containment isolation system actuation as designed.

The safety significance of this event is minimal since the unit was defueled and the valves that would have isolated were already in the closed position due to planned outage work.

E. CORRECTIVE ACTIONS

At 1945 hours the IH personnel were requested to return reactor level transmitter 1B21-N402B to service and the Division II isolation was reset.

The light bulbs were replaced for alarm windows E504, "CHAN B1/B2 MSIV ISOL TRIP," and F504, "CHAN A1/A2 MSIV ISOL TRIP."

On November 14, 1989 at 0100 hours the IM's installed jumpers in accordance with LaSalle Administrative Procedure LAP-240-6, "Temporary System Change," (TSC 1-983-89) to prevent Main Steam Isolation Valve (MSIV) Group 1 PCIS isolation from occurring while a half isolation signal is present due to AC electrical bus 135X/Y outage. This was done to allow testing of Division II logic to continue.

At 1240 hours on November 14, 1989, LIS-MS-107B was completed satisfactorily without any further event.

All alarm windows for both Unit 1 and 2 main Control Room have been checked to verify both light bulbs in each window are working properly.

The Operating Department will review the need to revise procedures to provide more guidance on what an alarm window test requires, such as checking each window to determine if both bulbs are working properly when tested. Action Item Record (AIR) 373-200-89-11201 will track this corrective action.

E. CORRECTIVE ACTIONS (Continued)

AC electrical bus outage procedures will be developed to assist the Operating personnel in identifying potential problems which will arise due to deenergizing equipment or logic system power supplies. AIR 373-200-89-11202 will track these procedures.

The Training Department will review this event to determine if additional training is required to insure proper turnover information that could effect Engineered Safety Featured system actuation reportability is discussed. AIR 373-200-89-11203 will track the completion of this review.

A General Information Notification (GIN) will be developed to review this event with Operating, Maintenance and Technical Staff personnel emphasizing the importance of verifying or reverifying the required initial conditions just prior to performing a test or surveillance to prevent inadvertent Engineered Safety Featured System actuations. AIR 373-200-89-11204 will track the completion of this GIN.

F. PREVIOUS EVENTS

LER Number	Title
373/84-049-00	Secondary Containment Isolation During Testing
373/84-074-00	Reactor Water Cleanup Isolation
373/87-009-00	Group IV Isolation During Surveillance Test Due to Instrument Maintenance Procedure Inadequacy
373/87-030-00	Reactor Scram While Shutdown During Surveillance Due to Communication Error
374/88-017-00	Reactor Water Cleanup Isolation During Modification Test Due to Inadequate Reset
374/89-003-01	Engineered Safety Feature Actuation During Performance of Instrument Maintenance Functional Tests Due to Personnel Error
374/89-013-00	Primary Containment Isolation During Instrument Surveillance Testing of LIS-MS-401

G. COMPONENT FAILURE DATA

Not applicable.

E. CORRECTIVE ACTIONS (Continued)

AC electrical bus outage procedures will be developed to assist the Operating personnel in identifying potential problems which will arise due to deenergizing equipment or logic system power supplies. AIR 373-200-89-11202 will track these procedures.

The Training Department will review this event to determine if additional training is required to insure proper turnover information that could effect Engineered Safety Featured system actuation reportability is discussed. AIR 373-200-89-11203 will track the completion of this review.

A General Information Notification (GIN) will be developed to review this event with Operating, Maintenance and Technical Staff personnel emphasizing the importance of verifying or reverifying the required initial conditions just prior to performing a test or surveillance to prevent inadvertent Engineered Safety Featured System actuations. AIR 373-200-89-11204 will track the completion of this GIN.

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374/89-003-01	Engineered Safety Feature Actuation During Performance of Instrument Maintenance Functional Tests Due to Personnel Error
374/89-013-00	Primary Containment Isolation During Instrument Surveillance Testing of LIS-MS-401

G. COMPONENT FAILURE DATA

Not applicable.