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LaSalle County Nuclear Station
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November 17, 1989

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

Dear Sir:

Licensee Event Report #89-014-00, Docket #050-374 is being submitted to your office in accordance with 10CFR50.73(a)(2)(iv).

WR0

G. J. Diederich
for Station Manager
LaSalle County Station

GJD/DAC/bjp

Enclosure

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

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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 8

Title (4)

Primary Containment Isolation System Group 4 Isolation During Ground Isolation

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
1 0	2 0	8 9	8 9	0 1 4	0 0	1 1	1 7	8 9		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)			
1	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)
POWER LEVEL (10) 0 9 3	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)	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
Don Crowl, Regulatory Assurance, Extension 2860	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
A				N					
D	E	J		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 October 20, 1989 at 0123 hours with Unit 2 in Operational Condition 1 (Run Mode) a Primary Containment Isolation System (PCIS,PC) [JM] Group 4 isolation occurred. This resulted in the closure of the Unit 2 Reactor Building Ventilation (VR) [VA] Isolation Dampers, trip of the Unit 2 running VR supply and exhaust fans and auto start of the Unit 2 Standby Gas Treatment train (SBGT,VG) [BH]. The Reactor Building Isolation Dampers serve to isolate the secondary containment (CS) [NG].

The Primary Containment Isolation System (PCIS) Group 4 isolation occurred during the performance of a DC ground isolation. The ground isolation was performed without using existing procedures because the existing procedures were not written for the crosstied condition that the Division 2 DC buses were currently in. This resulted in de-energizing the Division 2 PCIS logic DC power supply

After further investigation the ground was determined to be the DC power supply to the Visual Annunciator Logic panel 1PA08J. The power supply was replaced.

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 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): 2 Event Date: 10/20/89 Event Time. 0123 Hours

Reactor Mode(s): 1 Mode(s) Name: Run Power Level(s): 93%

B. DESCRIPTION OF EVENT

On October 20, 1989 at 0123 hours with Unit 2 in Operation Condition 1 (Run Mode) a Primary Containment Isolation System (PCIS) (PC) [JM] Group 4 isolation occurred. This resulted in the closure of the Unit 2 Reactor Building Ventilation (VR) [VA] Isolation Damper, trip of the Unit 2 running VR supply and exhaust fans and auto start of the Unit 2 Standby Gas Treatment train (SBGT,VG) [BH]. The Reactor Building Isolation Dampers serve to isolate the secondary containment (CS) [NG].

Prior to the isolation, Unit 1 was defueled during a planned refueling outage. Unit 1 VR system was shutdown with the isolation dampers closed and Unit 1 SBGT was Out-Of-Service.

To perform outage work, a planned outage of Unit 1 Division 2 AC buses was scheduled for October 20, 1989. Backup power supply feeds were verified available to panels that were furnished with redundant power supplies. The breakers for the DC Emergency Lighting (LL) [FH] feeds from Unit 1 Division 2 were opened to minimize the charger load prior to the Division 2 AC Electrical Distribution Bus 142Y being deenergized.

At approximately 2200 hours on October 19, 1989 the Unit 1 Division 2 125 volt DC battery (DC) [EJ] was crosstied to Unit 2 Division 2 125 volt DC battery in order to allow the Unit 1 Division 2 125 volt DC battery charger to be deenergized and taken Out-Of-Service. Unit 2 Division 2 125 volt DC bus battery charger amperage increased to approximately 70 amps due to the additional load from the Unit 1 Division 2 125 volt DC electrical distribution system (normal load is approximately 36 amps). The Unit 1 Division 2 charger was being taken Out-Of-Service to install a Temporary System Change (TSC 2-810-89) to provide it a source of power while its normal power supply was deenergized. The Unit 1 Division 2 4160 volt ESF Bus (142Y) (AP) [EB] was being deenergized to install modifications. This in turn would de-energize the AC power supply which feeds the Unit 1 Division 2 125 volt DC battery charger. The temporary power source for the Unit 1 Division 2 125 volt DC charger would prevent allowing the battery to discharge or having to leave the battery crosstied to Unit 2. This would allow a longer period of time to complete the modification work.

At 2225 hours the Unit 1 Division 2 125 volt DC battery charger was taken Out-Of-Service.

B. DESCRIPTION OF EVENT (Continued)

At 0030 hours Equipment Operators (EO's) were instructed to take Out-Of-Service Bus 142Y.

At 0102 hours, when Bus 142Y was deenergized the following occurred, (1) Unit 2 Division 2 battery charger amperage increase to approximately 80 amps, (2) a negative 125 volt DC ground occurred and (3) Unit 1 Reactor Building Equipment Drain Tank (RBEDT,RE) [WK] level indication was lost. The 1B and 1C Residual Heat Removal (RH/E12) [BO] systems were being drained for planned maintenance and RBEDT level was being monitored at the time. The Unit 1 Shift Foreman (SF) began an investigation into why the RBEDT level indication was lost.

The Shift Engineer (SE) was notified and reported to the Control Room. At this time the SE determined that LaSalle Operating Procedure LOP-DC-05, "125 Volt DC System Division 2 Ground Location and Isolation" wasn't applicable for the condition that the system was in at the time because the Division 2 DC Buses were crosstied with no available Unit 1 battery charger. The SE knew a negative 125 volt DC ground existed and the Unit 2 charger amperage was approximately 80 amps. In accordance with LOP-DC-05 time allowed to crosstie between Units is limited to 15 minutes when crosstying a grounded bus to an ungrounded bus. The 15 minutes was intended for the controlled evolution of crosstying a grounded bus to an ungrounded bus to perform a ground isolation. During this event the ground occurred after the buses were crosstied and the required action for identifying and correcting a DC ground were taken per existing station policy. It was not determined at this time that de-energizing Bus 142Y caused the ground to occur, although both events occurred at the same time.

The SE and the Shift Control Room Engineer (SCRE) using a Key Diagram (a drawing identifying the loads fed from a particular bus) for Unit 1 Division 2 125 volt DC bus 112Y (drawing 1E-1-4000FC) and the Technical Specifications determined which DC breakers could be opened to isolate the ground. The following breakers on DC Bus 112Y were opened or verified open as noted below.

1. #16 125 volt DC Control Power to Switchgear (SWGR) 136X
2. #17 Reactor Recirculation 6.9 kv SWGR 152-1
3. #14 Diesel Generator 1A Local Control Power
4. #24 Remote Shutdown Panel
5. #18 125 volt DC Control Power to SWGR 136Y
6. #22 125 volt DC Control Power to SWGR 142Y
7. #2 Division 2 Automatic Depressurization System (ADS) panel 1H13-P631
8. #4 Reactor Core Isolation Cooling (RCIC) interlock panel 1H13-P618
9. #6 Division 2 ADS panel 1H13-P645
10. #5 Residual Heat Removal (RHR) interlock panel 1H13-P601

B. DESCRIPTION OF EVENT (Continued)

11. #3 RCIC interlock panel 1H13-P601

12. #1 Reactor Protection System (RPS) division B2 panel 1H13-P611

13. #21 Alternate Rod Insertion (ARI) control panel 1H13-P801

14. #20 Primary Containment Isolation System (PCIS) panel 1PA14J

15. #8 Standby Gas Treatment System (SBGT) panel 1PL17J

16. #9 Reactor Recirculation System panel 1B33-P001B

The SE marked up the Key Diagram (1E-1-4000FC) for Unit 1 Division 2 125 volt DC distribution panel and gave it to the Extra SF to direct the Equipment Operator to open the breakers noted above. Breaker number 8 was not one of the breakers indicated to open on the key diagram given to the Extra SF. The Extra SF then instructed the Equipment Operator to open the breakers, including breaker number 8. The Extra SF determined that breaker 8 could be opened because Unit 1 SBGT was Out-Of-Service and de-energized at this time. He failed to recognize that the logic for Unit 1 SBGT initiation also provides an initiation signal for Unit 2 SBGT system.

At 0123 hours 125 volt DC Bus 112Y circuit breaker number 20 was opened, this caused the Unit 2 Reactor Building Ventilation (VR) system isolation dampers 2VR04YB and 2VR05YA to close, Unit 2 VR Supply and Exhaust Fans to trip, and Unit 2 Standby Gas Treatment Train (SBGT) to start automatically. This was caused by de-energizing the DC power which feeds the Primary Containment Isolation System (PCIS) manual initiation logic. When circuit breaker number 8 was opened this deenergized the automatic initiation logic for SBGT system and provided an additional initiation signal.

The Center Desk Nuclear Station Operator (NSO, Licensed Reactor Operator) and the Unit 2 NSO reported to the SE that Unit 2 VR had tripped and isolated and Unit 2 SBGT had initiated.

At 0126 hours LaSalle Abnormal Procedure LOA-VR-04, "Restart of Reactor Building Ventilation After A Group 4 Isolation" was entered on Unit 2 due to the loss of ventilation to the main steam tunnel.

The SE instructed the Unit 1 Extra SF to have the Equipment Operators (EO) reclose the opened circuit breakers on Unit 1 Division 2 DC Bus 112Y. Once the breakers were reclosed the Unit 1 PCIS and Unit 2 SBGT initiation logic was reset. SBGT was shutdown within 10 minutes and Unit 2 VR system was unisolated and restarted in accordance with LOA-VR-04.

At 0156 hour LOA-VR-04 was exited.

At 0200 hours the SE authorized a temporary return of AC Bus 142Y to service, this re-energized the Unit 1 Division 2 AC Distribution system and the negative 125 VDC ground cleared.

The SE and the SCRE reviewed the electrical schematics and determined that the VR system isolation and SBGT system initiation occurred when DC Bus 112Y circuit breakers 20 and 8 were opened.

B. DESCRIPTION OF EVENT (Continued)

The Unit 1 Extra SF then verified that the DC Emergency Lighting Feed breakers were off and had not caused the ground. The Unit 1 Extra SF and Electrical Maintenance Foreman reviewed the Bus 112Y Key Diagram and determined that circuit breaker 15 on 112Y might be the cause of the ground. Circuit breaker 15 is the DC feed to the Visual Annunciator Logic panel 1PA08J. When the normal AC feed breaker was opened for panel 1PA08J, the ground came back after approximately 10 seconds when the power supply automatically transferred to the backup DC feed. The normal AC feed breaker was reclosed and the ground cleared.

At 0400 hours the temporary power supply installation for Unit 1 Division 2 125 volt DC battery charger was completed. The Unit 1 Division 2 125 volt DC battery charger was returned to service. The Unit 2 Division 2 and the Unit 1 Division 2 125 volt DC distribution buses were uncrosstied in accordance with LaSalle Operating Procedure LOP-DC-02, "Changing Modes of Operation in the DC Electrical System", to prevent the ground from affecting Unit 2 Division 2 125 volt DC distribution system.

While investigating the loss of the Unit 1 RBEDT level indication the Unit 1 SF checked the Miscellaneous Automatic Control (IP) [EF] panel 1PA06J power supply and found a work request tag indicating the normal power supply was bad. No caution card was placed on the normal or backup AC power supply feed breakers to warn of this problem. The normal power supply local breaker in the 1PA06J panel was off, but the normal power supply feed breaker was found in the on position.

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 System.

C. APPARENT CAUSE OF EVENT

The Group 4 PCIS isolation resulted in tripping of the running VR fans and automatic initiation of Unit 2 SBGT. This was caused when the Unit 1 Division 2 125 volt DC breaker 20 was opened.

The Shift Engineer assumed the PCIS logic was completely fed from the Reactor Protection System (RP/C71) [EF] power supplies. The SE had forgotten that the normal push button initiation logic was supplied from DC bus 112Y. No review of electrical schematics were done prior to instructing the operator to open this breaker.

The SE and the SCRE failed to refer to LaSalle Operating Procedure LOP-DC-05, "125 volt DC System Division 2 Ground Location and Isolation". This procedure provides cautions prior to opening individual breakers to perform a ground isolation. This procedure also instructs the operator to open one breaker at a time and reclose it if the ground is still present. In this event several breakers were left open, this prevented the operators from initially identifying which breaker caused the PCIS Group 4 isolation. The SE determined LOP-DC-05 wasn't applicable for the condition that the system was in at the time the Division 2 battery buses were crosstied.

Once the ground occurred there was an urgency to remove the ground because a large ground existed on the operating unit. The SE knew that Unit 1 and 2 Division 2 125 volt DC distribution systems could not be uncrosstied because the Unit 1 Division 2 125 volt DC battery charger was unavailable to supply the Unit

C. APPARENT CAUSE OF EVENT (Continued)

1 bus. The Unit 1 Division 2 125 volt DC Bus 1B feed was open to the Division 2 distribution buses 112X and 112Y because the Unit 1 and 2 Division 2 battery distribution buses were crosstied in accordance with LaSalle Operating Procedure LOP-DC-02, "Changing Modes of Operation in the DC Electrical System". Uncrosstying the batteries at this time would have also resulted in the isolation event.

The negative 125 volt DC ground was the result of a bad power supply for the Visual Annunciator Logic panel 1PA08J. When the AC electrical distribution bus 142Y was deenergized, the normal AC power was lost, resulting in the automatic transfer to its backup power supply, which is fed from Unit 1 Division 2 125 volt DC distribution bus 112Y circuit breaker 15.

The loss of the RBEDT level indication was due to a bad normal power supply to the Miscellaneous Automatic Control System panel 1PA06J. No caution cards were used in accordance with LaSalle Administrative Procedure LAP-900-12, "Caution Card Procedure", on the normal or backup power supply feed breakers. This could have warned the operators of a potential problem when the alternate feeds were verified in the "ON" position prior to de-energizing Bus 142Y.

D. SAFETY ANALYSIS OF EVENT

The Reactor Building [NG] completely encloses the reactor and its primary containment (PC). The structure provides secondary containment (CS)[NG] when the primary containment is closed and in service, and primary containment when the primary containment is open, as it is during the refueling period.

Normal ventilation systems are not required to operate during accident conditions and are automatically shut down whenever the Standby Gas Treatment Train system automatically starts.

In the design basis for Primary Containment Isolation System (PCIS), the system is to provide assurance that the closure of automatic isolation valves (dampers) is initiated when required. The power supplies for the primary containment and reactor vessel isolation control system are arranged so that loss of one supply cannot prevent automatic isolation when required.

The safety significance of this event were minimal. When the DC power was deenergized to the Engineered Safety Feature system (SBGT, PCIS) the systems actuated as designed to minimize the potential of any releases to the environment in the event an actual Design Basis Accident (DBA) were to occur. Loss of steam tunnel cooling could have caused operational problems, however, prompt response minimized any impact.

E. CORRECTIVE ACTIONS

Shift personnel verified all appropriate automatic actions occurred as expected upon review of the various circuits involved.

E. CORRECTIVE ACTIONS (Continued)

The Unit 1 Division 2 125 volt DC Bus 112Y circuit breakers 8 and 20 were reclosed. The PCIS isolation logic was reset. Unit 2 Reactor Building Ventilation was restarted in accordance with LOA-VR-04 and Unit 2 SBGT was shutdown.

The AC Distribution Bus 142Y was re-energized causing the negative 125 volt DC ground to clear. The ground cleared when the power supply for Visual Annunciator Logic panel 1PA08J automatically transferred back to its normal AC power supply from the grounded DC power supply feed from Unit 1 Division 2 125 volt DC Bus 112Y circuit breaker 15.

The ground was determined to be the backup DC power supply for panel 1PA08J. This power supply was replaced under Station Work Request number L93792.

The Temporary System Change for installing the temporary power supply for the Unit 1 Division 2 125 volt DC battery charger was completed. Power was restored to Unit 1 Division 2 125 volt DC battery charger and Unit 1 and 2 Division 2 125 volt DC distribution buses 112X and 112Y were uncrosstied on October 10, 1989 at approximately 0400 hours.

The normal AC power supply for Miscellaneous Automatic Control System panel 1PA06J was replaced under the Station Work Request number L85346.

Technical Staff will review the need to establish a surveillance program for checking components that are backups but not routinely checked for proper operation. Action Item Number (AIR) 374-200-89-05901 will track this review.

A General Information Notification (GIN) will be developed and issued to the appropriate operating personnel to tailgate on this event. AIR 374-200-89-05902 will track completion of the GIN.

The Shift Engineer involved in this event has been counseled by the Senior Operating Engineer and the Assistant Superintendent of Operating on the importance of using existing plant procedures for guidance on taking corrective actions.

LaSalle Operating Procedures for performing ground isolations will be reviewed and revised as necessary to incorporate guidance for ground isolation when crosstied between units. Also a revision will be made to the caution statement before the step which opens breaker 20 on Bus 112Y to indicate an initiation will occur for both Unit 1 and 2 PCIS group 4 logic. AIR 374-200-89-05903 will track these procedure reviews and revisions.

A review for the need to implement a policy for flagging off normal equipment to control room personnel (e.g. caution card procedure, turnovers) will be performed. AIR 374-200-89-05904 will track this review.

A review for the need to implement a policy specifying when actions may be taken without a procedure such as when a procedure currently does not exist for a condition (i.e. what level of urgency or craft capability warrants not revising or initiating a procedure will be performed). AIR 374-200-89-05905 will track this review.

E. CORRECTIVE ACTIONS (Continued)

The Out-Of-Service procedure LAP-900-4 has been revised to clarify how an Out-Of-Service that is partially hung can be restored to the original status.

A review for the need to implement additional training for this event with the emphasis on the ground isolation procedure prerequisite, the bases for this prerequisite and the DC logic cross trips between systems and units will be performed. AIR 374-200-89-05906 will track this review.

Past INPO Significant Operating Experience Reports (SOER) and Operating Experience Report (OPEX) have been reviewed to determine if any other corrective action can be implemented to prevent recurrence of this event. No other corrective actions were developed from this review.

F. PREVIOUS EVENTS

LER Number	Title
373/82-025-03L-0	LTS-300-4 Mechanical Checklist Violation
373/84-074-00	Reactor Water Cleanup Isolation
373/86-005-00	An ESF Actuation From Loss of Division 1 DC Caused By a Personnel Error

G. COMPONENT FAILURE DATA

None.