



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

December 16, 1992

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

Dear Sir:

Licensee Event Report #92-016-00, Docket #050-374 is being submitted to your office in accordance with 10CFR50.73(a)(2)(iv).

for G. J. Diederich  
Station Manager  
LaSalle County Station

GJD/DJE/mkl

Enclosure

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

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## LICENSEE EVENT REPORT (LER)

Form Rev 2.0

Facility Name (1) LaSalle County Station Unit 2  
 Title (4) Reactor Scram On Loss Of Air Due To A Defective Procedure

Docket Number (2) 0 | 5 | 0 | 0 | 0 | 3 | 7 | 4  
 Page (3) 1 | of | 0 | 5

Reactor Scram On Loss Of Air Due To A Defective Procedure

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   6	9   2	9   2	0   1   6	0   0	1   2	1   6	9   2		0   5   0   0   0   3   7   3
										0   5   0   0   0   1   1

OPERATING MODE (9) 1

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
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 Daniel Enright, Operating Department, Extension 2204

TELEPHONE NUMBER

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
E	L   F			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)

At 0122 on November 16, 1992, LaSalle County Station's Unit 2 scrambled from approximately 80% power following a load reduction from 100% power as a result of a feedwater transient that was caused by a loss of all Station Air (SA) Compressors.

Operating personnel isolated cooling water to the Unit 2 SA Compressor as part of a scheduled out-of-service. This resulted in cooling water being isolated from the running Unit 1 and Common SA compressors due to the Unit 2 Turbine Building Closed Cooling Water System (TBCCW) being cross-tied to the Unit 1 and Common SA Compressors while refuel outage activities were being performed on the Unit 1 TBCCW System.

Due to the loss of cooling water, the Unit 1 and Common SA Compressors tripped on high lube oil temperature. This resulted in a reduction of Instrument Air pressure. The loss of air pressure, combined with its subsequent restoration, resulted in a feedwater transient that resulted in a Main Turbine trip due to high reactor water level. The turbine trip caused a reactor scram.

The cause of this event is a lack of administrative control over the abnormal lineup of the TBCCW Systems. The procedure used for cross-tying the SA Compressor's cooling water to the other unit did not provide provisions for positive administrative control over this abnormal lineup nor did it provide provisions for alerting operating personnel that the abnormal lineup existed.

Corrective actions include revising the procedure utilized for cross-tying SA Compressor Cooling Water to the other unit to provide provisions for positive control over this abnormal lineup. In addition, engraved plaques have been placed at the applicable SA Compressor Supply, Return, and Cross-Tie Valves to instruct operators to verify cooling water will be available to the required SA Compressors prior to repositioning them.

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

# PLANT AND SYSTEM IDENTIFICATION

General Electric - Boiling Water Reactor

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

## A. CONDITION PRIOR TO EVENT

Unit(s): 2 Event Date: 11/16/92 Event Time: 0122 Hours

Reactor Mode(s): 1 Mode(s) Name: Run Power Level(s): 80%

## B. DESCRIPTION OF EVENT

LaSalle County Station Unit 2 scrambled from approximately 80% power as a result of a transient that was caused by a loss of all Station Air Compressors (SA) [LF].

The following is a list of events that lead up to and resulted in the scram of Unit 2 from approximately 900 megawatts on November 16, 1992.

On October 5, 1992, the Unit 2 Turbine Building Closed Cooling Water (TBCCW) (WT) [KB] System was cross-tied to the Unit 1 and Common SA Compressors in accordance with Step F.4 of LOP-WT-02 "Startup and Operation of the Turbine Building Closed Cooling Water System". This was performed in order to provide cooling to the Unit 1 and Common SA Compressors while the Unit 1 TBCCW System was shutdown for refuel outage activities. Administrative out-of-service (OOS) 1-0705-92 was hung at this time to provide control over the cross-tying operation, and to ensure that the Unit 1 SA Compressor TBCCW Supply and Return Valves remained closed to prevent connecting the running Unit 2 TBCCW System to the shutdown Unit 1 TBCCW System. In addition to hanging OOS cards on the Unit 1 SA Compressor TBCCW Valves, OOS cards were hung on the Unit 1 TBCCW Pump Control Switches.

On November 14, 1992, the Operating Department commenced actions to return the Unit 1 TBCCW System to operation. TBCCW System Electrical and Mechanical Lineup Checklists were started and completed on Sunday, November 15. It was noted by the Equipment Attendant (EA, non-licensed) performing Mechanical Checklist LOP-WT-01M, that the SA Compressor TBCCW Cross-Tie Stop Valves DWT098 and DWT099 were open, and that the Unit 1 SA Compressor TBCCW Supply and Return Valves 1WT106 and 1WT107 were OOS closed. Administrative OOS 1-0705-92 was cleared in order to return the Unit 1 TBCCW Pumps to service for system startup. The Unit 2 TBCCW System was to be left cross-tied to the Unit 1 and Common SA Compressors until it could be verified that the system was operating properly, and that there were no plans to shutdown the Unit 1 TBCCW System again. The Unit 1 TBCCW System was started on Sunday, November 15.

At approximately 0015 on November 16, the Operating Shift Crew began hanging OOS 2-2202-92 on the Unit 2 SA Compressor in accordance with an established schedule for planned maintenance. Although the Operating Supervisors on shift were aware that the Unit 2 TBCCW System was supplying cooling to the running Unit 1 and Common SA Compressors, they were not aware of the fact that OOS 2-2202-92 included closing Unit 2 SA Compressor TBCCW Supply and Return Valves 2WT106 and 2WT107, which would isolate cooling water to all SA Compressors due to the cross-tied lineup in place at the time.

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

#### B. DESCRIPTION OF EVENT CONTINUED

At approximately 0115, EAs assigned to hang OOS 2-2202-92 closed Unit 2 SA Compressor TBCCW Supply and Return Valves ZWT106 and ZWT107 (located in the Unit 2 SA Compressor Room) in accordance with the OOS checklist and proceeded to the Unit 1 SA Compressor Room to continue hanging the OOS. The EAs found the cross-tie valves DWT098 and DWT099 open which they had not expected, and left to call the Control Room.

At approximately 0118, the Unit 1 SA Compressor tripped followed approximately one minute later by a trip of the Common SA Compressor, both tripping due to high lube oil temperature. The EAs were made aware of the SA Compressor trips via a plant page made by Control Room Personnel, and immediately took actions to restore cooling to the SA Compressors and return them to operation.

Upon receiving the SA Compressor trip alarms, Control Room Personnel immediately observed indications of decreasing Instrument and Service Air Pressures. The Shift Engineer (SE, licensed SRO) and Shift Supervisors (SS, licensed SRO) reported to the Control Room. The Unit 2 Nuclear Station Operator (NSO, licensed RO) began reducing reactor power from 100% by reducing reactor recirculation (RR) [AD] flow. A reactor water level transient began due to the reduction in Instrument Air (IA) [LD] pressure which caused: the 2B Turbine Driven Reactor Feed Pump (TDRFP) (FW) [JK], which was in manual, to stop pumping due to a loss of control air pressure; the Feedwater Minimum Flow Valves to fail open; and the Heater Drain (HD) [SM] Pump Forward Valves to fail closed. The extra NSO in the Control Room took a position at the Feedwater Control Panel to respond to the transient. The 'A' TDRFP, which was in three element control continued to pump water to the reactor, and the Motor Driven Reactor Feed Pump (MDRFP) was manually started due to the loss of flow from the 'B' TDRFP and the decreasing reactor water level. Instrument Air Pressure decreased to approximately 60 psig before the SA Compressors were restarted. The Control Room personnel utilized LOA-IA-01 "Loss Of Instrument Air", and LOA-SA-01, "Loss Of Service Air", during the transient. Upon restoration of instrument air, the 'B' TDRFP began to pump to the reactor again until it was manually tripped due to increasing reactor water level. In addition, the Feed Pump Minimum Flow Valves went closed and the Heater Drain Pump Forward Valves went open due to the restoration of Instrument Air Pressure, both contributing to a high reactor water level condition. The operation of the Feedwater and Heater Drain System components was consistent with the reduction and restoration of air pressure.

At approximately 0123, the Unit 2 Main Turbine (TG) [TA] tripped due to high reactor water level (Level 8, +55.5" reactor water level) which resulted in a reactor scram due to Turbine Stop Valve (EH) [TG] closure. Reactor water level reached a maximum level of approximately +60", followed by a decrease of level to a minimum of approximately +2" caused by "shrink" during the turbine trip and scram pressure transient. This resulted in a reactor low level scram signal (Level 3, +12.5"). Recovery actions from the scram were normal and reactor parameters were stabilized.

After the scram, the "U" Safety Relief Valve (SRV) (NB) [AD], which is a Group 1 Safety Relief Valve, lifted. Group 1 Safety Relief Valve's have the lowest relief pressure settings and would be expected to lift first during a pressure transient. Review of the pressure transient indicates that the Safety Relief Valve operated consistent with its design setpoint.

During the transient the Reactor Core Isolation Cooling System (RCIC) (RI) [BN] initiated due to an instrument rack pressure spike which caused an invalid low reactor level (Level 2, - 50") to be sensed. The RCIC Turbine was immediately tripped by the NSO in the Control Room before the system injected into the reactor vessel. The level spike resulted from pressure waves traveling from the Turbine Control and Stop Valves up the steam lines into the Reactor Pressure Vessel Dome. General Electric, the Nuclear Steam Supply System (NSSS) Supplier, has indicated that these spikes are expected and were present on the initial cycle startup tests.

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#### B. DESCRIPTION OF EVENT CONTINUED

It should be noted that Unit 1 experienced the same reduction in Instrument and Service Air Pressures during the event. However, Unit 1 was in its fifth refuel outage with the reactor defueled at the time, and experienced no adverse consequences.

This event is reportable pursuant to the requirement of 10CFR50.73(a)(2)(iv) due to the automatic actuation of the Reactor Protection System (RPS) (RP) [JC].

#### C. APPARENT CAUSE OF EVENT

The cause of this event was the reduction in Instrument Air pressure which caused a Feedwater transient. This resulted in a trip of the Main Turbine due to high reactor water level and a subsequent reactor scram.

The loss of Instrument Air pressure was the result of trips of the two running SA Compressors due to high lube oil temperature as a result of the loss of all cooling water.

The loss of all cooling water to the SA Compressors was caused by the closure of the Unit 2 SA Compressor TBCCW Supply and Return Valves by Operating Personnel as part of a scheduled OOS while the Unit 2 TBCCW System was cross-tied to supply cooling water to the Unit 1 and Common SA Compressors. This was caused by a lack of realization on the part of the preparers and the personnel hanging OOS 2-2202-92 that closing these valves would isolate cooling water to the running SA Compressors.

The root cause of this event was a management deficiency associated with the equipment out-of-service procedure. The out-of-services at LaSalle Station are prepared by qualified individuals well in advance of the time they will be actually utilized. This methodology allows a thorough review, without any time pressure, to ensure that the equipment will be properly isolated. When the out-of-service is to be hung, the unit supervisor reviews the equipment being removed from service to ensure that it is not required for plant operations.

In this event, the out-of-service was written assuming a normal cooling water line-up. The preparer did not identify the possible impact of the out-of-service if the cooling water was in a non-normal configuration. When the out-of-service was hung, the unit supervisor was aware of the abnormal configuration, but not how this would be affected. Because no previous difficulties have been experienced as a result of the interaction between two off normal conditions, the individuals did not put enough detail into their reviews to prevent the problem.

#### D. SAFETY ANALYSIS OF EVENT

Turbine trip with bypass is classified as a transient of moderate frequency in Chapter 15 of the Update Final Safety Analysis Report (UFSAR). The turbine trip in this event initiated the reactor scram as required. Following the scram, reactor pressure was controlled by the Safety Relief Valve and Turbine Bypass Valves. These events are consistent with the UFSAR analysis of this event.



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#### D. SAFETY ANALYSIS OF EVENT CONTINUED

Safety features were initiated as designed and expected, with the exception of the RCIC System initiation which occurred due to a pressure spike sensed in the variable leg of its associated level instruments.

#### E. CORRECTIVE ACTIONS

The individuals involved have been counseled on the need to thoroughly consider the effects of their actions.

All Shift Supervisors have been briefed on the need to ensure that they have thorough understanding of the effect of out-of-services hung on their shift.

All out-of-service preparers have been counselled on the need to consider the effects of boundary isolations on systems where there is more than one design configuration. Where such configurations exist, the need for a heightened level of review will be clearly identified on the out-of-service before it is delivered to the shift supervisor.

LOP-WT-02 "Startup and Operation of the Turbine Building Closed Cooling Water System" will be revised to include provisions for positive control and to alert operators of the abnormal cross-tied lineup of the SA Compressor TBCCW by means of established station administrative methods and procedures. Action Item Record (AIR) 374-180-92-08201 will track procedure revisions.

Engraved plaques have been installed at each of the applicable SA Compressor TBCCW Supply, Return, and Cross-tie Valves (1WT106, 1WT107, 2WT106, 2WT107, DWT098, and DWT099) instructing operators to verify that cooling will be available to the required SA Compressors prior to repositioning them. AIR 374-180-92-08202 will track completion of the installation of the engraved plaques.

A letter will be sent to all Shift Engineers with system procedure assignments asking them to review their systems for similar physical configurations that could result in inadvertent system/unit crossties. AIR 374-180-92-08203 will track completion of these reviews.

#### F. PREVIOUS EVENTS

A search of the LER/DVR data base indicated no previous similar events.

#### G. COMPONENT FAILURE DATA

None.

# EVENT SUMMARY AND CAUSE CODES

 DVR Number  
01-2-92-082

<input type="checkbox"/> Lost generation	<input type="checkbox"/> Reactor trip	<input type="checkbox"/> NRC violation, level---
<input type="checkbox"/> Cost > \$25,000	<input type="checkbox"/> ESF actuation	<input type="checkbox"/> GSEP event, class-----
<input type="checkbox"/> Hazard or Spill	<input type="checkbox"/> NRC reportable	<input type="checkbox"/> Tech Spec LCO
<input type="checkbox"/> Personnel injury	<input checked="" type="checkbox"/> LER	<input type="checkbox"/> Potential or future loss
<input type="checkbox"/> Component type	<input type="checkbox"/> PSE	<input type="checkbox"/> SALP functional area--

Failure mode	Department
X	
X	
X	

Licensed? L or blank	Type	Level	Department	Detail code
A				
A				
A				

Type	Detail Code	Department
B		
B		
B		

Type	Detail code
C	

Type of deficiency	Detail code	Procedure type
D		
D		
D		

Type	Detail code	Department
E	PI	OIP
E		
E		