



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

July 26, 1991

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

Dear Sir:

Licensee Event Report #91-006-00, Docket #050-374 is being submitted to your office to document an event which occurred on March 29, 1991. This event was originally determined to not be reportable under 10CFR50.73 because no LCO timeclock was exceeded. After subsequent review and discussion with the NRC, LaSalle Station has concluded that this event does require reportability under 10CFR50.73(a)(2)(v), Control of Rad Releases. This event was reclassified on July 3, 1991 and thus exceeded the 30 day limit for reportable events.

*Charles W. Diederich*  
for G. J. Diederich 7/26/91  
Station Manager  
LaSalle County Station

GJD/CLA/mkl

Enclosure

cc: 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)

Docket Number (2)

Page (3)

LaSalle County Station Unit 2

0 | 5 | 0 | 0 | 0 | 3 | 7 | 4 | 1 | of | 0 | 6

Title (4)

Breach of Primary Containment During Surveillance Testing Due To Procedural Deficiency

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

OPERATING  
MODE (9)THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10CFR  
(Check one or more of the following) (11)

POWER LEVEL (10)	1	0	0	20.402(b)	20.405(a)(1)(i)	20.405(a)(1)(ii)	20.405(a)(1)(iii)	20.405(a)(1)(iv)	20.405(a)(1)(v)	20.405(c)	50.36(c)(1)	50.36(c)(2)	50.73(a)(2)(i)	50.73(a)(2)(ii)	50.73(a)(2)(iii)	50.73(a)(2)(iv)	50.73(a)(2)(v)	50.73(a)(2)(vii)	50.73(a)(2)(viii)(A)	50.73(a)(2)(viii)(B)	50.73(a)(2)(x)	73.71(b)	73.71(c)	Other (Specify in Abstract below and in Text)
																	X							

## LICENSEE CONTACT FOR THIS LER (12)

Name	TELEPHONE NUMBER
Cynthia L. Alleman, Regulatory Assurance, Extension 2925	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	B	B		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 March 21, 1991 at 1110 hours, Unit 2 Primary Containment integrity was declared inoperable during a test run of Unit 1 Hydrogen Recombiner. The recombinder blower cover had been removed for preventative maintenance creating an opening to the Reactor Building such that when the Unit 2 containment valves were open, Primary Containment integrity became inoperable. The test run was a planned 10 minute evolution and the Unit 2 valves were closed from the Control Room following the test. One of the redundant isolation valves had a dual indication, and an operator was dispatched to investigate. The operator determined the cause of the dual indication and the valve closure was completed. He also recognized the Primary Containment integrity concern and notified the Control Room. Primary Containment integrity had been restored at 1150 hours by the Control Room Operator's remote closure of the valves, which was within the 1 hour timeclock of the Technical Specification 3.6.1.1 Limiting Condition For Operation (LCO). Personnel were in attendance at the recombinder during the condition. Because the LCO time limit was not exceeded, the condition was erroneously determined to not be an ENS call or LER.

On July 3 at 0850 hours, after subsequent review and discussions initiated by the NRC, LaSalle Station concluded that this event required notification under 10CFR50.72(b)(2)(iii)(C) and is reportable as an LER in accordance with 10CFR50.73(a)(2)(v). ENS notification was made at 1010 hours on July 3, 1991.

LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

Form Rev 2.0

FACILITY NAME (1)	DOCKET NUMBER (2)	LER NUMBER (6)						Page (3)		
		Year	///	Sequential Number	///	Revision Number				
LaSalle County Station Unit 2	0   5   0   0   0   3   7   4	9   1	-	0   0   6	-	0   0	0   2	OF	0   6	

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: 03/21/91 Event Time: 1110 Hours

Reactor Mode(s): 1 Mode(s) Name: Run Power Level(s): 100%

B. DESCRIPTION OF EVENT

On March 19, 1991, with Unit 2 in Operational Condition 1 (Run) at 100% power, the Electrical Maintenance Department began LaSalle Electrical Surveillance, LES-HG-103, "Hydrogen Recombiner Blower Motor Lubrication". This surveillance (performed every five years) describes the steps necessary to disassemble, lubricate, and reassemble the Hydrogen Recombiner (HG) [EB] blower motor. In accordance with the procedure, the Electrical Maintenance Department had the motor can case removed. The motor can cover is part of the suction side piping and an integral part of the primary containment. The blower is hard piped on the exhaust side. Once the motor was greased, they needed the Operating Department to run the motor for ten minutes prior to removing excess grease and replacing the motor can case.

Operating asked the station Technical Staff to provide them with a procedure for running the motor since LES-HG-103 offered no guidance. After a discussion between the Technical Staff Engineer and the Operating Supervisor, it was decided to run the blower motor in line with the Unit 2 Primary Containment (PC) [NH]. This decision was based on the fact that many Unit 1 valves were Out Of Service (OOS) and due to a radiation protection concern on the Unit 1 side (Unit 1 was in a refuel outage). The Technical Staff Engineer then outlined steps in LaSalle Operating Surveillance LOS-HG-SA1, "Post-LOCA Combustible Gas Control System Semi-Annual Functional Test and H2 Recombiner Check Valve Inservice Test", for Operating to follow.

On March 21, 1991, Operating, using LOS-HG-SA1, began the steps to run the blower motor. The Equipment Operator (EO, non-licensed operator) visually verified that the Unit 1 OOS valves were in the closed position. He then proceeded to energize the hydrogen recombiner valves and instrumentation at the local panel.

The Nuclear Station Operator (NSO, licensed Reactor Operator), at 1110 hours opened the hydrogen recombiner valves. The blower was started and the EO verified flow. At 1150 hours the NSO closed the hydrogen recombiner valves. He had indication that one of the hydrogen recombiner valves was not operating properly. The EO went down to the hydrogen recombiner skid to examine the valve. He determined that the valve was caught on a cable that interfered with the clutch. While inspecting the valve, he became aware that the inlet path to the blower was exposed to the Unit 1 Reactor Building atmosphere, therefore taking suction of this air and exhausting it into the Unit 2 Primary Containment (Drywell). He immediately closed the Unit 2 Primary Containment isolation valve and verified that the Unit 1 Primary Containment isolation valves were closed. He then notified the control room of the situation.

LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

Form Rev 2.0

FACILITY NAME (1)	DOCKET NUMBER (2)	LER NUMBER (6)						Page (3)		
		Year	///	Sequential Number	///	Revision Number				
LaSalle County Station Unit 2	0   5   0   0   0   3   7   4	9   1	-	0   0   6	-	0   0	0   3	OF	0   6	
TEXT Energy Industry Identification System (EIIS) codes are identified in the text as [XX]										

B. DESCRIPTION OF EVENT (CONTINUED)

Because the control room suspected that primary containment was breached, they sampled the containment and found it to be 4.8% oxygen which is greater than the Technical Specification limits of 4% oxygen. Inerting was initiated as : on as it was determined to be greater than 4%.

Because the LCO time limit was not exceeded, the condition was originally determined to not be an ENS call or LER. After subsequent review and discussions initiated by the NRC, LaSalle Station concluded that this event required notification under 10CFR50.72(b)(2)(iii)(C) and is reportable as an LER in accordance with 10CFR50.73(a)(2)(v).

C. APPARENT CAUSE OF EVENT

The integrity of the Unit 2 Primary Containment was breached when the hydrogen recombiner isolation valves were opened. With the cover off the blower, it allowed atmospheric air from Unit 1 to enter into the Unit 2 Primary Containment. LES-HG-103 offered no cautions to warn Operating that the motor can case not only covered the motor but was actually part of the inlet piping to the blower fan, therefore Operating was unaware that the blower was no longer part of a closed loop with Unit 2 Primary Containment.

The procedure also offered no guidance or precautions on what type of line up was needed to operate the blower motor. It was believed that the blower needed to be in a closed path to operate, and that in placing it in line with Unit 2 Primary Containment, a closed path would be formed.

The Technical Staff Engineer was asked to provide a procedure directing Operating to run the motor. He was unaware of the exact maintenance performed on the motor. Had he known that the housing covering the fan was removed, he may have been able to identify a containment problem and offer another way to operate the motor.

The root cause for the Unit 2 Primary Containment being breached was due to poor wording and a lack of precautions in the procedure. If Operating had been aware that the inlet to the blower fan was opened to atmosphere, they would have ensured appropriate Technical Specification compliance was achieved.

The cause of the failure to report this event in a timely manner was due to cognitive errors by personnel responsible for event classification. They clearly recognized that, had the duration of the event exceeded one hour, it would have been reportable as a violation of the Technical Specifications. Because the duration was less than one hour, it was believed the event was not reportable. The need to report the event as a condition that could have prevented the fulfillment of a safety function was not properly assessed.

D. SAFETY ANALYSIS OF EVENT

During this event the Unit 2 containment was breached by the opening of the motor blower housing. Although inadvertant, this was a controlled test. Had an accident occurred during the test, the recombiner could have been isolated from the Control Room using the normal isolation valves. The safety significance is further mitigated by the fact that the opening was only established for a brief period of time. Unit 2 was in steady state operation during the event.



LICENSEE EVENT REPORT (LER) TEXT CONTINUATION										Form Rev 2.0	
FACILITY NAME (1)	DOCKET NUMBER (2)	LER NUMBER (6)						Page (3)			
		Year	///	Sequential Number	///	Revision Number					
LaSalle County Station Unit 2	0 1 5 1 0 1 0 1 3 7 4	9	1	-	0	0	6	-	0	0	0 4 OF 0 6

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#### D. SAFETY ANALYSIS OF EVENT (CONTINUED)

The consequences of the change in drywell nitrogen concentration are minimal since the Drywell Oxygen concentration was reduced to less than 4% within the 24 hour timeclock. LaSalle Operational Procedure, LOS-AA-W1 "Accidental Monitoring Instrumentation Channel Check" checks the oxygen concentration weekly and if the oxygen concentration is greater than 4%, a 24 hour timeclock is started to reduce oxygen concentration to less than 4% per Technical Specification 3.6.6.2. In addition, redundant hydrogen recombiners ensure that an explosive mixture will not occur in the Primary Containment after a Loss of Coolant Accident (LOCA).

Had a Design Basis Accident occurred on Unit 2 during the period of time the system was opened, it is reasonable to assume that the Unit 1 NSO would have terminated the test. It is also reasonable to assume that the maintenance people, who were monitoring the test, would have notified the Control Room that a rush of steam and containment atmosphere was emanating from the opening of the Hydrogen Recombiner Piping and the Unit 2 NSO would have isolated the system.

A radiological assessment was performed to determine offsite radiological doses that could have resulted if a design basis Loss Of Coolant Accident (LOCA) occurred while the hydrogen recombining system was in this configuration. The worst case accident would have been a reactor recirculation line break. It was determined, from this assessment that if a LOCA had occurred at the same instant that the isolation valves were opened and left opened, that the potential dose to the offsite area would have been less than the limits set by 10CFR100. Two different but similar cases were analyzed. The two cases were:

Case 1: The standby gas treatment filter units were assumed to have an efficiency rating of 99% as proven by testing. The removal of the elemental and particulate forms of iodine by the scrubbing in the BWR Mark II design suppression pool was not taken into consideration.

Case 2: Ninety percent removal of iodine, as stated in Safety Analysis Report, was assumed for filter efficiency of the standby gas treatment system. The removal of the elemental and particulate forms of iodine by the scrubbing in the suppression pool was taken into consideration for this case. A decontamination factor of ten was assumed as permitted by Standard Review Plan 6.5.5.

These assumptions apply to both cases.

1. The radionuclides released from the vessel are quantified in Regulatory Guide 1.3.
2. Thermal-hydraulic calculations were made to quantify the releases from both the drywell and the suppression pool regions by way of the hydrogen recombining suction and discharge lines into the secondary containment.
3. Conservatively, no credit was taken for the mixing, holdup, or plate-out of the radionuclides in the secondary containment.
4. A release time, from the primary to the secondary containment, of 40 minutes was used.
5. The wind speed, stability class, and wind direction which existed at the time of the event was assumed.
6. Offsite radiological doses were calculated using published methodologies. A finite cloud model was used for calculating whole body doses from noble gases; the methodology of Regulatory Guide 1.3 was used to calculate thyroid doses.

LICENSEE EVENT REPORT (LER) TEXT CONTINUATION												Form Rev 2.0												
FACILITY NAME (1)			DOCKET NUMBER (2)				LER NUMBER (6)					Page (3)												
							Year	///	Sequential Number	///	Revision Number													
LaSalle County Station Unit 2			0	5	0	0	0	3	7	4	9	1	-	0	0	6	-	0	0	0	5	OF	0	6
TEXT Energy Industry Identification System (EIIS) codes are identified in the text as [XX]																								

#### E. CORRECTIVE ACTIONS

Once the EO notified the Control Room of the situation, the NSO and the Shift Control Room Engineer (SCRE, Licensed Senior Reactor Operator) looked at drawings of the system lineup and determined that there was in fact a breach of primary containment. They notified the Shift Engineer (Licensed Senior Reactor Operator) to determine the correct corrective actions to take. The actions were:

1. Verify that the Unit 2 Primary Containment isolation valves are closed.
2. Document a one hour time clock starting when the Primary Containment was breached.
3. Sample the suppression chamber for oxygen concentrations.
4. Place Unit 2 Primary Containment valves OOS.
5. Submit LES-HG-103 procedural changes.

The focus of the changes are: (A) address the concern that Primary Containment will be breached if run with the motor can cover off; (B) address concerns that a leak rate test would need to be performed prior to operating the blower in line with a Primary Containment system; (C) address the need to place administrative tags on the motor and blower before starting the test and removing them after the leak rate test is finished. Action Item Record 374-200-91-01101 will track these concerns.

At 1345 hours the NSO started Division II Post LOCA to sample the suppression chamber for oxygen concentrations.

At 1405 hours, it was determined that the oxygen concentration level was greater than 4% which is the limit allowed by Technical Specification 3.6.6.2. A 24 hour timeclock was entered for inerting the suppression chamber.

At 1420 hours, the Division II Post LOCA system was secured and the sampling determined that the oxygen concentration was 4.8% after vent and purge samples were taken and analyzed.

At 1915 hours, the NSO began inerting the Primary Containment by LaSalle Operating Procedure, LOP-VQ-11, "Nitrogen Inerting of Primary Containment with the Primary Containment Vent/Purge System", and at 2040 hours the Primary Containment inerting was secured and the timeclock was exited with an oxygen concentration at 2.6%.

Technical Staff will investigate the blower motor to determine how the motor may be run for a 10 minute time period without breaching Primary Containment and provide recommendations for revisions to procedures if appropriate. AIR 374-200-91-01102 will track the investigation and procedure revision.

This event will be tailgated by all departments, emphasizing that when requesting a special procedure, that the personnel providing the procedure are made aware of significant anomalies in system configuration. AIR 374-200-91-01103 will track the tailgate.

LICENSEE EVENT REPORT (LER) TEXT CONTINUATION												Form Rev 2.0												
FACILITY NAME (1)			DOCKET NUMBER (2)				LER NUMBER (6)					Page (3)												
							Year	///	Sequential Number	///	Revision Number													
LaSalle County Station Unit 2			0	5	0	0	0	3	7	4	9	1	-	0	0	6	-	0	0	0	6	OF	0	6
TEXT Energy Industry Identification System (EIIIS) codes are identified in the text as [XX]																								

#### E. CORRECTIVE ACTIONS (CONTINUED)

This event will be tailgated with Operating Department, emphasizing the need to closely review the reporting requirements for loss of a safety function even if Technical Specification LCOs are met. AIR 374-200-91-01104 will track the tailgate.

LaSalle Emergency Procedure LEP-1310-1, "Notifications" has been revised to include notification requirements for events affecting primary containment integrity.

#### F. PREVIOUS EVENTS

LER Number	Title
373/91-005-00	Missed Technical Specification Surveillance on Containment Monitoring due to Inadequate Pre-license Review.

(These events are similar due to the fact that it was a procedure deficiency that caused the event).

373/84-057-00	Group 1 Isolation
374/89-013-01	Primary Containment Isolation During Instrument Surveillance Testing Due To Procedural Deficiency.

#### G. COMPONENT FAILURE DATA

None