

Commonwealth Edison Company
LaSalle Generating Station
2601 North 21st Road
Marseilles, IL 61341-9757
Tel 815-357-6761

ComEd

October 17, 1996

United States Nuclear Regulatory Commission
Attention: Document Control Division
Washington, D.C. 20555

Licensee Event Report #96-007-00, Docket #050-4 is being submitted to your office in accordance with 10 CFR 50.73(a)(2)(iv).

Respectfully,



D. J. Ray
Station Manager
LaSalle County Station

Enclosure

cc: A. B. Beach, NRC Region III Administrator
M. P. Huber, NRC Senior Resident Inspector - LaSalle
C. H. Mathews, IDNS Resident Inspector - LaSalle
F. Niziolek, IDNS Senior Reactor Analyst
INPO - Records Center

JE221

9610240037 961017
PDR ADOCK 05000374
S PDR

LICENSEE EVENT REPORT (LER)

ESTIMATED BURDEN PER RESPONSE TO COMPLY WITH THIS INFORMATION COLLECTION REQUEST: 50.0 HRS. FORWARD COMMENTS REGARDING BURDEN ESTIMATE TO THE INFORMATION AND RECORDS MANAGEMENT BRANCH (MNBB 7714), U.S. NUCLEAR REGULATORY COMMISSION, WASHINGTON, DC 20555-0001, AND TO THE PAPERWORK REDUCTION PROJECT (3150-0104), OFFICE OF MANAGEMENT AND BUDGET, WASHINGTON, DC 20503.

FACILITY NAME (1):

LaSalle County Station Unit Two

DOCKET NUMBER (2)

05000374

PAGE (3)

1 of 5

TITLE (4)

Reactor Water Cleanup System Isolation on High Differential Flow.

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 NAME	DOCKET NUMBER
09	17	96	96	007	00	10	17	96	FACILITY NAME	DOCKET NUMBER

THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (Check one or more) (11)

OPERATING MODE (9)

1

POWER LEVEL (10)

080

<input type="checkbox"/>	20.2201(b)	<input type="checkbox"/>	20.2203(a)(3)(i)	<input type="checkbox"/>	50.73(a)(2)(iii)	<input type="checkbox"/>	73.71(b)
<input type="checkbox"/>	20.2203(a)(1)	<input type="checkbox"/>	20.2003(a)(3)(ii)	<input checked="" type="checkbox"/>	50.73(a)(2)(iv)	<input type="checkbox"/>	73.71(c)
<input type="checkbox"/>	20.2203(a)(2)(i)	<input type="checkbox"/>	20.2003(a)(4)	<input type="checkbox"/>	50.73(a)(2)(v)	<input type="checkbox"/>	OTHER
<input type="checkbox"/>	20.2203(a)(2)(ii)	<input type="checkbox"/>	50.36(c)(1)	<input type="checkbox"/>	50.73(a)(2)(vii)	(Specify in Abstract below and in Text, NRC Form 366A)	
<input type="checkbox"/>	20.2203(a)(2)(iii)	<input type="checkbox"/>	50.36(c)(2)	<input type="checkbox"/>	50.73(a)(2)(viii)(A)		
<input type="checkbox"/>	20.2203(a)(2)(iv)	<input type="checkbox"/>	50.73(a)(2)(i)	<input type="checkbox"/>	50.73(a)(2)(viii)(B)		
<input type="checkbox"/>	20.2003(a)(2)(v)	<input type="checkbox"/>	50.73(a)(2)(ii)	<input type="checkbox"/>	50.73(a)(2)(x)		

LICENSEE CONTACT FOR THIS LER (12)

NAME

Jack Leider, Operating

TELEPHONE NUMBER (Include Area Code)

(815) 357-6761 Extension 3026

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

SUPPLEMENTAL REPORT EXPECTED (14)

☐ YES

(If yes, complete EXPECTED SUBMISSION DATE)

☒ NOEXPECTED
SUBMISSION
DATE (15)

MONTH DAY YEAR

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

At 0743 on September 17, 1996, while returning the 2A Reactor Water Cleanup Filter Demineralizer to service, a high differential flow occurred across the Reactor Water Cleanup System(RWCU) and a Group 5 isolation was initiated. This actuation closed RWCU Primary Containment inboard and outboard isolation valves, 2MOV-2G33-F001 and 2MOV-2G33-F004, isolating reactor coolant flow to the cleanup system and terminating the differential flow condition. All other Engineered Safety Features remained available during the event and subsequent recovery.

The isolation of the Reactor Water Cleanup System through automatic closure of the primary containment isolation valves is an Engineered Safety Function. There was no loss of reactor coolant outside the 2A filter/demineralizer and RWCU drain system nor any release of radioactive material.

The event occurred when the 2A filter/demineralizer was being unisolated. When pressure in the filter/demineralizer increased as it was unisolated, the displacement of residual air and outflow to the phase separator from system valves was sufficient to initiate a high differential flow condition. The safety significance of this event was minimal with no adverse safety or radiological occurrences.

LICENSEE EVENT REPORT (LER)
TEXT CONTINUATION

ESTIMATED BURDEN PER RESPONSE TO COMPLY WITH THIS INFORMATION COLLECTION REQUEST: 50.0 HRS. FORWARD COMMENTS REGARDING BURDEN ESTIMATE TO THE INFORMATION AND RECORDS MANAGEMENT BRANCH (MNBB 7714), U.S. NUCLEAR REGULATORY COMMISSION, WASHINGTON, DC 20555-0001, AND TO THE PAPERWORK REDUCTION PROJECT (3150-0104), OFFICE OF MANAGEMENT AND BUDGET, WASHINGTON, DC 20503.

FACILITY NAME (1)	DOCKET NUMBER (2)	LER NUMBER (6)			PAGE (3)
		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	
LaSalle County Station Unit Two	05000374	96	007	00	2 of 5

(If more space is required, use additional copies of NRC Form 366A)(17)

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: 09/17/96

Event Time: 0743 Hours

Reactor Mode(s): 1

Mode(s) Name: Run

Power Level(s): 80%

B. DESCRIPTION OF EVENT

At 0743 on September 17, 1996, while returning the 2A Reactor Water Cleanup Filter Demineralizer to service, a high differential flow occurred across the Reactor Water Cleanup System (RWCU) [CE] and a Group 5 isolation was initiated. This actuation closed RWCU Primary Containment inboard and outboard isolation valves, 2MOV-2G33-F001 and 2MOV-2G33-F004, isolating reactor coolant flow to the cleanup system and terminating the differential flow condition. Prior to this event, the RWCU system was in normal operation with flow through the 2B filter demineralizer and bypass line. The 2A filter demineralizer had been removed from service earlier that day for routine back washing and replacement of the precoat-type resin. Operators had completed resin precoat of the 2A filter/demineralizer using procedure LOP-RT-06, RWCU Filter/Demineralizer Precoat, and were preparing to unisolate the filter. In unisolating the filter, the inlet valves to the filter/demineralizer open when the local operator places the panel control switch to the unisolate position. The pressure in the filter/demineralizer is increased when the inlet valves open from a nominal 100 psig to reactor coolant pressure of 1000 psig.

The operator at the local filter/demineralizer control panel contacted the Unit 2 control room operator by telephone to coordinate the unisolating activity. As the inlet valves opened, a RWCU high differential flow alarm sounded in the Unit 2 control room. The alarm flashed several times then remained on. The control room operator observed that RWCU flow had increased from 350 GPM to above 400 GPM. When the alarm did not clear, the Control Room Supervisor checked the time delay relay used with the differential flow instrumentation. He observed that twenty seconds remained until the relay timed out and a Group 5 actuation would be initiated. Since the alarm had not cleared during this time, he instructed the control room operator to inform the local operator to isolate 2A filter/demineralizer. Before the local operator returned the control switch back to isolate the filter and clear the high differential flow condition, the Group 5 initiated and the RWCU system primary containment isolation valves closed. All other Engineered Safety Features remained available during the event and subsequent recovery.

LICENSEE EVENT REPORT (LER)
TEXT CONTINUATION

ESTIMATED BURDEN PER RESPONSE TO COMPLY WITH THIS INFORMATION COLLECTION REQUEST: 50.0 HRS. FORWARD COMMENTS REGARDING BURDEN ESTIMATE TO THE INFORMATION AND RECORDS MANAGEMENT BRANCH (MNBB 7714), U.S. NUCLEAR REGULATORY COMMISSION, WASHINGTON, DC 20555-0001, AND TO THE PAPERWORK REDUCTION PROJECT (3150-0104), OFFICE OF MANAGEMENT AND BUDGET, WASHINGTON, DC 20503.

FACILITY NAME (1)	DOCKET NUMBER (2)	LER NUMBER (6)			PAGE (3)
		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	
LaSalle County Station Unit Two	05000374	96	007	00	3 of 5

(If more space is required, use additional copies of NRC Form 366A)(17)

After verifying that RWCU had been isolated as required, the Control Room Supervisor had the local operator and the Field Supervisor inspect the system for indications of line breaks, other failures or valve misalignments which could have resulted in the high flow condition. There was no indication of a line break or other loss of integrity for the system. The valve lineup for precoating the 2A filter was verified as correct, however, the outlet strainer drain valves, 2G33-Z001-42A and 43A were found such that the remote operator was not tight against the stop. These are 1-inch ball-type valves that if not tightly seated by the remote operator would allow water to leak by to the radwaste system. In verifying valve position, the operator was able to tighten down slightly on both of the drain valve remote operators.

Inputs into the radwaste system phase separator tank from the backwash and precoat cycle of the 2A filter/demineralizer were reviewed. These inputs were normal except for an input into the phase separator after the precoat activity was completed. Level in the phase separator tank increased by approximately 2 inches prior to the filter being placed in service. This increase in tank level would have occurred during the unisolating activity and this increase is not normal. The increase was equivalent to about 90 gallons of water. In addition, the operators performing the unisolation commented on hearing a flow noise when the filter inlet valves first opened. Based on the increase in phase separator tank level and the report of the flow noise, it was concluded that the 2A filter demineralizer most likely had a combination of trapped air and a flow path through either the 42A and 43A strainer drain valves or other unidentified valves that leaked into the phase separator. This leakage flow was sufficient to initiate a high differential flow signal. The setpoint for this signal is 70 GPM.

A high differential flow condition can occur during unisolation from the rapid repressurization of the filter/demineralizer if air, used in the backwash and precoat processes, remains trapped in the filter/demineralizer or if a flow path is present through vents or drains to the radwaste system. To prevent high differential flow from initiating spurious isolations, a 45 second time delay is provided to allow the condition to clear. When the operators were unable to isolate the 2A filter within 45 seconds of receiving the alarm, as allowed by procedure, a Group 5 actuation resulted.

Following the isolation, RWCU system was filled and vented. The 2B filter/demineralizers was then placed in service at 1722 on September 17, 1996. 2C filter/demineralizer was returned to service by 0044 hours on September 18, 1996. 2A filter remained isolated. Unit 2 started a refueling outage on September 20, 1996. The 2A filter/demineralizer will remain isolated until it can be monitored by the system engineer when it is returned to service. The return to service will occur prior to the end of the Unit 2 refueling outage.

This event is reportable in accordance with 10 CFR 50.73(a)(2)(iv) due to an automatic actuation of an Engineered Safety Feature.

LICENSEE EVENT REPORT (LER)
TEXT CONTINUATION

ESTIMATED BURDEN PER RESPONSE TO COMPLY WITH THIS INFORMATION COLLECTION REQUEST: 50.0 HRS. FORWARD COMMENTS REGARDING BURDEN ESTIMATE TO THE INFORMATION AND RECORDS MANAGEMENT BRANCH (MNBB 7714), U.S. NUCLEAR REGULATORY COMMISSION, WASHINGTON, DC 20555-0001, AND TO THE PAPERWORK REDUCTION PROJECT (3150-0104), OFFICE OF MANAGEMENT AND BUDGET, WASHINGTON, DC 20503.

FACILITY NAME (1)	DOCKET NUMBER (2)	LER NUMBER (6)			PAGE (3)
		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	
LaSalle County Station Unit Two	05000374	96	007	00	4 of 5

(If more space is required, use additional copies of NRC Form 366A)(17)

C. CAUSE OF EVENT

The event occurred when the 2A filter/demineralizer was being unisolated. When pressure in the filter/demineralizer increased as it was unisolated, the displacement of residual air and outflow to the phase separator from system valves was sufficient to initiate a high differential flow condition. The outflow is considered to have been caused by leakage past closed drain valves on the filter outlet strainer and/or through other vent and drain valves.

A probable contributing cause is an inherent inaccuracy with the RWCU flow instruments in accurately measuring differential flow. These instruments are required to measure coolant flows over a wide temperature range. Because of limitations with the instruments, a sensed, but not actual, differential flow is present continually on this system. As a result, any actual outflow would be additive to this sensed flow, reducing the margin to actuation. Although the inaccuracy is conservative, in that the high differential flow setpoint is effectively lowered, an actual outflow significantly below the 70 GPM setpoint would result in an actuation. In this event, based on the flashing flow alarm, the actual differential flow would have been above 50 GPM.

D. ASSESSMENT OF SAFETY CONSEQUENCES

The isolation of the Reactor Water Cleanup System through automatic closure of the primary containment isolation valves is an Engineered Safety Function. There was no loss of reactor coolant outside the 2A filter/demineralizer and RWCU drain system nor any release of radioactive material. The system isolation valves operated as designed. Upon isolation, the system depressurized and remained in a stable condition. Equipment inspections performed by the operators and system engineer following the event verified that no external leakage had occurred. The return to service of train B and C of Reactor Water Cleanup on September 18, 1996 verified the overall integrity of the system. In the event that an actual line break had occurred, the high differential flow actuation would have mitigated the event. In addition, operators observe the filter/demineralizer during the return to service and are present at the local control panel to isolate the filter in the event the primary containment isolation fails. The RWCU system removes solid and dissolved impurities from the reactor coolant. Operation of the reactor is not directly and immediately affected by isolation of the system. There were no adverse radiological or safety consequences as a result of this event.

E. CORRECTIVE ACTIONS

1. The restart of 2A Reactor Water Cleanup Filter\Demineralizer will be monitored and observed by the system engineer to determine if other leakage paths exist. Identified leakage will be isolated or repaired prior to returning the filter to service. The 2A strainer outlet valves, 42A and 43A, and their remote operators will be verified for leak tightness and proper operation prior to returning the filter/demineralizer to service. This will be completed by restart of Unit 2.

LICENSEE EVENT REPORT (LER)
TEXT CONTINUATION

ESTIMATED BURDEN PER RESPONSE TO COMPLY WITH THIS INFORMATION COLLECTION REQUEST: 50.0 HRS. FORWARD COMMENTS REGARDING BURDEN ESTIMATE TO THE INFORMATION AND RECORDS MANAGEMENT BRANCH (MNBB 7714), U.S. NUCLEAR REGULATORY COMMISSION, WASHINGTON, DC 20555-0001, AND TO THE PAPERWORK REDUCTION PROJECT (3150-0104), OFFICE OF MANAGEMENT AND BUDGET, WASHINGTON, DC 20503.

FACILITY NAME (1)	DOCKET NUMBER (2)	LER NUMBER (6)			PAGE (3)
LaSalle County Station Unit Two	05000374	YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	5 of 5
		96	007	00	

(If more space is required, use additional copies of NRC Form 366A)(17)

2. An Engineering review of the system design, including flow instrumentation, will be performed. This review will provide recommendations to eliminate/prevent spurious trips and isolations. This review will be completed by June 30, 1997.

F. PREVIOUS OCCURRENCES

LER NUMBER	TITLE
LER 374-93-009	Reactor Water Cleanup System high differential flow isolation due to filter/demineralizer operation in startup. The corrective action for this event was to revise the operating procedure for placing a filter/demineralizer in service during reactor startup conditions. This corrective action was implemented but is not applicable to the current event.

G. COMPONENT FAILURE DATA

Since no component failure occurred, this section is not applicable.