



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

March 22, 1994

U.S. Nuclear Regulatory Commission
Attention: Document Control Desk
Washington, D.C. 20555

Licensee Event Report #94-002-00, Docket #050-374 is being submitted to your office in accordance with 10CFR50.73 (a)(2)(v), 10CFR50.73(a)(2)(ii)(B) and 10CFR50.73(a)(2)(i)(B).

D. J. Ray
Station Manager
LaSalle County Station

DJR/CES/mkl

Enclosure

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

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LICENSEE EVENT REPORT (LER)

Form Rev 3.0

Facility Name (1)
LaSalle County Station Unit 2

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

Title (4)
Reactor Core Isolation Cooling System Inoperable Due to Turbine Exhaust Line Pressure Spike

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	2	2	1	9	4	9	4	---	0	0	2	---	0	0	0	3	7	4	1	of	0	4

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)	<input type="checkbox"/>	20.405(c)	<input type="checkbox"/>	50.73(a)(2)(iv)	<input type="checkbox"/>	73.71(b)	<input type="checkbox"/>
20.405(a)(1)(i)	<input type="checkbox"/>	50.36(c)(1)	<input checked="" type="checkbox"/>	50.73(a)(2)(v)	<input checked="" type="checkbox"/>	73.71(c)	<input type="checkbox"/>
20.405(a)(1)(ii)	<input type="checkbox"/>	50.36(c)(2)	<input type="checkbox"/>	50.73(a)(2)(vii)	<input type="checkbox"/>	Other (Specify	<input type="checkbox"/>
20.405(a)(1)(iii)	<input checked="" type="checkbox"/>	50.73(a)(2)(i)	<input type="checkbox"/>	50.73(a)(2)(viii)(A)	<input type="checkbox"/>	in Abstract	<input type="checkbox"/>
20.405(a)(1)(iv)	<input checked="" type="checkbox"/>	50.73(a)(2)(ii)	<input type="checkbox"/>	50.73(a)(2)(viii)(B)	<input type="checkbox"/>	below and in	<input type="checkbox"/>
20.405(a)(1)(v)	<input type="checkbox"/>	50.73(a)(2)(iii)	<input type="checkbox"/>	50.73(a)(2)(x)	<input type="checkbox"/>	Text)	<input type="checkbox"/>

POWER LEVEL (10) 1 0 0

LICENSEE CONTACT FOR THIS LER (12)

Name: Charles E. Sargent, Investigation Team Leader, Extension 2680

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				N					

SUPPLEMENTAL REPORT EXPECTED (14)

Expected Submission Date (15) X NO

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

On February 21, 1994, at 1127 hours, Unit 2 Reactor Core Isolation Cooling System (RCIC) turbine exhaust rupture discs ruptured during system testing. Both discs ruptured immediately upon admittance of steam to the turbine. The Control Room Operator responded to various annunciators and tripped the RCIC turbine approximately 30 seconds later, and the system was declared inoperable.

It was subsequently determined that the discs ruptured due to a pressure spike in the turbine exhaust line. The pressure spike was caused by an accumulation of condensate in the exhaust line from previous system operation. The water accumulation was due to a combination of a configuration control deficiency and a foreign material exclusion deficiency which led to blockage of the turbine exhaust drain line.

On March 6, 1994, at 1615 hours, the Unit 2 RCIC System was restored to operability. Unit 1 RCIC System will be restored to operable status prior to operating Condition 1 (Run) from the current refuel outage.

This event is being reported pursuant to 10CFR50.73(a)(2)(v), loss of a safety function; 10CFR50.73(a)(2)(ii)(B), condition outside the Design Basis; and 10CFR50.73(a)(2)(i)(B), condition prohibited by Technical Specifications.

LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

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		Year	/// /// ///	Sequential Number	/// /// ///	Revision Number																
		LaSalle County Station Unit 2	0	5	0	0	0						3	7	4	9	4	-	0	0	2	-

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

PLANT AND SYSTEM IDENTIFICATION

General Electric - Boiling Water Reactor

Energy Industry Identification System (EIS) codes are identified in the text as (XX).

A. CONDITION PRIOR TO EVENT

Unit(s): 2/1 Event Date: 02/21/94 Event Time: 1127 Hours
 Reactor Mode(s): 1/4 Modes(s) Name: Run/Cold Shutdown Power Level(s): 100%

B. DESCRIPTION OF EVENT

On February 21, 1994, at 1127 hours with Unit 2 in Operating Condition 1 (Run) at 100% power during Reactor Core Isolation Cooling (RCIC, RI) [BM] pump operability testing, the Nuclear Station Operator (NSO) admitted steam to the RCIC turbine and the turbine exhaust line rupture discs ruptured. In the Control Room, the NSO acknowledged a RCIC Pump Room High Temperature Alarm, a Fire Detection Control Panel Trouble Alarm and Reactor Building High Radiation Alarm, and tripped the RCIC turbine approximately 30 seconds after admitting steam to the turbine. Personnel in the RCIC pump area evacuated the area and reported to the Control Room that they heard a loud noise and saw a white flash as the RCIC room filled with steam. No automatic isolations or system actuations occurred as a result of this event. At 1207 hours, the RCIC System was declared inoperable in accordance with Technical Specification 3/4.7.3. The Unit 2 Low Pressure Core Spray (LPCS, LP) [BM] System, which is located in the same room with the RCIC System, was also declared inoperable due to moisture in the LPCS motor area.

The rupture disc design pressure is 150 psig with a disc opening diameter of 6 inches. Normal RCIC turbine exhaust pressure is approximately 8-12 psig during operation. The RCIC pump area reached a maximum temperature of 125 degrees Fahrenheit following the event. Four individuals were externally contaminated; no one was injured.

At 1223 hours an ENS Notification was made pursuant to 10CFR50.72(b)(2)(iii)(B); any event or condition that alone could have prevented the fulfillment of the safety function of structures or systems that are needed to remove residual heat.

On February 22, 1994, at 2105 hours the Unit 2 LPCS System was declared operable following satisfactory meggering of the pump motor and an environmental qualification evaluation of the equipment in the RCIC/LPCS Room.

During the course of investigating the overpressurization event, it was identified that a 10 psig pressure switch instrument line in the RCIC exhaust header located between the inner and outer rupture discs was not configured in accordance with the design basis and was, therefore, inoperable in violation of Technical Specifications. This 1-inch I.D. line was attached to the exhaust header via a short length of 3/8 inch I.D. line. The pressure switch is designed to alarm and isolate RCIC and provide containment isolation in the event of a degraded condition of the inner disc during normal RCIC operation. This switch is required to be operable by Technical Specification Table 3.3.2-1, Item 4.C. However, this switch is not designed to provide alarm or isolation in the event of simultaneous catastrophic rupture of both discs. This same configuration deficiency was subsequently found to exist in the Unit 1 RCIC System. Unit 1 was in the Cold Shutdown condition at this time.

On March 1, 1994, at 1922 hours an ENS Notification was made pursuant to 10CFR50.72(b)(1)(ii)(B); condition outside the Design Basis for both Units.

On March 6, 1994, at 1615 hours, the Unit 2 RCIC System was restored to operability.

This event is being reported pursuant to 10CFR50.73(a)(2)(v), loss of a safety system function; 10CFR50.73(a)(2)(ii)(B), condition outside the Design Basis; and 10CFR50.73(a)(2)(i)(B), condition prohibited by Technical Specifications.

C. APPARENT CAUSE OF EVENT

The root cause of this event is Management Deficiency in the areas of Plant Configuration Control and Foreign Material Exclusion.

The Unit 2 Plant Configuration Control deficiency is based on the existing system design information calling for square edge orifices to be installed in the RCIC 3/4" drain lines. Beveled orifices are installed. Further, the Barometric Condenser Inlet orifice (2E51-D004), RCIC Stop Valve (2E51-F360) above seat drain orifice (2E51-D010B), and Stop Valve below seat drain orifice (2E51-D010A) were installed backwards (i.e., beveled side toward flow). It has not been determined when or why these orifices were installed in this manner.

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LaSalle County Station Unit 2	0 5 0 0 0 3 7 4	9	4	-	0	0	2	-	0	0	0 3 OF 0 4

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

C. Apparent Cause of Event (Continued)

The RCIC Inboard Steam Isolation Valve (2E51-F063) and RCIC Outboard Steam Isolation Valve (2E51-F008) were replaced during the Fall 1993 refueling outage. As a result of a deficiency in the Foreign Material Exclusion Program (no flushing of the system following work that breached a carbon steel system), compounded by the plant configuration program deficiency (2E51-D004 orifice installed backwards), a piece of milling material lodged in the orifice. This plugged the orifice approximately 90 percent which slowed the water flow allowing accumulation of scale that eventually blocked the Drain Pot drain line. With the Drain Pot drain line plugged, this allowed an accumulation of water in the turbine exhaust line from condensation from previous system operation. Upon startup of the RCIC turbine, an impulse pressure spike caused the rupture diaphragms to actuate in response to an overpressure condition.

While the 10 psig instrument sensing line deficiencies were identified as a Configuration Control deficiency, this condition did not contribute to the cause of the overpressurization event.

D. SAFETY ANALYSIS OF EVENT

The safety consequences of this event were minimal. With RCIC inoperable, adequate core cooling was assured by the High Pressure Core Spray (HPCS, HP) [BG] System which was operable at all times during this event.

Although it is not known when the 10 psig instrument sensing lines were rendered in the deficient configuration, this condition alone would not have rendered RCIC unable to perform its intended safety function. However, had this condition been known, RCIC and its associated containment isolation valves would have been isolated and RCIC would have been declared inoperable in accordance with Technical Specifications.

E. CORRECTIVE ACTIONS

1. An evaluation of all environmentally qualified equipment in the Unit 2 LPCS/RCIC Pump Room was performed due to the steam environment that had existed. No equipment was found to be damaged or degraded.
2. All Unit 2 RCIC drain orifices were inspected and were reoriented as necessary to eliminate neck down trap of debris.
3. All Unit 1 RCIC drain orifices will be inspected to assure proper orientation.
4. The Site Preventive Maintenance (PM) program for RCIC will be expanded to:
 - * Replace rupture discs every refuel outage;
 - * Proceduralize the orientation of all orifices;
 - * Inspect orifices every refuel outage;
 - * Flush RCIC drain lines after major maintenance on RCIC and every refuel outage;
 - * Inspect and clean the RCIC exhaust barometric condenser screen every refuel outage.
5. The site Foreign Material Exclusion (FME) policy will be evaluated and changes made as appropriate.
6. A new magnetrol level switch has been installed on the Unit 1 RCIC steam inlet drain pot, and will be installed in Unit 2 as scheduled during the next refuel outage, L2R06, per General Electric Service Information Letter (SIL) 531.
7. The Unit 1 RCIC turbine exhaust 10 psig pressure switch sensing line will be returned to its design basis configuration prior to Unit 1 startup following the current refueling outage.
8. The Unit 2 10 psig pressure switch sensing line has been returned to its design basis configuration.
9. Scale and debris were cleaned from the Unit 2 RCIC turbine exhaust drain line.
10. The Unit 1 RCIC turbine exhaust drain line components will be inspected and cleaned as necessary.

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

F. PREVIOUS EVENTS

There were no previous similar events identified at LaSalle.

G. COMPONENT FAILURE DATA

None.

EVENT SUMMARY AND CAUSE CODES

DVR Number

- | | | |
|-------------------------------------------|-----------------------------------------|-------------------------------------------------|
| <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 type="checkbox"/> LER | <input type="checkbox"/> Potential or future to |
| <input type="checkbox"/> Component type | <input type="checkbox"/> PSE mode | <input type="checkbox"/> SALP functional area__ |

	Component type	Failure mode	Department
X			
X			
X			

	Licensed? L or blank	Level	Department	Type	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		P1	MM
E		P2	MM
E			