



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

August 13, 1992

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

Dear Sir:

Licensee Event Report #92-009-00, Docket #050-374 is being submitted to your office in accordance with 10CFR50.73(a)(2)(v).

*WR. Almitt*  
G. J. Diederich  
Station Manager  
LaSalle County Station

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

Title (4) Failure Of Reactor Core Isolation Cooling Isolation Valve 2E51-F086 Due To Packing Binding

Event Date (5)			LER Number (6)			Report Date (7)			Other Facilities Involved (8)	
Month	Day	Year	Sequential Number	Revision Number	Month	Day	Year	Facility Names	Docket Number(s)	
07	14	92	0109	010	08	13	92		0   5   0   0   0   1   1   0   5   0   0   0   1   1	

CLASSIFICATION MODE (9) 1

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

<input type="checkbox"/> 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 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 in Abstract below and in Text)
<input type="checkbox"/> 20.405(a)(1)(iii)	<input type="checkbox"/> 50.73(a)(2)(i)	<input type="checkbox"/> 50.73(a)(2)(viii)(A)	
<input type="checkbox"/> 20.405(a)(1)(iv)	<input type="checkbox"/> 50.73(a)(2)(ii)	<input type="checkbox"/> 50.73(a)(2)(viii)(B)	
<input type="checkbox"/> 20.405(a)(1)(v)	<input type="checkbox"/> 50.73(a)(2)(iii)	<input type="checkbox"/> 50.73(a)(2)(ix)	

LICENSEE CONTACT FOR THIS LER (12)

Name: Brian K. Smith, Technical Staff Engineer, Extension 2649

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
X	B   N	I   S   V	R   3   4   0	Yes					

SUPPLEMENTAL REPORT EXPECTED (14)

Expected Submission Date (15)

Yes (If yes, complete EXPECTED SUBMISSION DATE)  NO

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

On July 14, 1992, at 2058 hours, while Unit 2 was in Operational Condition 1 (Run), at 97% power, the Reactor Core Isolation Cooling (RCIC) [BN] Turbine Exhaust Vacuum Breaker Upstream Stop, Motor Operated Valve 2E51-F086 tripped due to thermal overload on the Motor Control Center 236Y-2, Compartment E2. This event occurred while attempting to stroke the valve following lubrication of the valve stem as part of the corrective action from LER 374/92-008, Thermal Overload Trip of RCIC Exhaust Vacuum Breaker Isolation Valve 2E51-F086.

The RCIC system was declared inoperable and entered in the Degraded Equipment Log (DEL) 59-92-2-18 at 2058 hours on July 14, 1992. The RCIC Turbine Exhaust Vacuum Breaker Downstream Stop, 2E51-F080 was closed and taken out of service.

The 2E51-F086 valve was then cycled satisfactorily with LaSalle Operating Procedure, LOP-AP-21, "Motor Operated Valves". During this valve cycling, the Electrical Maintenance Department performed current traces to assist in the troubleshooting of the valve. These current traces found the currents to be very high and erratic during valve strokes. This indicated an unusually high loading during the portion of the valve stroke when very little loading would be expected. Inspections performed by the Mechanical Maintenance Department found the valve packing very tight, and a "cocked" Junk Ring at the bottom of the stuffing box. The valve was repacked and subsequent current traces showed normal loading during the valve strokes.

During the time of this incident the High Pressure Core Spray (HPCS, HP) [BG] System, and the other emergency core cooling systems were fully operable. There were no adverse consequences to this event.

This event is reported to the Nuclear Regulatory Commission as a Licensee Event Report in accordance with 10CFR50.73(a)(2)(v) due to RCIC being declared inoperable (loss of a safety system function).

LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

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

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: 07/14/92 Event Time: 2058 Hours

Reactor Mode(s): 1 Mode(s) Name: Run Power Level(s): 97%

B. DESCRIPTION OF EVENT

On July 14, 1992, Unit 2 was in Operational Condition 1 (Run), at 97 percent power. At 2058 hours, the Reactor Core Isolation Cooling (RCIC, RI) [BN] Turbine Exhaust Vacuum Breaker Upstream Stop, Motor Operated Valve 2E51-F086, tripped due to thermal overload on the Motor control Center 236Y-2, Compartment E2.

This event occurred while attempting to stroke the valve following lubrication of the valve stem as part of the corrective action from LER 374/92-008, "Thermal Overload Trip Of RCIC Exhaust Vacuum Breaker Isolation Valve 2E51-F086".

Shortly after the Nuclear Station Operator had moved the hand switch to the closed position, valve 2E51-F086 tripped from thermal overload. The valve was later cycled satisfactorily with LaSalle Operating Procedure, LOP-AP-21, "Motor Operated Valves". During this valve cycling, the Electrical Maintenance Department performed current traces to assist in the troubleshooting of the valve. These current traces found the currents to be very high and erratic during valve strokes. This indicated an unusually high loading during the portion of the valve stroke when very little loading would be expected. Work request L16660 was initiated to perform additional current traces.

The RCIC system was declared inoperable and entered in the Degraded Equipment Log, (DEL) 59-92-2-18 at 2058 hours on July 14, 1992. The RCIC Turbine Exhaust Vacuum Breaker Downstream Stop, 2E51-F080 was closed and taken out of service per Technical Specification 3.6.3 for compliance with Primary Containment Integrity.

No other inoperable equipment/systems contributed to this event. No automatic or manual safety system actuations occurred and none were required. No Operator actions contributed to the causation or severity of this event.

This event is reported to the Nuclear Regulatory Commission as a Licensee Event Report in accordance with 10CFR50.73(a)(2)(v) due to RCIC being declared inoperable (loss of a safety system function).

LICENSEE EVENT REPORT (LER) TEXT CONTINUATION											Form Rev 2.0			
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TEXT Energy Industry Identification System (EIS) codes are identified in the text as [XX]														

### C. APPARENT CAUSE OF EVENT

Inspections performed by the Mechanical Maintenance Department found a problem with the valve packing being very tight which had "cocked" the Junk Ring located at the bottom of the stuffing box. This caused the cocked Junk Ring to bind against the valve stem during valve strokes. The valve was repacked and subsequent current traces showed normal loading during the valve strokes.

The configuration of this valve is a rising rotating stem valve which utilizes a yoke bushing in the top of the valve yoke to drive the stem into the valve rather than the normal stem to stem nut configuration. This type of configuration causes the stem to turn through the packing instead of just rising through the packing.

The valve was last repacked in December of 1985 under Work Requests L54571 and L54612 using two (2) Chesterton Style 1 anti-extrusion rings and two (2) John Crane Grafoil 235 rings. No adjustments have been made to the packing since that time.

The apparent root cause of the valve's failure on July 14, 1992, was the packing being too tight which caused the Junk Ring to become "cocked". The contributing factors were:

1. The age of the packing;
2. The rising rotating configuration of the valve and valve stem.

### D. SAFETY ANALYSIS OF EVENT

The RCIC Turbine Exhaust Vacuum Breaker Upstream Stop Valve, 2E51-F086, and the RCIC Turbine Exhaust Vacuum Breaker Downstream Stop Valve, 2E51-F080, function as double isolation valves to isolate the Primary Containment during accident conditions. The RCIC Turbine Exhaust Vacuum Breaker Downstream Stop Valve, 2E51-F080, was closed, isolating Primary Containment. 2E51-F080 was taken Out of Service due to the failure of 2E51-F086 to stroke electrically.

During the time of this incident the High Pressure Core Spray (HPCS) System, and the other emergency core cooling systems, were fully operable. There were no adverse consequences due to this event.

### E. CORRECTIVE ACTIONS

The RCIC system was declared inoperable and entered in the DEL 59-92-2-18 at 2058 hours on July 14, 1992. The valve was then cycled satisfactorily with LaSalle Operating Procedure, LOP-AP-21, "Motor Operated Valves". During this valve cycling, the Electrical Maintenance Department performed current traces to assist in the troubleshooting of the valve. These current traces found the currents to be very high and erratic during valve strokes indicating an unusually high loading during the portion of the valve stroke when very little loading would be expected. The valve was also noted to be making a squeaking noise during the valve stroke. The valve was then declared inoperable per DEL 59-92-2-19 at 0000 hours on July 15, 1992. Work Request L16660 was initiated to perform additional current traces, per LES-GM-125, "Motor Operated Valve Current Signature Trace".



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E. CORRECTIVE ACTIONS (CONTINUED)

The first current trace performed under Work Request L16660 was done on July 15, 1992. This current trace showed the motor currents to be slightly high and erratic but not of significant enough magnitude to be near repeating the valve failure. The squeaking noise was also noted to have diminished considerably at this time. Due to this it was decided to continue stroking the valve and taking current traces on a periodic frequency to see if the failure mode would return. The valve was stroked and current traces were performed on a shiftly basis on 07/15/92 and 07/16/92. The frequency was then decreased to daily for 07/17/92 and 07/18/92. The valve was then stroked on 07/20/92. On this date a Valve Operation Test and Evaluation System (VOTES) test was also performed for diagnostic purposes only per LLP-90-114, "Motor Operated Valve Diagnostic and Operating Procedure", VOTES 100 System. This test as well as the current traces showed no significant anomalies.

The 2E51-F086 valve and the RCIC System were declared operable but degraded and entered into the DEL 59-92-2022 at 1000 hours on 07/21/92. This was done per an Operability Evaluation performed per LAP-220-5, "Equipment Operability Determination", initiated on 07/17/92. Per this operability evaluation, current traces were to be continued to be taken under Work Request L16660 on an increased frequency.

Current traces were again taken on 07/22/92 and 07/24/92 and showed no significant anomalies. Based on this the frequency was extended to every three days.

Another current trace was taken on 07/27/92. This trace showed slightly increased motor currents, and the squeaking of the valve had begun to increase. A second current trace was taken the same day and the currents decreased. Based on this it was decided to take another current trace in two days which was 07/29/92.

On 07/29/92 another current trace was performed. This trace showed increased motor currents compared to the first trace taken on 07/27/92. A VOTES test was then performed for diagnostic purposes only to try to determine the source of the high currents. This VOTES test was not conclusive as to the source of the high motor currents. Work Request L16946 was then initiated to relubricate the valve stem and yoke bushing to try to determine if this was the source of the high motor currents and squeaking of the valve.

The RCIC system was taken administratively out of service and logged in L 59-92-2-28 at 1850 hours on 07/29/92. The valve stem and yoke bushing were lubricated and the valve was manually cycled several times to work the lubricant in. The valve was then electrically cycled and current traces were taken. The current traces showed motor currents to have decreased, but the squeaking of the valve had not improved. The squeaking of the valve was determined to be coming from the stuffing box area by use of a stethoscope on the valve. The reduction in motor currents were attributed to the repeated manual cycling of the valve, and the true problem was believed to be in the packing area.

Based on this evaluation it was decided to repack the valve on 07/30/92 per Work Request L16677 and LaSalle Mechanical Procedure LMP-GM-01, "Valve Packing". When the old packing was removed it was very tight, and the Junk Ring at the bottom of the stuffing box was found "cocked" and the valve stem slightly worn in this area. The Junk Ring was adjusted and the valve was repacked. A Local Leak Rate Test was performed satisfactorily per LaSalle Technical Surveillance LTS-100-20, "RCIC Turbine Exhaust Vacuum Breakers Isolation Valves Local Leak Rate Test 1(2)E51-F080 and 1(2)E51-F086 and Inservice Test of RCIC Turbine Exhaust Vacuum Breakers 1(2)E51-F082 and 1(2)E51-F084". A current trace and VOTES Test were performed and showed no abnormalities, and the squeaking of the valve had been eliminated.

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E. CORRECTIVE ACTIONS (CONTINUED)

The 2E51-F086 valve and the RCIC System were returned to service at 1415 on 07/31/92. Work Request L16660 will be left open to continue stroking the valve on an increased frequency. The frequency will continue to be evaluated based on the current traces taken per this work request.

An investigation will be performed to determine if ring rotating stem valves such as this one should have the packing inspected and/or replaced on a specified frequency, and if a different type of valve packing should be used on this type of valve. This investigation will be traced by Action Item Record AIR 374-180-92-06101.

F. PREVIOUS EVENTS

LER	Title
374/92-008	Failure of 2E51-F086

A search of the LER/DVR data base for the RCIC System and the event description containing failure, or valve, or isolation, or 2E51-F086 revealed LER 374/92-008 only. This failure occurred while performing corrective actions for that LER.

A search of the Nuclear Plant Reliability Data System (NPRDS) reported failures found many valve failures due to old or too tight packing. This problem will be addressed by the previously identified AIR 374-180-92-06101.

G. COMPONENT FAILURE DATA

Manufacturer	Nomenclature	Model Number	MFG Part Number
Rockwell Manufacturing Corp.	Forged steel univalve glove stop	2-3624 MT	N/A