



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

March 24, 1993

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

Dear Sir:

Licensee Event Report #93-001-00, Docket #050-374 is being submitted to your office in accordance with 10CFR50.73(a)(2)(v).

G. F. Spedl  
Station Manager  
LaSalle County Station

GFS/JEB/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 15 10 10 10 13 17 14 Page (3) 1 of 0 4

Title (4) \_\_\_\_\_

RCIC High Flow Isolation Static-O-Ring (SOR) Failure Due To A Torn Diaphragm

| 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    | 9              | 3                 | 9               | 3               | 0   | 0    | 1                             | 0                | 3 | 2 | 14 | 9 | 3 | 0 | 15 | 10 | 10 | 10 | 13 | 17 | 14 |

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

|                  |   |   |   |                   |                  |                      |                |
|------------------|---|---|---|-------------------|------------------|----------------------|----------------|
| POWER LEVEL (10) | 0 | 9 | 6 | 20.402(b)         | 20.405(c)        | 50.73(a)(2)(iv)      | 73.71(b)       |
|                  |   |   |   | 20.405(a)(1)(i)   | 50.36(c)(1)      | X 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 Jeffrey E. Bryant, System Engineer, Leak Detection Ext. 2319 TELEPHONE NUMBER 8 1 5 3 15 17 1 - 6 17 16 11

## COMPLETE ONE LINE FOR EACH COMPONENT FAILURE DESCRIBED IN THIS REPORT (13)

| CAUSE | SYSTEM | COMPONENT | MANUFAC-TURER | REPORTABLE TO NPRDS | CAUSE | SYSTEM | COMPONENT | MANUFAC-TURER | REPORTABLE TO NPRDS |   |
|-------|--------|-----------|---------------|---------------------|-------|--------|-----------|---------------|---------------------|---|
| X     | B      | N         | P             | D                   | S     | S      | 3         | 8             | 2                   | Y |

## SUPPLEMENTAL REPORT EXPECTED (14)

Expected Submission Date (15) \_\_\_\_\_

Yes (If yes, complete EXPECTED SUBMISSION DATE) X NO

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

On February 22, 1993, at 0245 hours while Unit 2 was in Operational Condition 1 (Run) at 96% power, Reactor Core Isolation Cooling (RCIC) Steam Line High Flow Isolation Switch PDS 2E31-N013AA was found with an apparent ruptured diaphragm. The failure was found during the performance of LaSalle Special Test, LST-93-012, "Unit 2 Steam Line High Flow RCIC Isolation Calibration."

The switch functions to provide a Division 1 (Outboard) isolation of the RCIC Steam Line in the event of a high flow condition, which is an indication of a break in the RCIC Steam Line. The switch was rendered inoperable due to the diaphragm rupture, therefore the Division 1 isolation from this switch was not available. During this event the Division 2 (Inboard) isolation from PDS 2E31-N013BA was available and would have provided system isolation through the Inboard Isolation Valves 2E51-F063 and 2E51-F076.

The RCIC System was declared inoperable on February 22, 1993 at 1010 hours as a result of the failed differential pressure switch. The High Pressure Core Spray System was available throughout this event.

A replacement switch was characterized, installed, calibrated, and functionally tested satisfactorily. The RCIC System was declared operable February 23, 1993 at 1100 hours.

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 safety system function).

LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

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|                               |                               |                |                   |           |                 |       |       |    |       |  |  |          |  |  |
|-------------------------------|-------------------------------|----------------|-------------------|-----------|-----------------|-------|-------|----|-------|--|--|----------|--|--|
| 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   3          | -                 | 0   0   1 | -               | 0   0 | 0   2 | OF | 0   4 |  |  |          |  |  |

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: 2/22/93 Event Time: 0245 Hours  
 Reactor Mode(s): 1 Mode(s) Name: Run Power Level(s): 96%

B. DESCRIPTION OF EVENT

On February 22, 1993 at 0245 hours with Unit 2 in Operational Condition 1 (Run) at 96% power, during the performance of LST-93-012 "Unit 2 Steam Line High Flow RCIC Isolation Calibration" Pressure Differential Switch (PDS) 2E31-N013AA failed its diaphragm integrity test. The switch is a component of the Leak Detection System (LD) [JM] and actuates on a high flow condition in the RCIC (RI) [BN] Steam Line. The test applied a differential pressure across the switch to verify proper setpoint actuation. During the test the Instrument Mechanic (CST) could not actuate the instrument; the switch would not hold the applied pressure. RCIC was declared inoperable per Technical Specification 3.7.3 and entered into the Degraded Equipment Log (DEL) and taken out of service (OOS #2-0122-93).

PDS 2E31-N013AA functions to initiate a Division 1 (Outboard) isolation and close valve 2E51-F008, "RCIC Steam Line Outboard Isolation Valve". In the event of a high steam line flow the switch will trip at the desired setpoint and initiate the isolation. However, at the time of the event switch 2E31-N013AA would not have been able to provide this function.

PDS 2E31-N013BA was available to provide the Division 2 (Inboard) isolation throughout this event. This switch functions to close the inboard isolation valves 2E51-F063 and 2E51-F076.

No other inoperable equipment/systems contributed to the event. No automatic or manual safety systems or actuations were required. The actions taken to correct the cause of the event were timely and appropriate.

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

C. APPARENT CAUSE OF EVENT

The switch was disassembled and inspected by Instrument Maintenance and Technical Staff in accordance with LIP-GM-962, "Disassembly and Inspection of Static-O-Ring (SOR) Model 102 and 103 Delta-P Switches" on 2-26-93 to determine the cause of the failure. The root cause of the failure was determined to be a U shaped tear in the diaphragm, approximately 1/2 an inch long. This tear would allow for a pressure equalization across the low and high pressure bodies of the instrument and prevent it from actuating on a high differential pressure. During the inspection nothing abnormal was found which would have caused the tear.

| 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               | 3 | -        | 0            | 0 | 1 | - | 0 | 0 | 0 | 3 | OF | 0 | 4 |

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

#### D. SAFETY ANALYSIS OF EVENT

The safety consequences of this event were minimal. During the time that PDS-2E31-N013AA was inoperable, the switch would not have been able to provide the outboard isolation function in the occurrence of a steam line break. The torn diaphragm of the switch would allow for pressure equalization between the high and low pressure sides. However, the inboard (Division 2) isolation function was available from the remaining switch.

The corrective action for this event was performed as required by Technical Specification 3.7.3. The switch failure resulted in RCIC being declared inoperable from 2-22-93, 1010 hours to 2-23-93, 0610 hours.

#### E. CORRECTIVE ACTIONS

PDS 2E31-N013AA was replaced under work request L21566 on 2-23-93 with a SOR Differential Pressure Switch characterized in accordance with LaSalle Instrument Procedure LIP-GM-956, "Analysis of Static-O-Ring Differential Pressure Switch Data". The failed switch was disassembled in accordance with LIP-GM-962 and the root cause of the failure determined to be diaphragm failure.

AIR 373-251-91-00037 "Implementation of Engineering Letter (Chron #163410) on performance of SOR differential pressure switches" is tracking the implementation of recommendations by Signals and Safeguards on the overall improvement of SOR switches. This includes recommendations that are being taken to reduce the number of failures of SOR switches by ruptured diaphragms. It includes replacing older model switches with newer models made with improved manufacturing techniques. Although this switch was not one that required replacement, the overall performance of the SOR switches is improving.

#### F. PREVIOUS EVENTS

| DVR NUMBER    | TITLE   |
|---------------|---|
| LER 87-019-01 | RCIC Steam Flow Isolation Switch OOT/Ruptured Diaphragm                                     |
| LER 87-020-01 | RCIC Steam Line High Flow Switch Failure/Ruptured Diaphragms Found In Four Switches         |
| LER 89-009-01 | Failure Of RCIC High Steam Flow Switch (SOR)/Failed Diaphragm/Unknown                       |
| LER 89-012-00 | RCIC Hi Steam Flow Isolation SOR Failure/Leak In Diaphragm                                  |
| LER 90-009-00 | Failed RCIC Hi Steam Flow DP Switch Due To Torn Diaphragm/Unknown                           |
| LER 90-011-00 | Failure Of RCIC Steam Line High Flow SOR Differential Pressure Switch Due To Torn Diaphragm |

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

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

G. COMPONENT FAILURE DATA

| MANUFACTURER        | NOMENCLATURE                    | MODEL NUMBER            | MFG PART NUMBER |
|---------------------|---------------------------------|-------------------------|-----------------|
| SOR (Static-O-Ring) | Differential Pressure<br>Switch | 103AS-B203<br>NX-JJTTX6 | 88-6-118        |

# EVENT SUMMARY AND CAUSE CODES

DVR Number  
01-2-93-000

|                          |                  |                                     |                |                          |                          |
|--------------------------|------------------|-------------------------------------|----------------|--------------------------|--------------------------|
| <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 |
| Component                |                  | <input type="checkbox"/>            | PSE            | <input type="checkbox"/> | SALP functional area__   |
| type                     |                  | Failure mode                        |                |                          |                          |

| Type |   |   |   | Department |  |   |   |
|------|---|---|---|------------|--|---|---|
| X    | I | M | M | 1          |  | I | M |
|      |   |   |   |            |  |   |   |
|      |   |   |   |            |  |   |   |
|      |   |   |   |            |  |   |   |

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

| Type | Detail Code | Department |
|------|-------------|------------|
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| Type | Detail code |
|------|-------------|
| C    |             |

| Type of deficiency | Detail code | Procedure type |
|--------------------|-------------|----------------|
|                    |             |                |

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| D |  |  |  |  |  |
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| Type | Detail code |   | Department |
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| 1    | 1           | 1 |            |
| 1    | 1           | 1 |            |
| 1    | 1           | 1 |            |