



LaSalle County Station
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10 CFR 50.73

RA16-015

April 18, 2016

U.S. Nuclear Regulatory Commission
ATTN: Document Control Desk
Washington, DC 20555-0001

LaSalle County Station, Unit 2
Facility Operating License No. NPF-18
NRC Docket No. 50-374

Subject: Licensee Event Report 2016-001-00, Secondary Containment Inoperable
Due to Door Interlock Failure

In accordance with 10 CFR 50.73(a)(2)(v)(C) and 10 CFR 50.73(a)(2)(v)(D), Exelon Generation Company (EGC), LLC, is submitting Licensee Event Report Number 2016-001-00 for LaSalle County Station, Unit 2.

There are no regulatory commitments in this letter. Should you have any questions concerning this report, please contact Mr. Guy V. Ford, Regulatory Assurance Manager, at (815) 415-2800.

Respectfully,

A handwritten signature in black ink, appearing to read "Harold T. Vinyard".

Harold T. Vinyard
Plant Manager
LaSalle County Station

Enclosure: Licensee Event Report

cc: Regional Administrator – NRC Region III
NRC Senior Resident Inspector – LaSalle County Station



LICENSEE EVENT REPORT (LER)
(See Page 2 for required number of digits/characters for each block)

Estimated burden per response to comply with this mandatory collection request: 80 hours. Reported lessons learned are incorporated into the licensing process and fed back to industry. Send comments regarding burden estimate to the FOIA, Privacy and Information Collections Branch (T-5 F53), U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001, or by internet e-mail to Infocollects.Resource@nrc.gov, and to the Desk Officer, Office of Information and Regulatory Affairs, NEOB-10202, (3150-0104), Office of Management and Budget, Washington, DC 20503. If a means used to impose an information collection does not display a currently valid OMB control number, the NRC may not conduct or sponsor, and a person is not required to respond to, the information collection.

| | | |
|---|-------------------------------------|--------------------------|
| 1. FACILITY NAME LaSalle County Station, Unit 2 | 2. DOCKET NUMBER 05000374 | 3. PAGE 1 OF 4 |
|---|-------------------------------------|--------------------------|

4. TITLE
Secondary Containment Inoperable Due to Interlock Doors Open

| 5. EVENT DATE | | | 6. LER NUMBER | | | 7. REPORT DATE | | | 8. OTHER FACILITIES INVOLVED | |
|---------------|-----|------|---------------|-------------------|---------|----------------|-----|------|------------------------------|---------------|
| MONTH | DAY | YEAR | YEAR | SEQUENTIAL NUMBER | REV NO. | MONTH | DAY | YEAR | FACILITY NAME | DOCKET NUMBER |
| 02 | 17 | 2016 | 2016 | - 001 | - 00 | 04 | 18 | 2016 | N/A | N/A |
| | | | | | | | | | N/A | N/A |

9. OPERATING MODE **11. THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (Check all that apply)**

| | | | | |
|-----|---|---|---|---|
| 1 | <input type="checkbox"/> 20.2201(b) | <input type="checkbox"/> 20.2203(a)(3)(i) | <input type="checkbox"/> 50.73(a)(2)(ii)(A) | <input type="checkbox"/> 50.73(a)(2)(viii)(A) |
| | <input type="checkbox"/> 20.2201(d) | <input type="checkbox"/> 20.2203(a)(3)(ii) | <input type="checkbox"/> 50.73(a)(2)(ii)(B) | <input type="checkbox"/> 50.73(a)(2)(viii)(B) |
| | <input type="checkbox"/> 20.2203(a)(1) | <input type="checkbox"/> 20.2203(a)(4) | <input type="checkbox"/> 50.73(a)(2)(iii) | <input type="checkbox"/> 50.73(a)(2)(ix)(A) |
| | <input type="checkbox"/> 20.2203(a)(2)(i) | <input type="checkbox"/> 50.36(c)(1)(i)(A) | <input type="checkbox"/> 50.73(a)(2)(iv)(A) | <input type="checkbox"/> 50.73(a)(2)(x) |
| 100 | <input type="checkbox"/> 20.2203(a)(2)(ii) | <input type="checkbox"/> 50.36(c)(1)(ii)(A) | <input type="checkbox"/> 50.73(a)(2)(v)(A) | <input type="checkbox"/> 73.71(a)(4) |
| | <input type="checkbox"/> 20.2203(a)(2)(iii) | <input type="checkbox"/> 50.36(c)(2) | <input type="checkbox"/> 50.73(a)(2)(v)(B) | <input type="checkbox"/> 73.71(a)(5) |
| | <input type="checkbox"/> 20.2203(a)(2)(iv) | <input type="checkbox"/> 50.46(a)(3)(ii) | <input checked="" type="checkbox"/> 50.73(a)(2)(v)(C) | <input type="checkbox"/> 73.77(a)(1) |
| | <input type="checkbox"/> 20.2203(a)(2)(v) | <input type="checkbox"/> 50.73(a)(2)(i)(A) | <input checked="" type="checkbox"/> 50.73(a)(2)(v)(D) | <input type="checkbox"/> 73.77(a)(2)(i) |
| | <input type="checkbox"/> 20.2203(a)(2)(vi) | <input type="checkbox"/> 50.73(a)(2)(i)(B) | <input type="checkbox"/> 50.73(a)(2)(vii) | <input type="checkbox"/> 73.77(a)(2)(ii) |
| | <input type="checkbox"/> 50.73(a)(2)(i)(C) | <input type="checkbox"/> OTHER | Specify in Abstract below or in NRC Form 366A | |

12. LICENSEE CONTACT FOR THIS LER

| | |
|--|--|
| LICENSEE CONTACT Joe Fiesel, Maintenance Director | TELEPHONE NUMBER (Include Area Code) (815) 415-2500 |
|--|--|

13. COMPLETE ONE LINE FOR EACH COMPONENT FAILURE DESCRIBED IN THIS REPORT

| CAUSE | SYSTEM | COMPONENT | MANUFACTURER | REPORTABLE TO EPIX | CAUSE | SYSTEM | COMPONENT | MANUFACTURER | REPORTABLE TO EPIX |
|-------|--------|-----------|--------------|--------------------|-------|--------|-----------|--------------|--------------------|
| X | NG | IMEC | SDC | Y | | | | | |

14. SUPPLEMENTAL REPORT EXPECTED **15. EXPECTED SUBMISSION DATE**

YES (If yes, complete 15. EXPECTED SUBMISSION DATE) NO

| | | |
|-------|-----|------|
| MONTH | DAY | YEAR |
| | | |

ABSTRACT (Limit to 1400 spaces, i.e., approximately 15 single-spaced typewritten lines)

On February 17, 2016, Unit 2 was in Mode 1 at 100 percent power and Unit 1 was in Mode 5 for refueling outage L1R16 with no fuel movements or operations with the potential to drain the reactor vessel (OPDRV) in progress. At 1035 hours CST, both air-lock doors of the Unit 2 Chemistry Lab corridor / Unit 2 Reactor Building interlock were open at the same time for approximately five seconds. While both interlock doors were open, Technical Specification (TS) Surveillance Requirement (SR) 3.6.4.1.2 to verify one secondary containment access door in each access opening is closed was not met for Unit 2. Secondary containment was declared inoperable for the period of time that both interlock doors were open. TS 3.6.4.1 Required Action (RA) A.1 to restore secondary containment to OPERABLE status within four hours was entered and exited.

The cause was failure of the relays on the door controller circuit card. The controller circuit card was replaced, which restored the interlock functionality. Corrective actions include determining the cause of vendor quality issues with the controller circuit card relays and procurement of a more reliable controller circuit card following the identification of the cause of the relay failures from vendor analysis.



**LICENSEE EVENT REPORT (LER)
CONTINUATION SHEET**

Estimated burden per response to comply with this mandatory collection request: 80 hours. Reported lessons learned are incorporated into the licensing process and fed back to industry. Send comments regarding burden estimate to the FOIA, Privacy and Information Collections Branch (T-5 F53), U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001, or by internet e-mail to Infocollects.Resource@nrc.gov, and to the Desk Officer, Office of Information and Regulatory Affairs, NEOB-10202, (3150-0104), Office of Management and Budget, Washington, DC 20503. If a means used to impose an information collection does not display a currently valid OMB control number, the NRC may not conduct or sponsor, and a person is not required to respond to, the information collection.

| 1. FACILITY NAME | 2. DOCKET NUMBER | 3. LER NUMBER | | |
|--------------------------------|------------------|---------------|-------------------|---------|
| | | YEAR | SEQUENTIAL NUMBER | REV NO. |
| LaSalle County Station, Unit 2 | 05000374 | 2016 | - 001 | - 00 |

NARRATIVE

A. Condition Prior to Event:

Unit(s): 1 / 2 Event Date: February 17, 2016 Event Time: 1035 CST
 Reactor Mode(s): 5 / 1 Mode(s) Name: Refueling Mode/Power Operation Power Level: 0 percent/100 percent

B. Description of Event:

On February 17, 2016, Unit 2 was in Mode 1 at 100 percent power and Unit 1 was in Mode 5 for refueling outage L1R16 with no fuel movements, core alterations, or OPDRV in progress. At approximately 1035 hours CST, Operating Department received a report that an employee entered a secondary containment interlock and identified that both doors of the Unit 2 Chemistry Lab corridor / Reactor Building interlock (door number 247 and door number 248) opened simultaneously.

The employee immediately secured both doors in the interlock and notified the Main Control Room Supervisor. Both doors in the interlock were open for approximately five seconds. With both doors open, TS SR 3.6.4.1.2 was not met for Unit 2. This rendered secondary containment inoperable in accordance with TS 3.6.4.1. Reactor Building differential pressure, as observed in the Main Control Room, remained less than -0.25 inches vacuum water gauge (w.g.) at all times. Administrative controls were put in place to ensure the doors remained closed pending repairs to the interlock.

An emergency notification system (ENS) report was made to the NRC at 1705 EST on February 17, 2016 (EN 51741) pursuant to 10 CFR 50.72(b)(3)(v)(C) and (D). This occurrence is reportable in accordance with 10 CFR 50.73(a)(2)(v)(C) and (D) as an event or condition that could have prevented the fulfillment of the safety function of the structures or systems that are needed to control the release of radioactive material and to mitigate the consequences of an accident. A technical evaluation has determined this event did not meet the NEI 99-02 definition of a Safety System Functional Failure (SSFF).

C. Cause of Event:

The cause of the event was the failure of the relays of the UR2-4 controller circuit card in the interlock door. The exact cause of the relay failures is currently unknown. However, corrective actions have been created to identify the cause and make changes to the card to eliminate the less than desired circuit card service life.

D. Safety Analysis:

The safety significance of this event was minimal. The Reactor Building-to-outside differential pressure remained negative throughout the period that the secondary containment was inoperable. This event did not result in the reactor enclosure differential pressure dropping below the design bases set point. Both the inner and outer doors were promptly closed by station personnel, which ended the event. This event did not involve any kind of door or airlock material condition preventing door closure. Additionally, both the inner and outer doors were closed by normal expected means and were capable of remaining closed as designed. The secondary containment was inoperable for approximately five seconds, which was significantly less than the four-hour Completion Time to restore the secondary containment to operable status allowed by TS 3.6.4.1 Required Action A.1.

The function of the secondary containment is to contain, dilute, and hold up fission products that may leak from the primary containment following a Design Basis Accident (DBA). Engineering Change (EC) 396711 was performed to show that the event had no impact on the safety function associated with secondary containment. The time that both doors were simultaneously opened was approximately five seconds, which is bounded by the technical evaluation.

This event did not result in the reactor enclosure differential pressure dropping below the design bases set point of -0.25 inches w.g. Both the inner and outer doors were promptly closed by station personnel, which ended the event. This event did not involve any kind of door or airlock material condition preventing door closure. Additionally, both the inner and outer doors were closed by normal expected means and were capable of remaining closed as designed.

NRC FORM 366A
(11-2015)

U.S. NUCLEAR REGULATORY COMMISSION

APPROVED BY OMB: N 3150-0104

EXPIRES: 10/31/2018



LICENSEE EVENT REPORT (LER) CONTINUATION SHEET

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NARRATIVE

The computed dose for EC 396711 was based on the door opening during the 780 second time period prior to Standby Gas Treatment (SBGT) system drawdown and filtration. This discounts the initial 120 seconds of an event where no release takes place, per calculation L-003068, "Re-Analysis of Loss of Coolant Accident (LOCA) Using Alternative Source Terms."

The approximate period of time the secondary containment doors were open is bounded by calculation L-003068. Should an event occur, in which both secondary containment doors were open simultaneously for 30 seconds or less, it would result in a potential dose increase of approximately 3.85 percent. The 3.85 percent decrease in margin is inconsequential in comparison to the 10 CFR 100 regulatory limits.

EC 396711 also evaluated the pressure impact on the secondary containment and the ability of the SBGT system to achieve the TS required negative pressure. The results of the evaluation show SBGT would restore secondary containment pressure within 3 minutes which is well below the 15 minute maximum drawdown time required by TS.

Based on the short duration of door opening (approximately 5 seconds), no material condition preventing door closure or maintaining the doors closed, and attendance by knowledgeable personnel who closed the doors immediately, the secondary containment safety function was maintained.

E. Corrective Actions:

The immediate corrective action taken by the station was replacement of the defective controller circuit card. Controller circuit cards with failed relays were sent to PowerLabs for analysis. They will next be sent to the vendors for further failure analysis. Those analyses will be used to determine the cause of the premature controller relay failures and recommend actions to eliminate the less than desired circuit card service life, including procurement of more reliable controller circuit cards.

F. Previous Occurrences:

LER 2015-003-00

On February 17, 2015, Unit 1 was in Mode 1 at 100 percent power and Unit 2 was in Mode 5 with no fuel movements in progress. Operations with the potential to drain the reactor vessel (OPDRVs) were in progress in the secondary containment on Unit 2. At 1145 hours CST, it was reported that both air-lock doors between the Unit 1 diesel generator corridor and the Unit 1 Reactor Building were open at the same time for approximately 5 -10 seconds. While both interlock doors were open, TS SR 3.6.4.1.2 was not met, and secondary containment was declared inoperable for the time that both interlock doors were open. TS 3.6.4.1 RA A.1 to restore secondary containment to OPERABLE status within 4 hours was entered and exited. The cause was a failure of a controller circuit card in the door interlock logic. The circuit card was replaced, which restored the interlock functionality. Corrective actions include determining the cause premature controller circuit card failures and replacing the card with more reliable models.

LER 2015-001-00

On December 12, 2014, both Units 1 and 2 were in Mode 1 at 100 percent power with no fuel movements in progress. At 1324 hours CST, it was reported that both air-lock doors of the Unit 2 Reactor Building 710' elevation between the Unit 2 diesel generator corridor and the Unit 2 Reactor Building were open at the same time for approximately 10 seconds. While both interlock doors were open, TS SR 3.6.4.1.2 was not met, and secondary containment was declared inoperable for the time that both interlock doors were open. TS 3.6.4.1 RA A.1 to restore secondary containment to OPERABLE status within 4 hours was entered and exited. The cause was a degradation of the door closure mechanism, and the contributing cause was a less than robust design of the door interlock assembly. Corrective actions from the previous occurrences to identify, procure and install a more robust interlock assembly design were in progress at the time of the event. Additional corrective actions, including periodic preventative maintenance to inspect, tighten, and replace fasteners as necessary, were in place but did not preclude this event.



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| LaSalle County Station, Unit 2 | 05000374 | 2016 | - 001 | - 00 |

NARRATIVE

LER 2014-001-00

On February 18, 2014, Unit 1 was in Mode 5 with fuel moves in progress during refueling outage L1R15, and Unit 2 was in Mode 1 at 100 percent power. At 1820 hours CST, it was reported that both air-lock doors of the Unit 2 Reactor Building 710' elevation between the Unit 2 diesel generator corridor and the Unit 2 Reactor Building were open at the same time for approximately 3 seconds. While both interlock doors were open, TS SR 3.6.4.1.2 was not met, and secondary containment was declared inoperable for the time that both interlock doors were open. TS 3.6.4.1 RA C.1 to suspend fuel movements on Unit 1 and RA A.1 to restore secondary containment to OPERABLE status within 4 hours were entered and exited. The cause of the event was degradation of the door closure mechanism and door frame seal. A contributing cause was a less than robust design of the door interlock assembly. Corrective actions from the previous occurrences to identify, procure and install a more robust interlock assembly design were still in progress at the time of the event. Additional corrective actions included creating a periodic preventative maintenance task to inspect, tighten, and replace fasteners as necessary.

LER 2013-007-01

On October 22, 2013, both Units 1 and 2 were in Mode 1 at 100 percent power. At 1129 hours CDT, it was reported that both air lock doors on the Unit 1 Reactor Building 710' elevation between the Chemistry Hot Lab and the Reactor Building were open at the same time for approximately 10 seconds. While both interlock doors were open, TS SR 3.6.4.1.2 was not met, and secondary containment was declared INOPERABLE for the time that both interlock doors were open. TS 3.6.4.1 RA A.1 for both Units 1 and 2 to restore secondary containment to OPERABLE status within 4 hours was entered and exited. The cause of the event was a less than robust design of the door interlock assembly. Troubleshooting found that the mounting fasteners that secure the entire locking assembly to the frame of door # 226 (Reactor Building side of the interlock) were loose, which prevented the electro-mechanical solenoid operated bolt from properly aligning with the door-mounted catch. This misalignment prevented the bolt from entering the catch on door # 226 when door # 225 (Chemistry Hot Lab side) was opened. This malfunction resulted in the capability to open both interlock doors at the same time, and was similar to a previous occurrence on February 28, 2013.

LER 2013-001-02

On February 28, 2013, Unit 1 was in Mode 1 at 100 percent power and Unit 2 was in Mode 5 for refueling outage L2R14. At 0400 hours CST, it was reported that both air lock doors on the Unit 1 Reactor Building 710' elevation between the Chemistry Hot Lab and the Reactor Building were open at the same time for approximately 10 seconds. While both interlock doors were open, TS SR 3.6.4.1.2 was not met for Unit 1, and secondary containment was declared INOPERABLE for the time that both interlock doors were open. TS 3.6.4.1 RA A.1 to restore secondary containment to OPERABLE status within 4 hours was entered and exited. The cause of the event was determined to be a less than robust design of the door interlock assembly. Troubleshooting found that the mounting fasteners that secure the entire locking assembly to the frame of door # 226 (Reactor Building side of the interlock) were loose, which prevented the electro-mechanical solenoid operated bolt from properly aligning with the door-mounted catch. This misalignment prevented the bolt from entering the catch on door # 226 when door # 225 (Chemistry Hot Lab side) was opened. This malfunction resulted in the capability to open both interlock doors at the same time.

G. Component Failure Data:

Manufacturer: Security Door Controls (SDC)
Device: UR2-4 Controller Card
Component ID: 1695558