



LaSalle County Station

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RA17-014

10 CFR 50.73

February 8, 2017

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

LaSalle County Station, Unit 1
Renewed Facility Operating License No. NPF-11
NRC Docket No. 50-373

Subject: Licensee Event Report 2017-001-00, "Reactor Core Isolation Cooling System Inoperable Longer than Allowed by the Technical Specifications due to Low Suction Pressure Trips"

Exelon Generation Company, LLC (EGC) is submitting Licensee Event Report (LER) Number 2017-001-00 for LaSalle County Station Unit 1 in accordance with 10 CFR 50.73(a)(2)(i)(B).

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

Respectfully,



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)

(See NUREG-1022, R.3 for instruction and guidance for completing this form
<http://www.nrc.gov/reading-rm/doc-collections/nuregs/staff/sr1022/r3/>)

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 e-mail to Infocollections.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 1

2. DOCKET NUMBER

05000373

3. PAGE

1 OF 3

4. TITLE

Reactor Core Isolation Cooling System Inoperable Longer than Allowed by the Technical Specifications due to Low Suction Pressure Trips

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
12	16	2016	2017	001	00	02	08	2017	NA	NA
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)(vii)(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)		
10. POWER LEVEL			<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 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 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 checked="" 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	MANU-FACTURER	REPORTABLE TO EPIX	CAUSE	SYSTEM	COMPONENT	MANU-FACTURER	REPORTABLE TO EPIX
E	BN	65	W290	Y	NA	NA	NA	NA	NA

14. SUPPLEMENTAL REPORT EXPECTED☐ YES (If yes, complete 15. EXPECTED SUBMISSION DATE) ☒ NO**15. EXPECTED SUBMISSION DATE**

MONTH	DAY	YEAR
NA	NA	NA

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

On October 18, 2016, the Unit 1 Reactor Core Isolation Cooling (RCIC) system tripped on low suction pressure during a normal system start following completion of scheduled maintenance activities. The system was restored to operable on October 20, 2016. A second event involving a Unit 1 RCIC system trip on low pressure suction pressure occurred on November 17, 2016, during the system's quarterly operability surveillance. The system was restored to operable on November 20, 2016. The component failure analysis completed on December 16, 2016, determined the cause of both Unit 1 RCIC system trips was a failure of the electronic governor-remote (EG-R) hydraulic actuator.

The Unit 1 RCIC inoperable period was from the first system trip on October 18, 2016, to when full restoration was completed on November 20, 2016. This time was greater than allowed by Technical Specifications (TS) 3.5.3, "RCIC System," Condition A Completion Time of 14 days. This event is reportable in accordance with 10 CFR 50.73(a)(2)(i)(B) as a condition prohibited by the plant's TS. The root cause for the low suction pressure trips was inadequate management of the EG-R preventative maintenance (PM) strategy. Corrective actions included replacement of the EG-R and a plan to implement an appropriate PM strategy for the RCIC EG-R. The safety consequences were minimal since the RCIC system is not credited in the safety analysis, and the credited High Pressure Core Spray (HPCS) system remained available to provide its safety function.

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

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1. FACILITY NAME	2. DOCKET NUMBER	3. LER NUMBER		
		YEAR	SEQUENTIAL NUMBER	REV NO.
LaSalle County Station, Unit 1	05000373	2017	- 001	- 00

NARRATIVE**PLANT AND SYSTEM IDENTIFICATION**

LaSalle County Station Unit 1 is a General Electric Boiling Water Reactor with 3546 Megawatts Thermal Rated Core Power. The affected system was Unit 1 Reactor Core Isolation Cooling System (RCIC).

CONDITION PRIOR TO EVENT

Unit(s): 1	Event Date: December 16, 2016	Event Time: 0934 CST
Reactor Mode(s): 1	Mode(s) Name: Power Operation	Power Level: 100%

DESCRIPTION OF EVENT

On October 18, 2016, while Unit 1 was in Mode 1 at 100% power, the Unit 1 RCIC system tripped on low suction pressure during a normal start that was being performed in accordance with the RCIC system pump operability valve test procedure, following completion of scheduled maintenance activities. Repairs were performed that restored the system to operability on October 20, 2016. A second event involving a Unit 1 RCIC system trip on low suction pressure occurred on November 17, 2016, revealing a related cause. Previously, the last successful RCIC operability test had been performed on August 27, 2016.

Background:

The RCIC system is provided to assure adequate core cooling in the event the reactor is isolated from its primary heat sink in conjunction with a loss of normal feed-water flow to the reactor vessel. The normal water flow path is from the Cycled Condensate Storage Tank through the RCIC pump and into the discharge line. Steam enters the turbine, where most of the energy is removed driving the turbine, and is then exhausted to the Suppression Pool through a check valve and motor operated exhaust isolation valve. The design of the RCIC system has various instrumentation monitoring performance parameters. Various RCIC turbine trip functions are provided, including low pump suction trip to protect against cavitation and lack of cooling that could cause damage to the pump. The RCIC turbine steam admission valve uses a logic in which the turbine speed demand is compared with the actual turbine speed and generates an error signal that is passed to the Electronic Governor Remote (EG-R). The EG-R interprets the signal to hydraulically position the governor valve to control steam admission to the RCIC turbine.

Event 1:

On October 18, 2016, at 22:23 CST, during start of the Unit 1 RCIC system post-maintenance test (PMT) surveillance following planned maintenance activities, the system tripped on low suction pressure. Troubleshooting identified the potential causes were related to the low-pressure switch out of calibration and the flow controller ribbon cable not seated correctly. Corrective actions included replacement of the pressure switch and the flow controller. Further troubleshooting was not performed due to successful RCIC startup following these initial troubleshooting actions. The RCIC system was declared operable and associated Technical Specifications (TS) timeclocks were exited on October 20, 2016, at 03:00 CST.

Event 2:

On November 17, 2016, at 11:00 CST, during start of the Unit 1 RCIC system for its quarterly surveillance, RCIC tripped on low suction pressure following fluctuations in suction pressure. All other parameters, including those in the field, were verified to be normal, and Unit 1 RCIC was placed in a safe configuration and declared inoperable. Troubleshooting determined the cause was degradation of the EG-R. In addition, rust was found on the oil port face, potentially restricting oil flow to the EG-R. The degraded EG-R was replaced with a new EG-R, and the degraded EG-R was sent off-site for component failure analysis. The PMT and a detailed review of historical performance data indicated improved EG-R governor positioning. The RCIC system was declared operable on November 20, 2016, at 19:05 CST.

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CONTINUATION SHEET**

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NARRATIVE**CAUSE OF EVENT**

The component that caused both of the low suction pressure trips was the EG-R hydraulic actuator for the RCIC governor valve. The EG-R component failure analysis (report dated December 16, 2016) determined the failure mechanism was due to the presence of internal iron oxide deposits on the control lands and on the inside of the bore. These deposits resulted in binding between precision internal components which caused intermittent operation of the EG-R. Rust deposits and wear was also noted on several actuator components, which suggested there had been moisture entrained in the oil.

The root cause for both of the Unit 1 RCIC low suction pressure trips was inadequate management of the EG-R hydraulic actuator PM strategy. The site did not perform preventative maintenance on Unit 1 RCIC EG-R on an interval that would prevent internal fouling from adversely affecting RCIC governor performance.

REPORTABILITY AND SAFETY ANALYSIS

This event is reportable in accordance with 10 CFR 50.73(a)(2)(i)(B) as a condition prohibited by TS due to the failure to complete TS 3.5.3, Required Action A.2 within the specified Completion Time of 14 days. The Unit 1 RCIC inoperable period was from the first system trip on October 18, 2016, to when full restoration of the system was completed on November 20, 2016. The EG-R was determined by failure analysis completed on December 16, 2016, to be the failure mechanism that caused Unit 1 RCIC inoperability to be longer than the allowed 14-day Completion Time. The events for the October 2016 and November 2016 RCIC trips did not meet the reporting threshold in accordance with 10 CFR 50.72.

There were no safety consequences associated with the events since there was no loss of safety function. RCIC system is not an Engineered Safety Feature (ESF) system, and no credit is taken in the safety analyses for the RCIC system operation. RCIC does not meet the threshold for failure of a single train non-safety system since it is not included in the safety analysis. In addition, the Unit 1 High Pressure Core Spray (HPCS) system remained available during the period that the Unit 1 RCIC system was inoperable. There were no actual demands for either Unit 1 RCIC or Unit 1 HPCS during this period.

CORRECTIVE ACTIONS

The degraded EG-R was replaced. The degraded EG-R was sent off-site for component failure analysis. Post-maintenance testing and a detailed review of historical performance data indicated improved EG-R governor positioning. The Unit 1 RCIC system was declared operable on November 20, 2016, at 19:05 CST. A root cause investigation identified additional corrective actions, including actions to improve RCIC system trending and to develop and implement an appropriate PM strategy that includes EG-R device-specific replacement frequency and EG-R oil reservoir clean-flush frequency. The EG-R on the Unit 2 RCIC system was also successfully replaced as part of the extent of condition review.

PREVIOUS OCCURRENCES

A review of Licensee Event Reports for the past three years identified no previous similar occurrences at LaSalle Station.

COMPONENT FAILURE DATA

Part Description: Actuator, Hydraulic, Governor
Manufacturer: Woodward
Model No.: A9903-026