

PSEG Nuclear LLC  
P.O. Box 236, Hancocks Bridge, NJ 08038-0236



January 29, 2016

LR-N16-0013

10 CFR 50.73

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

Salem Nuclear Generating Station Unit 1  
Renewed Facility Operating License No. DPR-70  
NRC Docket No. 50-272

Subject: Licensee Event Report 272/2015-007-001, "Inoperable Control Room Emergency Air Conditioning System Due to Failed Charcoal Filter Surveillance Test"

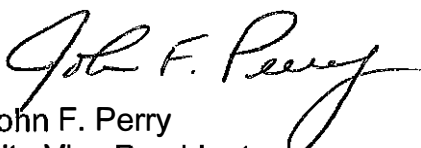
Reference: PSEG Letter LR-N15-0244, dated December 7, 2015  
Licensee Event Report 272/2015-007-00

In accordance with the requirements of 10 CFR 50.73(a)(2)(i)(B) and 10 CFR 50.73(a)(2)(v)(D), PSEG Nuclear LLC is submitting the enclosed Licensee Event Report (LER) Number 2015-007-001, "Inoperable Control Room Emergency Air Conditioning System Due to Failed Charcoal Filter Surveillance Test." The referenced LER stated that Salem Nuclear Generating Station would submit a supplement to the LER with the results of the causal evaluation performed for the event. The results of the causal evaluation are being communicated in the LER supplement attached to this letter.

If you have any questions or require additional information, please contact Mr. Thomas Cachaza at 856-339-5038.

There are no regulatory commitments contained in this letter.

Sincerely,

  
John F. Perry  
Site Vice President  
Salem Generating Station

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Attachment: Licensee Event Report 272/2015-007-001

cc            Mr. D. Dorman, Administrator – Region 1, NRC  
                 Ms. C. Sanders, Licensing Project Manager – Salem, NRC  
                 Mr. P. Finney, USNRC Senior Resident Inspector, Salem (X24)  
                 Mr. P. Mulligan, Manager IV, NJBNE  
                 Mr. R. Braun, President and Chief Nuclear Officer – Nuclear  
                 Mr. T. Cachaza, Salem Commitment Tracking Coordinator  
                 Mr. L. Marabella, Corporate Commitment Tracking Coordinator



**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.

<b>1. FACILITY NAME</b> Salem Generating Station – Unit 1	<b>2. DOCKET NUMBER</b> 05000272	<b>3. PAGE</b> 1 OF 4
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**4. TITLE**  
Inoperable Control Room Emergency Air Conditioning System Due to Failed Charcoal Filter Surveillance Test

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
10	07	2015	2015	007	001	01	29	2016	FACILITY NAME	DOCKET NUMBER
										05000
										05000

**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 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 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**

<b>LICENSEE CONTACT</b> Thomas Cachaza, Senior Regulatory Compliance Engineer	<b>TELEPHONE NUMBER (Include Area Code)</b> 856-339-5038
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**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
X	FN	FLT	159N	Y					

<b>14. SUPPLEMENTAL REPORT EXPECTED</b> <input type="checkbox"/> YES (If yes, complete 15. EXPECTED SUBMISSION DATE) <input checked="" type="checkbox"/> NO	<b>15. EXPECTED SUBMISSION DATE</b>	MONTH    DAY    YEAR

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

On October 28, 2015, Salem Unit 1 was in Mode 1 operating at 100 percent power and Unit 2 was in Mode 6 with fuel movement in progress. The Salem Unit 1 Control Room Emergency Air Conditioning System (CREACS) train was in single train filtration mode supplying air to the common Control Room due to outage activities on Unit 2.

At 0628, the Salem Unit 1 CREACS train was declared inoperable due to failure of its charcoal filter surveillance test, resulting in both units CREACS trains being inoperable. Unit 1 entered Technical Specification (TS) 3.0.3, and Unit 2 suspended fuel movement to comply with TS 3.7.6, Action c.

At 0950, the Unit 2 CREACS train was returned to service and aligned to single train filtration mode supplying air to the common Control Room. Unit 1 exited TS 3.0.3, meeting the requirement of TS 3.7.6.1, Action a., to restore a single train of CREACS to operable.

This event was caused by less than adequate procedure guidance and ownership of the surveillance activity by the maintenance shop responsible for performing the work. The direct cause of the TS entry was the filter failure due to aging.

This event is reportable under 10 CFR 50.73(a)(2)(i)(B), as a condition prohibited by the plant's TS, and 10 CFR 50.73(a)(2)(v)(D), as a condition that could have prevented the fulfillment of a safety function.



**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](mailto: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	6. LER NUMBER			3. PAGE
Salem Generating Station – Unit 1	05000272	YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	2 OF 4
		2015	- 007	- 001	

**NARRATIVE**

**PLANT AND SYSTEM IDENTIFICATION**

Westinghouse - Pressurized Water Reactor {PWR/4}  
Control Room Air Conditioning System {NA/FLT}

Energy Industry Identification System (EIS) codes and component function identifier codes appear as {SS/CCC}.

**IDENTIFICATION OF OCCURRENCE**

Event Date: October 7, 2015  
Discovery Date: October 22, 2015

**CONDITIONS PRIOR TO OCCURRENCE**

Salem Unit 1 was in operational Mode 1, operating at approximately 100 percent power. Salem Unit 2 was in Mode 6 with fuel movement in progress. The Salem Unit 1 Control Room Emergency Air Conditioning System (CREACS) {NA/FLT} train was in single train filtration mode supplying air to the common Control Room due to outage activities on the Unit 2. No additional structures, systems or components were inoperable at the time of discovery that contributed to this event.

**DESCRIPTION OF OCCURRENCE**

On October 7, 2015, a carbon sample was obtained from the unit 1 CREACS charcoal filtration unit for analysis in accordance with the requirements of TS Surveillance 4.7.6.1.b.3.

On October 28, 2015, at 0628, Salem operations was notified of failure of the Unit 1 charcoal filter TS surveillance test. Test results indicated a methyl iodide penetration of 3.054 percent with a TS acceptance criteria of less than 2.5 percent. The Unit 1 CREACS train was declared inoperable due to failure of its charcoal filter surveillance test, resulting in both units CREACS trains being inoperable. Unit 1 entered TS 3.0.3 because of no TS 3.7.6 Action Statement addressing the loss of both CREACS trains. Fuel movement on Unit 2 was suspended to comply with Unit 2's TS 3.7.6, Action c.

Subsequent review indicated that PSEG had received the results of the methyl iodide penetration analysis from the vendor testing laboratory on October 22, 2015, at 1843. PSEG documented the failure to take timely mitigating actions in the corrective action program.

On October 28, 2015 at 0950, the Unit 2 CREACS train was returned to service and aligned to single train filtration mode supplying air to the common Control Room. With single train filtration operation restored, Unit 1 exited TS 3.0.3, and entered TS 3.7.6.1, Action a., which requires alignment of the system to single train filtration within 4 hours, and restoration of the inoperable filtration train to operable status within 30 days.

The Unit 1 CREACS charcoal filter carbon was replaced, tested, and the CREACS train was returned to service on October 30, 2015 at 1442.



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

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**NARRATIVE**

The Event Date for this LER is considered to be October 7, 2015, when the charcoal filter sample was taken. The Discovery Date is considered to be October 22, 2015, when PSEG was notified by the vendor of the sample results. This event is reported as a condition prohibited by TS since at the time of discovery, the filter had exceeded its TS 3.7.6.1, Action a., Allowed Outage Time (AOT) to align CREACS for single train filtration within 4 hours. This event is also reported as a condition that could have prevented the fulfillment of a safety function because both units CREACS trains were inoperable from the time of discovery until the Unit 2 CREACS train was returned to service and aligned to single train filtration mode supplying air to the common Control Room.

An eight-hour NRC Event Notification (EN) was required on or before 0243 on October 23, 2015, as required by 10 CFR 50.72(b)(3)(v)(D) for an event or condition that at the time of discovery could have prevented the fulfillment of a safety function of structures or systems that are needed to mitigate the consequences of an accident. However, the EN was not made until Operations was notified of the surveillance failure. EN 51504 was completed on October 28, 2015, at 1326. This LER is being submitted pursuant to the requirements of 10 CFR 50.73(a)(2)(i)(B) and 10 CFR 50.73(a)(2)(v)(D).

**CAUSE OF EVENT**

This event was caused by less than adequate procedure guidance and ownership of the surveillance activity by the maintenance shop responsible for performing the work. The direct cause of the TS entry was the filter failure due to aging.

**SAFETY CONSEQUENCES AND IMPLICATIONS**

The Salem Unit 1 and 2 CREACS is a shared system between Unit 1 and 2 supplying a common Control Room Environment (CRE). The CREACS consists of two independent, redundant trains, one from each unit, that recirculate and filter air in the CRE and a CRE boundary that limits the in-leakage of unfiltered air. Each CREACS train consists of a pre-filter, a high efficiency particulate air (HEPA) filter, an activated charcoal absorber section for removal of gaseous activity, and fans. Following receipt of a Safety Injection or High Radiation actuation signal, one 100 percent capacity fan in each units CREACS will operate in accident pressurized mode with outside air supplied from the non-accident unit air intake duct for continued CRE pressurization.

A single CREACS filtration train is capable of providing adequate removal of post-accident airborne contaminants to ensure radiation exposures in the CRE are limited to 5 REM Total Effective Dose Equivalent (TEDE) or less. The Salem Updated Final Safety Analysis Report (UFSAR) assumes the charcoal filter has a removal efficiency of 95 percent. Vendor performance of multiple analyses of the filter's charcoal methyl iodide penetration indicated that the worst case sample result indicated a greater than 95 percent efficiency. Therefore, the level of degradation of the charcoal filter would not have prevented the filter unit from performing its design safety function.

**SAFETY SYSTEM FUNCTIONAL FAILURE**

A review of this event determined that a Safety System Functional Failure (SSFF) as defined in Nuclear Energy Institute (NEI) 99-02, Regulatory Assessment Performance Indicator Guideline, did not occur.



**LICENSEE EVENT REPORT (LER)  
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**NARRATIVE**

**PREVIOUS OCCURRENCES**

A review of Salem Unit 1 and 2 Licensee Event Reports for the previous three years identified no other similar events.

**CORRECTIVE ACTIONS**

- 1) The Unit 1 CREACS charcoal filter was replaced, tested, and the CREACS train was returned to service on October 30, 2015.
- 2) The surveillance procedure will be revised to include an administrative limit for charcoal filter replacement below the TS requirement of less than 2.5% methyl iodine penetration.
- 3) Other corrective actions are being tracked in the Licensee's Corrective Action Program.

**COMMITMENTS**

This LER contains no regulatory commitments.