Brad Berryman
Site Vice President

Susquehanna Nuclear, LLC
769 Salem Boulevard
Berwick, PA 18603
Tel. 570.542.2904 Fax 570.542.1504
Brad.Berryman@TalenEnergy.com

TALEN ENERGY

FEB 1 5 2018

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

10 CFR 50.73

SUSQUEHANNA STEAM ELECTRIC STATION
LICENSEE EVENT REPORT 50-387(388)/2017-006-01
UNIT 1 LICENSE NO. NPF-14
UNIT 2 LICENSE NO. NPF-22
PLA-7668

Docket No. 50-387
50-388

Attached is a supplement to Licensee Event Report (LER) 50-387(388)/2017-006-00. The LER reported an event involving control room envelope in-leakage exceeding the Technical Specification limit that was determined to be reportable in accordance with 10 CFR 50.73(a)(2)(v)(D) as a condition that could have prevented fulfilment of a safety function. This supplement includes additional information concerning the cause and corrective actions and adds reporting under 10 CFR 50.73(a)(2)(i)(B) as a condition prohibited by plant Technical Specifications.

There were no actual consequences to the health and safety of the public as a result of this event.

This letter contains no new regulatory commitments.

Should you have any questions regarding this submittal, please contact Mr. Jason Jennings, Manager – Nuclear Regulatory Affairs at (570) 542-3155.

B. Berryman

Attachment: LER 50-387(388)/2017-006-01

Copy: NRC Region I
Ms. T. E. Hood, NRC Project Manager
Ms. L. H. Micewski, NRC Sr. Resident Inspector
Mr. M. Shields, PA DEP/BRP

NRC FORM 366 (04-2017) U.S. NUCLEAR REGULATORY COMMISSION

APPROVED BY OMB: NO. 3150-0104 EXPIRES: 03/31/2020

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 Information Services Branch (T-2 F43), U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001, or by 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. PAGE
Susquehanna Steam Electric Station Unit 1	05000387	1 OF 4

4. TITLE Control Room Envelope In-leakage Exceeded the Technical Specification Limit

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
									Susquehanna Steam Electric Station Unit 2	05000388
10	06	2017	2017	- 006	- 01	02	15	2018	FACILITY NAME	DOCKET NUMBER
										05000

9. OPERATING MODE	11. THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: *(Check all that apply)*			
1	☐ 20.2201(b)	☐ 20.2203(a)(3)(i)	☐ 50.73(a)(2)(ii)(A)	☐ 50.73(a)(2)(viii)(A)
	☐ 20.2201(d)	☐ 20.2203(a)(3)(ii)	☐ 50.73(a)(2)(ii)(B)	☐ 50.73(a)(2)(viii)(B)
	☐ 20.2203(a)(1)	☐ 20.2203(a)(4)	☐ 50.73(a)(2)(iii)	☐ 50.73(a)(2)(ix)(A)
	☐ 20.2203(a)(2)(i)	☐ 50.36(c)(1)(i)(A)	☐ 50.73(a)(2)(iv)(A)	☐ 50.73(a)(2)(x)
10. POWER LEVEL	☐ 20.2203(a)(2)(ii)	☐ 50.36(c)(1)(ii)(A)	☐ 50.73(a)(2)(v)(A)	☐ 73.71(a)(4)
100	☐ 20.2203(a)(2)(iii)	☐ 50.36(c)(2)	☐ 50.73(a)(2)(v)(B)	☐ 73.71(a)(5)
	☐ 20.2203(a)(2)(iv)	☐ 50.46(a)(3)(ii)	☐ 50.73(a)(2)(v)(C)	☐ 73.77(a)(1)
	☐ 20.2203(a)(2)(v)	☐ 50.73(a)(2)(i)(A)	☒ 50.73(a)(2)(v)(D)	☐ 73.77(a)(2)(i)
	☐ 20.2203(a)(2)(vi)	☒ 50.73(a)(2)(i)(B)	☐ 50.73(a)(2)(vii)	☐ 73.77(a)(2)(ii)
		☐ 50.73(a)(2)(i)(C)	☐ OTHER Specify in Abstract below or in NRC Form 366A	

12. LICENSEE CONTACT FOR THIS LER

LICENSEE CONTACT	TELEPHONE NUMBER *(Include Area Code)*
C. E. Manges, Jr., Senior Engineer - Nuclear Regulatory Affairs	(570) 542-3089

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
B	NA	Gasket	F030	Y					

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

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

On October 6, 2017 at 1945 hours, a loss of Control Room Habitability Envelope (CRHE) was declared due to failing to meet Technical Specification (TS) 3.7.3, Surveillance Requirement (SR) 3.7.3.4 during surveillance testing. The CRHE is required to be maintained such that occupants can control the reactor safely under normal conditions and maintain it in a safe condition following a radiological event, hazardous chemical release, or a smoke challenge. Mitigating actions were identified and include the ability to issue potassium iodide (KI) to the control room staff and Emergency Plan responders. With implementation of the mitigating actions, the dose consequence to the control room operators and affected Emergency Plan personnel is substantially less than the regulatory limit of 5 Rem Total Effective Dose Equivalent (TEDE) for event duration.

On October 6, 2017, at 2146 hours, this condition was reported (ENS #53003) in accordance with 10 CFR 50.72(b)(3)(v)(D) and is also reportable in accordance with the corresponding criteria of 10 CFR 50.73(a)(2)(v)(D). Additional review resulted in an assumption that the gasket could have been out of position since installation in 2012; therefore, this condition is also being reported in accordance with 10 CFR 50.73(a)(2)(i)(B) as a condition prohibited by Technical Specifications.

The cause was out of position door gaskets on the "A" Control Room Emergency Outside Air Supply (CREOAS) filter train due to inadequate installation. Corrective actions include repairing the door gaskets, performing a successful retest, and adding a step in the preventive maintenance activity when replacing the door gaskets to ensure the gasket is entirely glued into the channel such that the gasket is in contact with the entire channel.

There were no actual consequences to the health and safety of the public as a result of this event.

1. FACILITY NAME	2. DOCKET NUMBER	3. LER NUMBER		
		YEAR	SEQUENTIAL NUMBER	REV NO.
Susquehanna Steam Electric Station Unit 1	05000387	2017	- 006	- 01

NARRATIVE

CONDITIONS PRIOR TO EVENT

Unit 1 – Mode 1, approximately 100 percent Rated Thermal Power

Unit 2 – Mode 1, approximately 100 percent Rated Thermal Power

EVENT DESCRIPTION

On October 6, 2017 at 1945 hours, a loss of Control Room Habitability Envelope (CRHE) [EIIS System Identifier: NA] was declared due to failing to meet Technical Specification (TS) 3.7.3, Surveillance Requirement (SR) 3.7.3.4 during surveillance testing. Specifically, during testing of the "A" Control Room Emergency Outside Air Supply (CREOAS) train [EIIS System Identifier: VI], the unfiltered inleakage was determined to be 222 cubic feet per minute (cfm) plus a test uncertainty of 458 cfm for a total of 680 cfm. This value exceeded the allowable inleakage value of 500 cfm. The CRHE is required to be maintained such that occupants can control the reactor safely under normal conditions and maintain it in a safe condition following a radiological event, hazardous chemical release, or a smoke challenge. Technical Specification (TS) 3.7.3, Required Action B.1, required immediate initiation of action to implement mitigating actions. The mitigating actions included the ability to issue potassium iodide (KI) to the control room staff and Emergency Plan responders. An adequate supply was verified to be available. Required Action B.2 required that, within 24 hours, the mitigating actions be verified to ensure CRE occupant exposures to radiological, chemical, and smoke hazards will not exceed limits. Toxic chemical analysis and smoke infiltration analysis assume normal ventilation operation and are not invalidated by the failed SR 3.7.3.4 results for the CRE. Analyses of dose impact determined that, with issuance of KI in accordance with procedures and an unfiltered inleakage of 800 cfm, the dose consequence to the control room operators and affected Emergency Plan personnel is substantially less than the regulatory limit of 5 Rem Total Effective Dose Equivalent (TEDE) for event duration.

Smoke testing was completed to identify sources of leakage. Leakage was identified from the filter train and fan plenum doors of the "A" CREOAS filter train. The door gaskets were found to be out of position. The gaskets had been replaced in 2012 and 2013 (between November 26, 2012 and November 27, 2013) as part of a preventive maintenance activity. The gaskets on the filter train and the fan plenum door were repaired.

On November 30, 2017, a re-test was performed that resulted in acceptable results (165 cfm ± 328 cfm).

On October 6, 2017, at 2146 hours, this condition was reported (ENS #53003) in accordance with 10 CFR 50.72(b)(3)(v)(D) as an event or condition that, at the time of discovery, could have prevented the fulfillment of the safety function needed to mitigate the consequences of an accident. This is also reportable in accordance with the corresponding criteria of 10 CFR 50.73(a)(2)(v)(D). In addition, since the gaskets are assumed to have been out of position since installation in 2012/2013, this condition is being reported in accordance with 10 CFR 50.73(a)(2)(i)(B) as a condition prohibited by TS 3.7.3 due to not meeting SR 3.7.3.4.

CAUSE OF EVENT

The direct cause was the door gaskets being out of position on the "A" CREOAS filter train. During removal, the gaskets were not flush with the door and were glued to a single spot on the top, middle and bottom section of the gasket strip. The gaskets likely rolled out of position due to not being completely glued onto the surface of the channel. The exact point in time of when the gaskets rolled out of position cannot be determined. Since there is no evidence that the personnel opened the filter train doors causing the gaskets to roll out of position after installation of the gaskets in 2012 and 2013, it is conservatively assumed that the gasket rolled out of position during the gasket replacement.

ANALYSIS/SAFETY SIGNIFICANCE

During the October 2017 tracer gas testing of the CREOAS trains, the unfiltered inleakage with the 'A' CREOAS train in operation was determined to be 680 cfm (including measurement uncertainty). Operation of CREOAS is assumed in two Final Safety Analysis Report (FSAR) Chapter 15 dose consequence analyses (Fuel Handling Accident and Design Basis Accident – Loss of Coolant Accident (DBA-LOCA)).

The Fuel Handling Accident calculation was performed using 700 cfm of unfiltered inleakage to bound the October 2017 testing results. The results of this analysis showed dose consequence to the control room operator remained less than the regulatory limit of 5 Rem TEDE.

The DBA-LOCA analysis was also performed using 700 cfm of unidentified inleakage to bound the October 2017 testing results. In the analysis, a bounding measured value from 2011 through 2017 was used for the Engineered Safety Features (ESF) recirculation leakage while other assumptions (e.g. secondary containment bypass leakage, containment leakage) were maintained at the design values in order to preserve the conservatism of the calculation. The results of this analysis showed dose consequence to the control room operator remained less than the regulatory limit of 5 Rem TEDE.

Based on engineering analysis of the event, the limiting dose consequences remained within the regulatory limit of 5 Rem TEDE and the Control Room Habitability Envelope (CRHE) remained capable of performing its safety function. This event will not be counted as a safety system functional failure (SSFF) for the NRC performance indicator based on the engineering analysis supporting the system's ability to fulfill the safety function.

CORRECTIVE ACTIONS

The key corrective action is as follows:

1. The gaskets on the filter train and the fan plenum door were repaired.
2. A re-test was performed that resulted in acceptable results.
3. A step in the work scope of the preventive maintenance activity for replacing the gaskets will be added to state, "Ensure gasket is entirely glued into the channel such that the gasket is in contact with the entire channel."

COMPONENT FAILURE INFORMATION

Information for gasket:
Manufacturer: Farr Company
Model: N-228

PREVIOUS SIMILAR EVENTS

LER 50-387/2016-018-01, Inoperability of RCIC Due to an Oil Leak Caused by an Unidentified Gasket Issue", dated March 3, 2017 was similar in that the cause was related to a gasket issue.