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FEB 15 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 50-388(387)/2017-009-01
UNIT 1 LICENSE NO. NPF-14
UNIT 2 LICENSE NO. NPF-22
PLA-7667**

**Docket No. 50-387
50-388**

Attached is a supplement to Licensee Event Report (LER) 50-388(387)/2017-009-00. The LER reported an event involving the loss of Secondary Containment due to a trip of a Zone II Equipment Exhaust fan that was determined to be reportable in accordance with 10 CFR 50.73(a)(2)(v)(C) as a condition that could have prevented fulfillment of a safety function. This supplement includes additional information concerning the cause and corrective actions.

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.

A handwritten signature in blue ink, appearing to be "B. Berryman", with a long horizontal line extending to the right.

B. Berryman

Attachment: LER 50-388(387)/2017-009-01

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			
<div style="display: flex; justify-content: space-between; align-items: center;"> <div style="text-align: center;"> <p>LICENSEE EVENT REPORT (LER) (See Page 2 for required number of digits/characters for each block)</p> <p>(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/)</p> </div> <div style="font-size: 0.8em;"> <p>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.</p> </div> </div>										
1. FACILITY NAME Susquehanna Steam Electric Station Unit 2					2. DOCKET NUMBER 05000388			3. PAGE 1 OF 4		
4. TITLE Secondary Containment Declared Inoperable Due to Trip of Zone II Equipment Exhaust Fan										
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 Susquehanna Steam Electric Station Unit 1	DOCKET NUMBER 05000387
09	16	2017	2017	- 009	- 01	02	15	2018	FACILITY NAME	DOCKET NUMBER 05000
9. OPERATING MODE 1			11. THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (Check all that apply)							
			<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)	
10. POWER LEVEL 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 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 C. E. Manges, Jr., Senior Engineer - Nuclear Regulatory Affairs								TELEPHONE NUMBER (Include Area Code) (570) 542-3089		
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	VA	CDMP	T265	Y	X	VA	FS	U075	Y	
14. SUPPLEMENTAL REPORT EXPECTED <input type="checkbox"/> YES (If yes, complete 15. EXPECTED SUBMISSION DATE) <input checked="" type="checkbox"/> NO					15. EXPECTED SUBMISSION DATE					
					MONTH DAY YEAR					
ABSTRACT (Limit to 1400 spaces, i.e., approximately 15 single-spaced typewritten lines)										
<p>On September 16, 2017 at approximately 13:30, when performing a swap to place the Unit 2 "A" Reactor Building Equipment Compartment Exhaust fan (2V206A) in service, the fan tripped unexpectedly after being placed in service. Reactor Building differential pressure lowered to < 0.25 inches water gauge (WG) due to the unexpected trip of 2V206A. As a result, Technical Specification 3.6.4.1 Surveillance Requirement 3.6.4.1.1 was not met due to loss of Secondary Containment differential pressure. The 2V206B fan was placed back in service and Reactor Building differential pressure was restored to above 0.25 inches WG.</p> <p>The condition is being reported in accordance with 10 CFR 50.73(a)(2)(v)(C) as an event or condition that could have prevented fulfillment of a safety function.</p> <p>The failure was not able to be replicated during investigation. The direct cause is inconclusive. A failure modes analysis was completed to identify the likely cause of the fan trip. Potential causes include one of the following: the flow control damper linkages binding, the low flow switch failing to reset, or the "A" and "B" fans running in parallel long enough to result in a low flow trip. A corrective action was identified to address each of these potential causes including greasing the linkages, testing the low flow switch reset and replacing the switch if necessary, and enhancing the affected procedures.</p> <p>There were no actual consequences to the health and safety of the public as a result of this event.</p>										

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

(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. LER NUMBER		
Susquehanna Steam Electric Station Unit 2	05000388	YEAR 2017	SEQUENTIAL NUMBER - 009	REV NO. - 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

There were no structures, systems, or components that were inoperable at the start of the event that contributed to the event.

EVENT DESCRIPTION

On September 16, 2017, a plant operator identified belts associated with the Unit 2 “B” Reactor Building Equipment Compartment Exhaust fan (2V206B) [EIS System/Component Identifier: VA/FAN] slipping and a hot burnt rubber smell in the area. The operator recommended swapping fans to place the “A” fan (2V206A) in service.

At approximately 13:30, when performing the swap to place the 2V206A fan in service, the 2V206A fan tripped unexpectedly after being placed in service. Reactor Building [EIS System Code: NG] differential pressure lowered to < 0.25 inches water gauge (WG). As a result, Technical Specification 3.6.4.1 Surveillance Requirement 3.6.4.1.1 was not met due to loss of Secondary Containment differential pressure. The 2V206B fan was placed back in service and Reactor Building differential pressure was restored to above 0.25 inches WG.

On September 16, 2017, at 15:53, this condition was reported (ENS #52973) in accordance with 10 CFR 50.72(b)(3)(v)(C) as an event or condition that, at the time of discovery, could have prevented the fulfillment of the safety function to mitigate the consequences of an accident by controlling the release of radioactive material. Susquehanna Steam Electric Station (SSES) has no redundant Secondary Containment System.

CAUSE OF EVENT

The failure was not able to be replicated during investigation. The direct cause is inconclusive.

A failure modes analysis was completed to identify the likely cause of the fan trip. Potential causes include the following:

1. Linkages on Flow Control Damper PDD27522A [EIS System/Component Identifier: VA/CDMP] could have been binding and prevented the damper from going open.
2. Low Flow Switch FSL27522A [EIS System/Component Identifier: VA/FS] could have failed to reset during the 2V206A start.

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		2017	- 009	- 01

3. The procedure section for performing a fan swap includes the following caution statement: "Minimizing time between start of standby fan and subsequent shutdown of running fan will prevent low flow trip to occur. Low flow trip will occur if fans remain in parallel for approx. 30 seconds". Operator interviews indicated the discharge damper took longer than expected to open. The fans may have been running in parallel for longer than 30 seconds.

ANALYSIS/SAFETY SIGNIFICANCE

Based on engineering analysis of the event, secondary containment could have performed its safety function of isolating as assumed in the accident analysis and of re-establishing 0.25 inches of vacuum WG (drawdown) within the assumed accident analysis time (10 minutes).

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

Due to the definitive cause being inconclusive, the remaining potential failure modes identified as unlikely are being addressed to minimize or eliminate an event similar to this. Corrective actions include the following:

1. Linkages on Flow Control Damper PDD27522A will be greased to reduce the probability of binding from occurring.
2. The reset for the Low Flow Switch FSL27522A will be tested to address the potential of an intermittent failure. If the reset test is unsatisfactory, the low flow switch will be replaced.
3. The caution statement in the applicable Unit 1 and 2 procedures will be revised to state "Leaving fans operating in parallel may cause a low flow trip. Securing a fan should be performed as soon as the discharge damper indicates dual position. Low flow trip will occur if flow remains below trip setpoint of 18,000 scfm for approximately 30 seconds."

COMPONENT FAILURE INFORMATION

Information for Flow Control Damper PDD27522A:

Manufacturer: Trane
Model: CF40A3SW3CCUBSX

Information for Low Flow Switch FSL27522A

Manufacturer: United Electric Controls
Model: J-6-142-9515

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		2017	- 009	- 01

PREVIOUS SIMILAR EVENTS

The following are recent related LERs involving loss of secondary containment:

LER 50-388(387)/2017-007-00, "Secondary Containment Declared Inoperable Due to Supply Air Flow," dated October 9, 2017.

LER 50-388(387)/2017-006-00, "Secondary Containment Declared Inoperable Due to Trip of Zone II Exhaust Fan," dated September 6, 2017.

LER 50-387(388)/2017-004-00, "Secondary Containment Declared Inoperable Due to Failure of an Exhaust Fan Breaker," dated August 4, 2017.

LER 50-388(387)/2017-005-00, "Secondary Containment Declared Inoperable Due to Trip of Zone III Filtered Exhaust Fan," dated August 18, 2017.

LER 50-387(388)/2017-003-00, "Loss of Secondary Containment Zone 3 Due to Fan Trip," dated May 5, 2017.

LER 50-388(387)/2016-006-00, "Loss of Secondary Containment Due to Damper Controller Sticking," dated November 17, 2016.

LER 50-388(387)/2016-003-00, "Secondary Containment Inoperability Due to Failure to Meet Surveillance Requirement 3.6.4.1.1," dated June 17, 2016.

LER 50-387(388)/2016-012-00, "Unit 2 HVAC Unable to Maintain Differential Pressure," dated May 26, 2016.

LER 50-387(388)/2016-003-00, "Unit 2 Zone 3 HVAC Unable to Maintain Differential Pressure," dated May 6, 2016.

LER 50-387(388)/2015-013-00, "Loss of Secondary Containment Due to Failure of Fans," dated February 2, 2016.

LER 50-387(388)/2015-012-00, "Loss of Secondary Containment Differential Pressure Due to Icing of the Intake Supply Plenum Screens," dated February 2, 2016.

LER 50-387(388)/2015-010-00, "Loss of Zone 2 During Unit 1 Reactor SCRAM," dated January 8, 2016.

LER 50-387(388)/2015-005-00, "Loss of Secondary Containment Due to Unit 2 Damper Alignment," dated June 25, 2015.

LER 50-387(388)/2015-002-00, "Loss of Secondary Containment due to failure of running fans," dated June 10, 2015.