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TALEN ENERGY

MAY 19 2016

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)/2016-008-00
UNIT 1 LICENSE NO. NPF-14
UNIT 2 LICENSE NO. NPF-22
PLA-7477

Docket No. 50-387
50-388

Attached is Licensee Event Report (LER) 50-387(388)/2016-008-00. The LER reports an event involving misalignment of contacts on a Mechanism-Operated Cell (MOC) switch associated with the "A" diesel generator output breaker. This event was determined to be reportable in accordance with 10 CFR 50.73(a)(2)(i)(B) as a condition prohibited by Technical Specifications and 10 CFR 50.73(a)(2)(v)(D) as a condition that could have prevented fulfilment of a safety function.

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.

J. A. Franke

Attachment: LER 50-387(388)/2016-008-00

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

NRC FORM 366 (11-2015) U.S. NUCLEAR REGULATORY COMMISSION

APPROVED BY OMB: NO. 3150-0104 EXPIRES: 10/31/2018

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.

LICENSEE EVENT REPORT (LER)

(See Page 2 for required number of digits/characters for each block)

1. FACILITY NAME	2. DOCKET NUMBER	3. PAGE
Susquehanna Steam Electric Station Unit 1	05000387	1 of 4

4. TITLE

Inoperability of Diesel Generator Due to Misalignment of MOC Switch Contacts Due to Inadequate Post Maintenance Testing

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
04	01	2016	2016	- 008	- 00	05	19	2016	FACILITY NAME	DOCKET NUMBER 05000

9. OPERATING MODE	11. THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: *(Check all that apply)*			
5	☐ 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)
	☐ 20.2203(a)(2)(ii)	☐ 50.36(c)(1)(ii)(A)	☐ 50.73(a)(2)(v)(A)	☐ 73.71(a)(4)
10. POWER LEVEL	☐ 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)
000	☐ 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 NUMER *(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
D	EK	SWGR	Westinghouse	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 April 1, 2016 at 20:24, Unit 2 entered Technical Specification 3.8.1 due to the A Diesel Generator (DG) being inoperable due to misaligned contacts on a Mechanism-Operated Cell (MOC) switch resulting in Fan 1V222A starting without a time delay. Based upon review of the history and cause, the condition likely existed since the supply breaker was replaced on July 19, 2010. The A DG was still able to perform its intended safety function; however, since the condition results in inability to meet Surveillance Requirement 3.8.1.18, the A DG must be considered inoperable during periods when 1V222A would have been available to start (without a time delay). As a result, this event is reportable as a condition prohibited by Technical Specifications, in accordance with 10CFR50.73(a)(2)(i)(B), since the inoperability is assumed to have existed for a period of time greater than allowed by the Technical Specifications. A review of historical information for the last three years identified instances in which one of the other DGs (B, C, or D) was inoperable. Based on this information, this condition is also reportable as a condition that could have prevented fulfillment of a safety function in accordance with 10CFR50.73(a)(2)(v)(D).

The direct cause of the MOC switch contacts not aligning properly was mis-adjustment of the MOC switch linkage. The apparent cause of the MOC switch contacts not aligning properly is inadequate post maintenance testing (PMT) for the breaker swap because PMT did not check MOC switch contact alignment. Procedures will be revised to include visual inspection to ensure the MOC switch contacts are properly aligned during post maintenance testing.

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

NRC FORM 366A (11-2015) U.S. NUCLEAR REGULATORY COMMISSION

APPROVED BY OMB: NO. 3150-0104 EXPIRES: 10/31/2018

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LICENSEE EVENT REPORT (LER) CONTINUATION SHEET

1. FACILITY NAME	2. DOCKET NUMBER	3. LER NUMBER		
		YEAR	SEQUENTIAL NUMBER	REV NO.
Susquehanna Steam Electric Station, Unit 1	05000387	2016	- 008	- 00

NARRATIVE

CONDITIONS PRIOR TO EVENT

Unit 1 – Mode 5, 0 percent Rated Thermal Power

Unit 2 – Mode 1, 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 other than the failed component itself.

EVENT DESCRIPTION

On April 1, 2016 at 20:24, Unit 2 entered Technical Specification (TS) 3.8.1 due to the A Diesel generator (DG) [EIIS System/Component Identifier: EK/DG] being inoperable due to the misaligned contacts [EIIS Component Identifier: CNTR] on the Mechanism-Operated Cell (MOC) switch. Based upon review of the history and cause, the condition likely existed since the supply breaker [EIIS Component Identifier: BKR] was replaced on July 19, 2010. A detailed timeline is provided below:

On July 19, 2010, Supply Breaker 1A20104 for the A DG was replaced during routine preventive maintenance activities.

On May 12, 2012, the timer (62X1A20104) [EIIS Component Identifier: TMR] associated with the Emergency Switchgear and Load Center Cooling Supply Fan (1V222A) [EIIS Component Identifier: FAN] immediately went to run without a time delay during performance of the Unit 1 Division I LOCA/LOOP test. The acceptance criterion for this timer is greater than or equal to 54 seconds. The timer was replaced. Post maintenance testing (PMT) was an abbreviated test performed by simulating the LOOP logic via a jumper and confirming the fan started after an appropriate time delay.

On April 17, 2014, during performance of Unit 1 Division I LOCA/LOOP testing, 1V222A started without a time delay. The timer was replaced. PMT was an abbreviated test to ensure the timer's delay was correct.

On April 25, 2014, during re-performance of LOCA/LOOP testing, 1V222A failed to give proper indication during bus stripping and bus re-energization, but the timing acceptance criterion was met. Possible wiring issues were investigated but none were found.

On March 23, 2016 at 13:36, Timer 62X1A20104 failed acceptance criteria during LOCA/LOOP testing as a result of 1V222A starting without a time delay. In accordance with the TS Bases, operability of the associated AC sources can be restored by rendering the affected load inoperable; Fan 1V222A was shut down by taking the hand switch to STOP. Extensive troubleshooting was performed to determine the cause, and on April 1, 2016, it was determined that the contacts on MOC Switch S1 in Breaker 1A20104 were not properly aligned.

On April 1, 2016 at 20:24, Unit 2 entered TS 3.8.1 due to the A DG being inoperable due to the misaligned contacts on the MOC switch. Unit 1 was in a refuel outage (Mode 5) and did not require the A DG; therefore, TS 3.8.2 was not entered on Unit 1.

On April 2, 2016 at 19:37, the A DG was declared Operable and Unit 2 exited TS 3.8.1 after MOC switch linkage adjustments were made and the contacts were cleaned.

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1. FACILITY NAME	2. DOCKET NUMBER	3. LER NUMBER		
		YEAR	SEQUENTIAL NUMBER	REV NO.
Susquehanna Steam Electric Station, Unit 1	05000387	2016	- 008	- 00

NARRATIVE

Based upon review of the history and cause, there is firm evidence that the condition existed since the supply breaker was replaced on July 19, 2010. As noted in the safety significance section, the A DG was still able to perform its intended safety function; however, since the condition results in inability to meet Surveillance Requirement 3.8.1.18, the A DG must be considered inoperable during periods when 1V222A would have been available to start (without a time delay). As a result, this event is reportable as a condition prohibited by Technical Specifications, in accordance with 10CFR50.73(a)(2)(i)(B), since the inoperability is assumed to have existed for a period of time greater than allowed by the Technical Specifications. A review of historical information for the last three years identified instances in which one of the other DGs (B, C, or D) was inoperable. Based on this information, this condition is also reportable as a condition that could have prevented fulfillment of a safety function in accordance with 10CFR50.73(a)(2)(v)(D).

CAUSE OF EVENT

The direct cause of the MOC switch contacts not aligning properly was mis-adjustment of the MOC switch linkage. The apparent cause of the MOC switch contacts not aligning properly is inadequate post maintenance testing (PMT) for the breaker swap because PMT did not check MOC switch contact alignment.

ANALYSIS/SAFETY SIGNIFICANCE

Actual Consequences:

As a result of declaring the A DG inoperable, Unit 2 entered a 72 hour shutdown action in accordance with TS 3.8.1. This TS entry caused Unit 2 EOOS to be Yellow. Unit 1 was in Mode 5 and the A DG was not required for Unit 1; therefore TS 3.8.2 was not entered. Due to the minimal loading resulting from 1V222A, there was no impact on the ability of the A DG to perform its safety function. Other loads such as Core Spray and RHR were proven to have the correct time delay during the performance of Unit 1 Division I LOCA/LOOP testing on March 23, 2016.

Potential Consequences:

If the issue was not resolved within 72 hours, Unit 2 would have had to initiate shutdown activities.

CORRECTIVE ACTIONS

Key corrective actions will include the following:

1. Revising procedures to include visual inspection to ensure the MOC switch contacts are properly aligned during post maintenance testing.

COMPONENT FAILURE INFORMATION

Westinghouse Porcelain Metal Clad Switchgear Type DH-P Housing

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CONTINUATION SHEET

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Susquehanna Steam Electric Station, Unit 1	05000387	2016	- 008	- 00

NARRATIVE

PREVIOUS SIMILAR EVENTS

The following are Susquehanna MOC switch issues identified within the past 10 years:

CR-1071573 – On September 9, 2008, 13.8kV Bus 10 failed to transfer due to an open contact in the circuit, which was a MOC switch on the 13kV Breaker. Troubleshooting found that the MOC switches were preloaded and that the pantograph was not moving freely. The linkage was adjusted; pantograph was cleaned, adjusted and lubricated so that it would not bind and so that all contacts were making up properly.

CR-1308123 – On September 28, 2010, a minimum flow valve did not auto open due to MOC switch contacts not fully making up. The condition was corrected by adjusting the MOC switch operating rod in order to have the contacts make up.