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TALEN ENERGY

January 9, 2024

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

10 CFR 50.73

SUSQUEHANNA STEAM ELECTRIC STATION
LICENSEE EVENT REPORT 50-387/2023-004-00
UNIT 1 LICENSE NO. NPF-14
PLA-8097

Docket No. 50-387

Attached is Licensee Event Report (LER) 50-387/2023-004-00. The LER reports an event involving a manual scram due to degrading main condenser vacuum. The condition is being reported in accordance with 10 CFR 50.73(a)(2)(iv)(A) as an event that resulted in a manual actuation of the Reactor Protection System (including a reactor scram).

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

This letter contains no new or revised regulatory commitments.

E. Casulli

Attachment: LER 50-387/2023-004-00

Copy: NRC Region I
Ms. J. England, NRC Senior Resident Inspector
Mr. C. Highley, NRC Senior Resident Inspector
Ms. A. Klett, NRC Project Manager
Mr. M. Shields, PA DEP/BRP

NRC FORM 366 (10-01-2023) U.S. NUCLEAR REGULATORY COMMISSION

APPROVED BY OMB: NO. 3150-0104 EXPIRES: 03/31/2024

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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/)

1. Facility Name		2. Docket Number	3. Page
Susquehanna Steam Electric Station Unit 1	☒ 050 ☐ 052	00387	1 OF 3

4. Title

Manual Reactor Scram Due to Degraded Main Condenser Vacuum

5. Event Date			6. LER Number			7. Report Date			8. Other Facilities Involved		
Month	Day	Year	Year	Sequential Number	Revision No.	Month	Day	Year	Facility Name	☐ 050	Docket Number
11	10	2023	2023	- 004 -	00	01	09	2024	Facility Name	☐ 052	Docket Number

9. Operating Mode	10. Power Level
1	100

11. This Report is Submitted Pursuant to the Requirements of 10 CFR §: *(Check all that apply)*

10 CFR Part 20	☐ 20.2203(a)(2)(vi)	**10 CFR Part 50**	☐ 50.73(a)(2)(ii)(A)	☐ 50.73(a)(2)(viii)(A)	☐ 73.1200(a)
☐ 20.2201(b)	☐ 20.2203(a)(3)(i)	☐ 50.36(c)(1)(i)(A)	☐ 50.73(a)(2)(ii)(B)	☐ 50.73(a)(2)(viii)(B)	☐ 73.1200(b)
☐ 20.2201(d)	☐ 20.2203(a)(3)(ii)	☐ 50.36(c)(1)(ii)(A)	☐ 50.73(a)(2)(iii)	☐ 50.73(a)(2)(ix)(A)	☐ 73.1200(c)
☐ 20.2203(a)(1)	☐ 20.2203(a)(4)	☐ 50.36(c)(2)	☑ 50.73(a)(2)(iv)(A)	☐ 50.73(a)(2)(x)	☐ 73.1200(d)
☐ 20.2203(a)(2)(i)	**10 CFR Part 21**	☐ 50.46(a)(3)(ii)	☐ 50.73(a)(2)(v)(A)	**10 CFR Part 73**	☐ 73.1200(e)
☐ 20.2203(a)(2)(ii)	☐ 21.2(c)	☐ 50.69(g)	☐ 50.73(a)(2)(v)(B)	☐ 73.77(a)(1)	☐ 73.1200(f)
☐ 20.2203(a)(2)(iii)		☐ 50.73(a)(2)(i)(A)	☐ 50.73(a)(2)(v)(C)	☐ 73.77(a)(2)(i)	☐ 73.1200(g)
☐ 20.2203(a)(2)(iv)		☐ 50.73(a)(2)(i)(B)	☐ 50.73(a)(2)(v)(D)	☐ 73.77(a)(2)(ii)	☐ 73.1200(h)
☐ 20.2203(a)(2)(v)		☐ 50.73(a)(2)(i)(C)	☐ 50.73(a)(2)(vii)		

☐ **OTHER** (Specify here, in abstract, or NRC 366A).

12. Licensee Contact for this LER

Licensee Contact	Phone Number (Include area code)
Andy Sabisch - Nuclear Regulatory Affairs	570-542-1461

13. Complete One Line for each Component Failure Described in this Report

Cause	System	Component	Manufacturer	Reportable to IRIS		Cause	System	Component	Manufacturer	Reportable to IRIS

14. Supplemental Report Expected		15. Expected Submission Date	Month	Day	Year
☐ No	☑ Yes (If yes, complete 15. Expected Submission Date)		06	28	2024

16. Abstract (Limit to 1326 spaces, i.e., approximately 13 single-spaced typewritten lines)

On November 10, 2023, at approximately 01:18, Susquehanna Steam Electric Station Unit 1 reactor was manually scrammed due to degrading Main Condenser vacuum caused by a failed turbine bearing waste water and oil drain. The event was reported by Event Notification 56846 in accordance with 10 CFR 50.72(b)(2)(iv)(B) and 10 CFR 50.72(b)(3)(iv)(A). This event is also reportable in accordance with 10 CFR 50.73(a)(2)(iv)(A) as an event that resulted in a manual actuation of the Reactor Protection System (including a reactor scram).

A cause evaluation is in progress. A supplement will be issued to provide information regarding the cause of the condition and corrective actions.

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

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/)

1. FACILITY NAME		2. DOCKET NUMBER	3. LER NUMBER		
			YEAR	SEQUENTIAL NUMBER	REV NO.
Susquehanna Steam Electric Station Unit 1	■ 050 ☐ 052	00387	2023	- 004	- 00

NARRATIVE

CONDITIONS PRIOR TO EVENT

Unit 1 - Mode 1, approximately 100% Rated Thermal Power
Unit 2 - Mode 1, approximately 100% Rated Thermal Power

Vacuum rapidly degraded on the Susquehanna Steam Electric Station (SSES) Unit 1 Main Condenser, which resulted in the need for a manual reactor scram.

EVENT DESCRIPTION

On November 10, 2023, SSES Unit 1 was manually scrammed due to degraded Main Condenser [EIIS System Code/ Component Code: SG/COND] vacuum caused by a failed turbine bearing waste water and oil drain [EIIS System Code/ Component Code: TF/DRN]. The following is a timeline of significant events associated with the scram:

November 10, 2023, at approximately 01:06 - Unit 1 Main Condenser vacuum was rapidly degrading along with indication of high offgas flow. A Recirculation Limiter 2 runback was inserted to lower reactor power. Main Condenser vacuum continued to degrade following the reduction in reactor power to approximately 70%.

November 10, 2023, at approximately 01:18 - A manual scram was inserted when Main Condenser vacuum reached 6 inches of mercury absolute. Plant response to the scram was per design, Reactor Protection System (RPS) [EIIS System Code: JC] channels all tripped and maintained the scram signal for the required 10 second period. Reactor Water Level lowered to -25" following the scram. Reactor Water Level 3 (+13 inch) containment isolation system signals were received and went to completion. The feedwater system [EIIS System Code: SJ] remained in service as the primary Reactor Pressure Vessel [EIIS System Code/Component Code: AC/RPV] water level control system. There were no Emergency Diesel Generator [EIIS System Code/Component Code: EK/DG] starts or Safety Relief Valve [EIIS System Code/ Component Code: SB/RV] actuations during the event.

The event was reported by Event Notification 56846 in accordance with 10 CFR 50.72(b)(2)(iv)(B) and 10 CFR 50.72(b)(3)(iv)(A). This event is also reportable in accordance with 10 CFR 50.73(a)(2)(iv)(A) as an event that resulted in a manual actuation of the RPS (including a reactor scram).

CAUSE OF EVENT

A cause evaluation of the failure mechanism is in progress. A supplement will be issued to provide information regarding the cause of the condition following examinations to be performed during the spring 2024 Unit 1 refueling outage.

ANALYSIS/SAFETY SIGNIFICANCE

The actual consequences from the drain leaking air into the Unit 1 Main Condenser were degraded Unit 1 Main Condenser vacuum, a forced down power, and subsequent manual scram.

Without prompt operator action, an automatic scram would have been initiated. Additionally, High Pressure Coolant Injection (EIIS System Code: BJ) System and Reactor Core Isolation Cooling (EIIS System Code: BN) System could have initiated which would require initiating support systems as well as adding additional heat to the suppression pool. This would have necessitated using the Residual Heat Removal (EIIS System Code: BJ) System in Suppression Pool Cooling mode to transfer the suppression pool heat to the spray pond.

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/)

APPROVED BY OMB: NO. 3150-0104 EXPIRES: 03/31/2024

1. FACILITY NAME		2. DOCKET NUMBER	3. LER NUMBER		
			YEAR	SEQUENTIAL NUMBER	REV NO.
Susquehanna Steam Electric Station Unit 1	■ 050 ☐ 052	00387	2023	- 004	- 00

NARRATIVE

Based on the results of a risk significance evaluation, this event is classified as having "very low" safety significance. It should also be noted that this manual scram was uncomplicated, did not require Emergency Core Cooling System initiation, and Main Steam Isolation Valves remained open (i.e. the main condenser remained available as the primary heat sink).

The condition described herein did not result in a Safety System Functional Failure. Accordingly, this event will not be counted as a Safety System Functional Failure in the Reactor Oversight Process Performance Indicators. There were no actual consequences to the health and safety of the public as a result of this event.

CORRECTIVE ACTIONS
Corrective actions will be provided in the supplement to this LER.

COMPONENT FAILURE INFORMATION
Component failure information, as applicable, will be provided in the supplement to this LER.

PREVIOUS OCCURRENCES
Previous occurrences, as applicable, will be provided in the supplement to this LER.