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TALEN ENERGY

December 05, 2022

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

10 CFR 50.73

SUSQUEHANNA STEAM ELECTRIC STATION
LICENSEE EVENT REPORT 50-387/2022-002-01
UNIT 1 LICENSE NO. NPF-14
PLA-8037

Docket No. 50-387

Attached is Licensee Event Report (LER) 50-387/2022-002-01. The LER supplement reports an event involving an automatic scram due to a Reactor Protection System actuation on high reactor pressure as a result of a Main Steam Isolation Valve closure. The condition is being reported in accordance with 10 CFR 50.73(a)(2)(iv)(A) as an event that resulted in automatic actuation of a system listed in 10 CFR 50.73(a)(2)(iv)(B).

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.

D LAMARCA FOR K CIMORELLI

K. Cimorelli

Attachment: LER 50-387/2022-002-01

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

NRC FORM 366 (08-2020) U.S. NUCLEAR REGULATORY COMMISSION

APPROVED BY OMB: NO. 3150-0104 EXPIRES: 08/31/2023

LICENSEE EVENT REPORT (LER)

(See Page 3 for required number of digits/characters for each block)

(See NUREG-1022, R.3 for instruction and guidance for completing this form https://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	05000387	1 of 3

4. Title

Automatic Reactor Scram Due to Reactor Protection System Actuation on High Reactor Vessel Pressure Signal Following Inadvertent Closure of Inboard Main Steam Isolation Valve

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
										05000
05	23	2022	2022	- 002 -	01	12	05	2022	Facility Name	Docket Number
										05000

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)	☐ 50.36(c)(2)	☒ 50.73(a)(2)(iv)(A)	☐ 50.73(a)(2)(x)
☐ 20.2201(b)	☐ 20.2203(a)(3)(i)	☐ 50.46(a)(3)(ii)	☐ 50.73(a)(2)(v)(A)	**10 CFR Part 73**
☐ 20.2201(d)	☐ 20.2203(a)(3)(ii)	☐ 50.69(g)	☐ 50.73(a)(2)(v)(B)	☐ 73.71(a)(4)
☐ 20.2203(a)(1)	☐ 20.2203(a)(4)	☐ 50.73(a)(2)(i)(A)	☐ 50.73(a)(2)(v)(C)	☐ 73.71(a)(5)
☐ 20.2203(a)(2)(i)	**10 CFR Part 21**	☐ 50.73(a)(2)(i)(B)	☐ 50.73(a)(2)(v)(D)	☐ 73.77(a)(1)(i)
☐ 20.2203(a)(2)(ii)	☐ 21.2(c)	☐ 50.73(a)(2)(i)(C)	☐ 50.73(a)(2)(vii)	☐ 73.77(a)(2)(i)
☐ 20.2203(a)(2)(iii)	**10 CFR Part 50**	☐ 50.73(a)(2)(ii)(A)	☐ 50.73(a)(2)(viii)(A)	☐ 73.77(a)(2)(ii)
☐ 20.2203(a)(2)(iv)	☐ 50.36(c)(1)(i)(A)	☐ 50.73(a)(2)(ii)(B)	☐ 50.73(a)(2)(viii)(B)	
☐ 20.2203(a)(2)(v)	☐ 50.36(c)(1)(ii)(A)	☐ 50.73(a)(2)(iii)	☐ 50.73(a)(2)(ix)(A)	

☐ **Other** (Specify here, in Abstract, or in NRC 366A).

12. Licensee Contact for this LER

Licensee Contact	Phone Number (Include Area Code)
Peggy Kramer, Regulatory Affairs Engineer	(570) 542-3131

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
X	LK	TBG	Swagelok	Y					

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

16. Abstract (Limit to 1560 spaces, i.e., approximately 15 single-spaced typewritten lines)

At approximately 17:16 on May 23, 2022, Susquehanna Steam Electric Station, Unit 1, experienced an automatic reactor scram. Reactor Protection System (RPS) was actuated on a high reactor vessel pressure signal due to inadvertent closure of an inboard Main Steam Isolation Valve (MSIV) (HV141F022D). All control rods inserted, and operators placed the mode switch to shut down. All safety systems responded as designed during this event.

Event Notification 55909 reported this event in accordance with 10 CFR 50.72(b)(2)(iv)(A), 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 automatic actuation of a system listed in 10 CFR 50.73(a)(2)(iv)(B).

The cause of the scram was due to a loss of pneumatic pressure resulting in closure of an inboard MSIV (HV141F022D) which resulted in a high reactor vessel pressure signal and valid RPS actuation. The loss of pneumatic pressure occurred due to high cycle fatigue induced failure, most likely from vibration, of the 3/8" Containment Instrument Gas tubing. Affected tubing was replaced and the weld on 3/8" tubing to HV141F022D was repaired.

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

NARRATIVE

CONDITIONS PRIOR TO EVENT

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

EVENT DESCRIPTION

At approximately 17:16 on May 23, 2022, Susquehanna Steam Electric Station, Unit 1, experienced an automatic reactor scram. Reactor Protection System (RPS) [EIIS System Code: JC] was actuated on a high reactor vessel pressure signal due to inadvertent closure of an inboard Main Steam Isolation Valve (MSIV) (HV141F022D) [EIIS System/Component Codes: SB/ISV] following loss of pneumatic pressure. All control rods inserted, and operators placed the mode switch to shut down.

Containment isolations [JM] and both Reactor Recirculation Pump [AD/P] trips occurred as reactor water level dropped below the Anticipated Transient Without Scram – Reactor Pump Trip logic setpoint. High Pressure Coolant Injection [BJ] and Reactor Core Isolation Cooling [BN] initiated as designed when the reactor water level lowered. Subsequently, operators maintained reactor water level within normal band using Reactor Feedwater [SJ]. All other safety systems responded as designed.

Event Notification 55909 reported this event in accordance with 10 CFR 50.72(b)(2)(iv)(A), 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 automatic actuation of a system listed in 10 CFR 50.73(a)(2)(iv)(B).

CAUSE OF EVENT

The cause of the scram was due to a loss of pneumatic pressure resulting in inadvertent closure of an inboard MSIV (HV141F022D) which resulted in a high reactor vessel pressure signal and valid RPS actuation. The loss of pneumatic pressure occurred due to high cycle fatigue induced failure, most likely from vibration, of the 3/8” Containment Instrument Gas [LK] tubing [TBG].

ANALYSIS/SAFETY SIGNIFICANCE

The actual consequence of this event was an automatic reactor scram. All safety systems responded as designed during this event. Residual Heat Removal [BO] and Residual Heat Removal Service Water [BI] remained available to remove residual heat. No fuel or clad damage occurred during the scram, as evidenced by Main Steam Line and Off-Gas radiation levels decreasing post-scram. All applicable systems were available to control the release of any radioactive material. All safety systems were available to mitigate the consequences of an accident.

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

CORRECTIVE ACTIONS

The sheared tubing was replaced, and pneumatic control restored to the inboard MSIV (HV141F022D). Additionally, an extent of condition visual exam and liquid penetrant examination were completed on the other three (3) Unit 1 inboard MSIVs. The outboard MSIVs are a different configuration, as such this failure mode is not applicable. Additional actions will be taken to perform an extent of condition review on the Unit 2 applicable MSIVs as well.

Additionally, Susquehanna will develop and implement, as needed, a Passive Single Point Vulnerability Mitigation Strategy for inboard MSIV Containment Instrument Gas tubing.

COMPONENT FAILURE INFORMATION

Component Name – Containment Instrument Gas supply line from header JCD-115 to line HCC-137
Component Identification – JCD-118
Part Number – SS-600-6
Manufacturer - Swagelok

PREVIOUS OCCURRENCES

None.