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SEP 16 2005

U. S. Nuclear Regulatory Commission
Attn: Document Control Desk
Mail Stop OP1-17
Washington, DC 20555

**SUSQUEHANNA STEAM ELECTRIC STATION
LICENSEE EVENT REPORT 50-388/2005-005-01
LICENSE NO. NPF-22
PLA-5953**

Docket No. 50-388

Licensee Event Report (LER) 50-388/2005-005, "Reactor Automatic Scram due to a Main Generator Lockout" was submitted August 5, 2005 in accordance with 10 CFR 50.73(a)(2)(iv)(A). The attached Revision 1 provides supplemental information regarding the root cause and corrective actions to prevent recurrence that were not available at the time of the original LER submittal.

No commitments are associated with this LER.

Robert Saccone
Vice President – Nuclear Operations

Attachment

IE22

cc: Mr. S. Collins
Regional Administrator
U. S. Nuclear Regulatory Commission
475 Allendale Road
King of Prussia, PA 19406

Mr. F. W. Jaxheimer
Sr. Resident Inspector
U. S. Nuclear Regulatory Commission
P.O. Box 35
Berwick, PA 18603-0035

Mr. R. Osborne
Allegheny Electric Cooperative
P. O. Box 1266
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Mr. R. R. Janati
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P. O. Box 8469
Harrisburg, PA 17105-8469

Estimated burden per response to comply with this mandatory collection request: 50 hours. Reported lessons learned are incorporated into the licensing process and fed back to industry. Send comments regarding burden estimate to the Records and FOIA/Privacy Service Branch (T-5 F52), U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001, or by internet e-mail to infocollects@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 reverse for required number
of digits/characters for each block)

1. FACILITY NAME Susquehanna Steam Electric Station Unit 2

2. DOCKET NUMBER
050003883. PAGE
1 OF 3

4. TITLE Reactor Automatic Scram due to a Main Generator Lockout

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
6	6	2005	2005	005	01	9	16	2005	FACILITY NAME	DOCKET NUMBER

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"/> 20.2201(d) <input type="checkbox"/> 20.2203(a)(1) <input type="checkbox"/> 20.2203(a)(2)(i) <input type="checkbox"/> 20.2203(a)(2)(ii) <input type="checkbox"/> 20.2203(a)(2)(iii) <input type="checkbox"/> 20.2203(a)(2)(iv) <input type="checkbox"/> 20.2203(a)(2)(v) <input type="checkbox"/> 20.2203(a)(2)(vi)	<input type="checkbox"/> 20.2203(a)(3)(i) <input type="checkbox"/> 20.2203(a)(3)(ii) <input type="checkbox"/> 20.2203(a)(4) <input type="checkbox"/> 50.36(c)(1)(i)(A) <input type="checkbox"/> 50.36(c)(1)(ii)(A) <input type="checkbox"/> 50.36(c)(2) <input type="checkbox"/> 50.46(a)(3)(ii) <input type="checkbox"/> 50.73(a)(2)(i)(A) <input type="checkbox"/> 50.73(a)(2)(i)(B)	<input type="checkbox"/> 50.73(a)(2)(i)(C) <input type="checkbox"/> 50.73(a)(2)(ii)(A) <input type="checkbox"/> 50.73(a)(2)(ii)(B) <input type="checkbox"/> 50.73(a)(2)(iii) <input checked="" type="checkbox"/> 50.73(a)(2)(iv)(A) <input type="checkbox"/> 50.73(a)(2)(v)(A) <input type="checkbox"/> 50.73(a)(2)(v)(B) <input type="checkbox"/> 50.73(a)(2)(v)(C) <input type="checkbox"/> 50.73(a)(2)(v)(D)	<input type="checkbox"/> 50.73(a)(2)(vii) <input type="checkbox"/> 50.73(a)(2)(viii)(A) <input type="checkbox"/> 50.73(a)(2)(viii)(B) <input type="checkbox"/> 50.73(a)(2)(ix)(A) <input type="checkbox"/> 50.73(a)(2)(x) <input type="checkbox"/> 73.71(a)(4) <input type="checkbox"/> 73.71(a)(5) <input type="checkbox"/> OTHER Specify in Abstract below or in NRC Form 366A
10. POWER LEVEL 100%				

12. LICENSEE CONTACT FOR THIS LER

FACILITY NAME	TELEPHONE NUMBER (Include Area Code)
Dayne R. Brophy, Senior Engineer – Nuclear Regulatory Affairs	(570) 542-3365

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

14. SUPPLEMENTAL REPORT EXPECTED

☐ YES (If yes, complete 15. EXPECTED SUBMISSION DATE)
 ☒ NO
15. EXPECTED
SUBMISSION
DATE

MONTH	DAY	YEAR

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

At 1233 hours on 6/6/2005 with Unit 2 operating in Mode 1 at 100% power, the reactor automatically scrammed as a result of a turbine trip from a generator lockout. The main generator excitation system had failed to positively respond to changes to the offsite grid, which resulted in a loss of generator field, causing the lockout. Although plant data was inconclusive in determining what initiated the event, the most probable cause was an increased resistance in the main generator exciter field circuitry. Based on the unplanned actuation of RPS, this event was determined to be reportable under 10 CFR 50.72, reference ENS Notification EN #41746.

Following the automatic scram, two Main Steam Safety Relief Valves opened and then closed to initially control reactor pressure. The Main Steam Bypass Valves were subsequently able to control pressure. Several balance of plant systems were impacted by the generator voltage perturbation but there were no unusual electrical transients or challenges to the station's safety-related electrical systems. All plant safety systems responded per design. Reactor water level dropped to -6 inches and was restored to +35 inches by normal feedwater level control. There were no challenges to containment or evidence of fuel failure. The automatic scram was an unplanned actuation of a system designed to mitigate the consequences of a significant event and is reportable per 10 CFR 50.73(a)(2)(iv)(A).

This event resulted in no actual adverse consequences to the health and safety of the public.

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Susquehanna Steam Electric Station Unit 2	05000388	YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	2 OF 3
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17. NARRATIVE (If more space is required, use additional copies of NRC Form 366A)

PLANT CONDITIONS AT TIME OF EVENT

Unit 1, Mode 1, 100%

Unit 2, Mode 1, 100%

EVENT DESCRIPTION

At 1233 hours on 6/6/2005 with Unit 2 in Mode 1 at 100% power, the reactor automatically scrammed as result of a turbine trip from a main generator (EISS Code: TB) lockout. The main generator exciter (EISS Code: TL) voltage regulator circuit had failed to positively respond to changes to the offsite grid which resulted in a loss of exciter field, causing the lockout. The most probable cause was an increased resistance in the generator exciter field circuitry. This led to an inability of the system to properly respond to the grid changes.

All control rods inserted and all safety systems responded as designed in response to the automatic scram. Immediately following the scram, two Safety Relief Valves (EISS Code: SB) opened and then properly reseated in response to the transient. The Main Steam Bypass Valves were subsequently able to control reactor pressure. Reactor water level dropped to -6 inches and was restored to +35 inches by normal feedwater level control. Several balance of plant systems were impacted by the generator voltage perturbation but there were no unusual electrical transients or challenges to the station's safety-related electrical systems. There also were no challenges to containment or evidence of fuel failure. The event was determined to be reportable under 10 CFR 50.72, reference ENS Notification EN #41746.

The automatic scram was an unplanned actuation of a system designed to mitigate the consequences of a significant event and is reportable per 10 CFR 50.73(a)(2)(iv)(A).

This event resulted in no actual adverse consequences to the health and safety of the public.

CAUSE OF THE EVENT

On June 6, 2005 when Unit 2 experienced changes in the offsite grid, the generator output voltage decreased in response to this change. The generator excitation system output voltage that controls generator output, also decreased as designed. The controlling circuitry for the excitation system has a minimum voltage requirement for it to perform properly, thereby maintaining stable operation of the system. Because of an increased resistance in the circuitry, the actual minimum voltage required for stable operation was higher than an established value. When voltage dropped below the actual minimum voltage requirement, the excitation system was no longer capable of properly functioning, resulting in a loss of exciter field.

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17. NARRATIVE (If more space is required, use additional copies of NRC Form 366A)

ANALYSIS / SAFETY SIGNIFICANCEActual Consequences

The actuation of the generator lockout caused a turbine trip, resulting in a reactor scram. All control rods inserted and safety systems functioned as designed. The health and safety of the public was not affected.

Potential Consequences

Challenges to nuclear safety can result from equipment failure or human errors during recovery of the reactor to normal shutdown conditions. The potential consequence results in a negligible increase in the probabilistic risk to the health and safety of the public.

CORRECTIVE ACTIONSCompleted Actions

- 1) Inspected generator voltage regulator circuit for potential faults/failures.
- 2) Replaced possible degraded potentiometer in voltage regulator circuitry.
- 3) Changed the existing minimum exciter voltage limit setting to increase the range of generator voltages to which the regulator circuitry can respond.

Planned Actions

- 1) On Unit 1 and Unit 2, identify high resistance paths in the voltage regulator circuits and correct.

ADDITIONAL INFORMATION

None