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AUG 02 2000

U.S. Nuclear Regulatory Commission  
Attn: Document Control Desk  
Mail Station P1-137  
Washington, DC 20555

SUSQUEHANNA STEAM ELECTRIC STATION  
LICENSEE EVENT REPORT 50-388/00-003-00  
PLA - 5221 FILE R41-2

Docket No. 50-388  
License No. NPF-22

Attached is Licensee Event Report 50-388/00-003-00. This report is being made pursuant to 10.CFR50.73(a)(2)(iv) as a result of an unplanned actuation of an Engineered Safety Feature (ESF) caused by an inadvertent loss of power on the 'B' Reactor Protection System bus.

Bryce L. Shriver  
Vice President – Nuclear Site Operations

Attachment

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

cc: Mr. S. L. Hansell  
Sr. Resident Inspector  
U.S. Nuclear Regulatory Commission  
P. O. Box 35  
Berwick, PA 18603-0035

IE22

EXPIRES 06/30/2001

## LICENSEE EVENT REPORT (LER)

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

ESTIMATED BURDEN PER RESPONSE TO COMPLY WITH THIS MANDATORY INFORMATION COLLECTION REQUEST: 50.0 HRS. REPORTED LESSONS LEARNED ARE INCORPORATED INTO THE LICENSING PROCESS AND FED BACK TO INDUSTRY. FORWARD COMMENTS REGARDING BURDEN ESTIMATE TO THE INFORMATION AND RECORDS MANAGEMENT BRANCH (T-6 F33), U.S. NUCLEAR REGULATORY COMMISSION, WASHINGTON, DC 20555-0001, AND TO THE PAPERWORK REDUCTION PROJECT (3150-0104), OFFICE OF MANAGEMENT AND BUDGET, WASHINGTON, DC 20503.

FACILITY NAME (1)

Susquehanna Steam Electric Station - Unit 2

DOCKET NUMBER (2)

05000388

PAGE (3)

1 OF 3

TITLE (4)

Inadvertent ESF Actuation Caused By Loss Of RPS Power Supply

EVENT DATE (5)			LER NUMBER (6)			REPORT DATE (7)			OTHER FACILITIES INVOLVED (8)	
MONTH	DAY	YEAR	YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	MONTH	DAY	YEAR	FACILITY NAME	DOCKET NUMBER
07	04	00	00	-- 003 --	00	08	02	00	FACILITY NAME	DOCKET NUMBER
										05000
OPERATING MODE (9)		1	THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (Check one or more) (11)							
POWER LEVEL (10)		100	20.2201(b)		20.2203(a)(2)(v)		50.73(a)(2)(i)		50.73(a)(2)(viii)	
			20.2203(a)(1)		20.2203(a)(3)(i)		50.73(a)(2)(ii)		50.73(a)(2)(x)	
			20.2203(a)(2)(i)		20.2203(a)(3)(iii)		50.73(a)(2)(iii)		73.71	
			20.2203(a)(2)(ii)		20.2203(a)(4)		X 50.73(a)(2)(iv)		OTHER	
			20.2203(a)(2)(iii)		50.36(c)(1)		50.73(a)(2)(v)		Specify in Abstract below or in NRC Form 366A	
			20.2203(a)(2)(iv)		50.36(c)(2)		50.73(a)(2)(vii)			

## LICENSEE CONTACT FOR THIS LER (12)

NAME

Gerard M. Machalick - Senior Engineer, Licensing

TELEPHONE NUMBER (Include Area Code)

570 / 542-3861

## COMPLETE ONE LINE FOR EACH COMPONENT FAILURE DESCRIBED IN THIS REPORT (13)

CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO EPIX		CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO EPIX
X	JC	ECBD	G082	Y						

## SUPPLEMENTAL REPORT EXPECTED (14)

SUPPLEMENTAL REPORT EXPECTED (14)				EXPECTED SUBMISSION DATE (15)	MONTH	DAY	YEAR
YES (If yes, complete EXPECTED SUBMISSION DATE).	X	NO					

## ABSTRACT (Limit to 1400 spaces, i.e., approximately 15 single-spaced typewritten lines) (16)

While operating at 100% power on July 4, 2000, Susquehanna Unit 2 experienced a half scram and containment isolations due to an unexpected loss of the 'B' Reactor Protection System (RPS) bus. The loss of power was caused by a voltage transient on the output of the RPS Motor-Generator (MG), which resulted in a trip of the RPS MG output breaker. All Engineered Safety Feature (ESF) actuations occurred as intended per plant design. The cause of the event was a failure of the RPS MG voltage regulator, causing generator output voltage to decrease. Corrective actions include replacement of the failed voltage regulator, failure analysis of the failed component, revision of the preventive maintenance replacement frequency for all four RPS MG voltage regulators installed at Susquehanna, and an evaluation of design changes to improve reliability of the components. This event is reportable as an inadvertent invalid actuation of an ESF per 10CFR50.73(a)(2)(iv). The safety significance of this event is low, and the health and safety of the public was not compromised.

# **LICENSEE EVENT REPORT (LER)**

## **TEXT CONTINUATION**

FACILITY NAME (1)	DOCKET	LER NUMBER (6)			PAGE (3)
	05000	YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	
Susquehanna Steam Electric Station - Unit 2	388	00	-- 003 --	00	2 OF 3

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

### **EVENT DESCRIPTION**

While operating at 100% power on July 4, 2000, Susquehanna Unit 2 experienced a half scram and containment isolations due to an unexpected loss of the 'B' Reactor Protection System (RPS; EIS Code: JC) bus. The loss of power was caused by a voltage transient on the output of the RPS Motor-Generator (MG), which resulted in a trip of the RPS MG output breaker. All Engineered Safety Feature (ESF) actuations occurred as intended per plant design. The 'B' RPS bus was subsequently aligned to the alternate power supply and affected systems were restored to normal configuration.

### **CAUSE OF EVENT**

The cause of the event was a failure of the RPS MG voltage regulator, causing generator output voltage to decrease. Preliminary investigation indicates that components within the voltage regulator are failing due to the environmental factors of heat and vibration. Failure analysis will be conducted on the failed voltage regulator to identify the failure mechanism.

### **REPORTABILITY/ANALYSIS**

This event is reportable as an inadvertent invalid actuation of an ESF per 10CFR50.73(a)(2)(iv), based on the containment isolation actions which occurred as a result of the event. The event was not caused by a valid ESF actuation signal, and the containment isolations were not required to mitigate the consequences of a plant transient or accident. As a result, the safety significance of this event is low.

### **CORRECTIVE ACTIONS**

Corrective actions which have been completed are:

- Replaced the failed voltage regulator for the 'B' RPS MG.
- Revised the preventive maintenance frequency for RPS MG voltage regulator replacement from 6 years to 3 years.

Corrective actions which are to be completed:

- Perform failure analysis on the failed voltage regulator to identify the failure mechanism.
- Evaluate 3-year replacement frequency based on results of failure analysis.
- Evaluate design changes to RPS Motor-Generators to improve equipment reliability.

## TEXT CONTINUATION

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

**ADDITIONAL INFORMATION**

Past Similar Events:      Docket No. 50-388      LER 97-002-00  
LER 97-002-01

Failed Component:      Voltage Regulator Circuit Card on the Output of the 'B' RPS Motor-Generator