Bryce L. Shriver
Vice President – Nuclear Site Operations

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DEC 2 8 2000

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

SUSQUEHANNA STEAM ELECTRIC STATION
LICENSEE EVENT REPORT 50-388/00-005-00
PLA - 5271 FILE R41-2

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

Attached is Licensee Event Report 00-005-00. This event was determined reportable per 10CFR50.73(a)(2)(iv) in that unplanned actuations of Engineered Safety Features occurred due to the loss of the primary power supply to the Division 2 Reactor Protection System power distribution panel when the downstream Electrical Protection Assembly breaker tripped.

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

NRC FORM 366 (6-1998) U.S. NUCLEAR REGULATORY COMMISSION

APPROVED BY OMB NO. 3150-0104
EXPIRES 06/30/2001
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.

LICENSEE EVENT REPORT (LER)

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

FACILITY NAME (1)	DOCKET NUMBER (2)	PAGE (3)
Susquehanna Steam Electric Station - Unit 2	05000388	1 OF 4

TITLE (4)
ESF Actuations Due To RPS EPA Breaker Trip

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
										05000
12	05	00	00	-- 005 --	00	12	28	00	FACILITY NAME	DOCKET NUMBER
										05000

OPERATING MODE (9)	1
POWER LEVEL (10)	100

THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (Check one or more) (11)

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)(ii)	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	TELEPHONE NUMBER (Include Area Code)
Joseph J. Meter - Nuclear Licensing	570 / 542-1873

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	52	G080	Y					

SUPPLEMENTAL REPORT EXPECTED (14)

X	YES (If yes, complete EXPECTED SUBMISSION DATE).		NO

EXPECTED SUBMISSION DATE (15)	MONTH	DAY	YEAR
	06	15	01

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

At 07:00 on December 5, 2000 with Unit 2 in Mode 1 at 100% power, the primary power supply to the "B" Reactor Protection System (RPS) power distribution panel was lost when the downstream Electrical Protection Assembly (EPA) breaker tripped. This resulted in Primary Containment Isolation System actuations and other automatic system initiations. RPS as well as other plant systems and components functioned properly in response to the event. The "B" distribution panel was swapped to alternate power while investigation of the event took place. There were no indications of abnormalities and all isolation signals were reset by 08:15. The investigation resulted in replacement of the downstream EPA logic card. The primary power source EPA breakers were reset and aligned to the "B" distribution panel at 18:11 on 12/9/00. The suspect faulty downstream EPA logic card was returned to the manufacturer to determine cause of failure. The event is reportable under 10CFR50.73(a)(2)(iv) in that unplanned actuations of Engineered Safety Features occurred. Since all Engineered Safety Feature (ESF) systems and components functioned properly and per design, there were no safety consequences or compromises to the health or safety of the public.

FACILITY NAME (1)	DOCKET	LER NUMBER (6)			PAGE (3)
	05000	YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	
Susquehanna Steam Electric Station - Unit 2	388	00	-- 005 --	00	2 OF 4

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

EVENT DESCRIPTION

At 07:00 on December 5, 2000 with Unit 2 in Mode 1 at 100% power, the primary power supply to the "B" Reactor Protection System (RPS; EIIS Code: JC) power distribution panel was lost when the downstream Electrical Protection Assembly (EPA) breaker tripped. This power interruption resulted in an RPS Half-SCRAM, Primary Containment Isolation System (EIIS Code: JM) actuations and other automatic system initiations. RPS as well as other plant systems functioned as designed in response to the event. The major actuations were as follows:

1) Reactor Building HVAC (EIIS Code: VA) Zone II and Zone III (Unit 2) isolated.

2) Reactor Water Cleanup System (EIIS Code: CE) inlet isolation valves closed.

3) Cooling water isolation valves to the Reactor Recirculation Pumps (EIIS Code: CC) closed.

4) "A" & "B" Standby Gas Treatment Systems (EIIS Code: BH) auto initiated.

5) "A" Control Room Emergency Outside Air Supply System (EIIS Code: VI) auto initiated.

The "B" RPS distribution panel was supplied by alternate power while the Operations personnel reset isolation signals and the cause of the trip was investigated. All isolation signals were reset by 08:15. The primary power EPA breakers were reset and aligned to the "B" distribution panel at 18:11 on 12/9/00 after replacement of the downstream EPA logic card.

CAUSE OF EVENT

The loss of power to the "B" RPS bus was due to an unexpected trip of the downstream primary power supply EPA breaker. The upstream EPA breaker did not trip which is the expected system response. The EPA breakers are in series and a trip of an upstream breaker would cause the downstream breaker to trip also, because of power loss to the downstream breaker. However, a trip of the downstream breaker does not cause the upstream breaker to trip. Investigation by Maintenance personnel (non-licensed, utility) of the downstream EPA logic card and breaker concluded that the trip was caused by an intermittent failure of the downstream EPA logic card which could not be replicated onsite. The voltage of the Unit 2 "B" primary power supply was monitored for anomalies for several days. None were recorded. The downstream logic card was replaced. The suspect card was returned to the manufacturer to determine cause of intermittent failure.

REPORTABILITY/SAFETY CONSEQUENCES ANALYSIS

This event was determined to be reportable under 10CFR50.73(a)(2)(iv) in that unplanned actuations of Engineered Safety Features (ESF) occurred when the Unit 2 "B" primary power supply downstream RPS EPA breaker tripped.

The safety function of the EPA card and breaker assembly is to interrupt power to the RPS buses in the event of overvoltage, undervoltage, or under-frequency conditions. RPS is designed such that a loss of power to the RPS buses results in power loss to other protective logic, which in turn results in plant systems aligning to their safe, conservative positions.

Since all ESF systems and components functioned properly and per design, there were no safety consequences or compromises to the health or safety of the public.

At the time of the event, the reactor was in Mode 1 at 100% power and shutdown cooling was not required. Had this event occurred with the Unit in Cold Shutdown or Refueling, shutdown cooling would have been temporarily lost due to the automatic isolation of the RHR Shutdown Cooling suction line.

In accordance with the guidance provided in NUREG 1022, Revision 1, Section 5.1.1, the required submission date for this report is January 4, 2001.

CORRECTIVE ACTIONS

The following corrective actions for this event have been completed:

The "B" RPS bus was placed on its alternate power supply and all isolations were reset within 1 hour and 15 minutes of the downstream primary supply EPA breaker tripping. An investigation was commenced to determine the cause of the EPA breaker trip. The EPA logic card circuit and trip function of the downstream card was checked and found to be normal. The 'B' RPS Motor-Generator (M/G) set was found in a normal run condition with normal output voltage and the generator output breaker closed. Although an onsite investigation of the downstream EPA logic card did not indicate any failed components, it was concluded that the trip was caused by an intermittent failure on the card that could not be replicated onsite. The suspect card was replaced. The voltage of the Unit 2 "B" primary power supply was monitored for anomalies for several days. None were recorded.

The following corrective actions for this event will be completed:

The suspect EPA card was returned to the manufacturer to determine cause of the intermittent failure and the appropriate actions will be taken in response to the manufacturer's evaluation.

Historical corrective actions:

Approximately 6 years ago, efforts were completed to perform component lifetime upgrades for EPA logic cards with limited lifetimes used at the station. This effort was intended to ensure all EPA logic cards had acceptable component lifetimes to prevent intermittent failures. All EPA cards used at the station since that time either had component upgrades or were new models already containing upgraded components. Concurrent with the EPA card upgrades, modifications to decrease ambient temperatures within the EPA logic card cabinets were also completed to reduce temperature induced failures.

FACILITY NAME (1)	DOCKET	LER NUMBER (6)			PAGE (3)
	05000	YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	
Susquehanna Steam Electric Station - Unit 2	388	00	-- 005 --	00	4 OF 4

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

ADDITIONAL INFORMATION

Failed Component Information:

Component - EPA Logic Card

Model - 148C6118G003

Manufacturer - General Electric

Past Similar Events:

A review of past Licensee Event Reports (LERs) for the station identified thirteen previous events where spurious EPA breaker trips resulted in ESF actuations. This is the first event since significant preventative measures were taken to prevent spurious EPA breaker trips.

UNIT 1 (Docket No. 50-387/License No. NPF-14)

LER 92-007	LER 87-024
LER 92-001	LER 86-029
LER 91-006	LER 86-023
LER 91-004	LER 83-172
LER 90-005	

UNIT 2 (Docket No. 50-388/License No. NPF-22)

LER 91-008	LER 90-007
LER 91-007	LER 88-005