Bryce L. Shriver
Vice President – Nuclear Site Operations

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

SUSQUEHANNA STEAM ELECTRIC STATION
LICENSEE EVENT REPORT 50-387/00-010-00
PLA - 5241 FILE R41-2

Docket No. 50-387
License No. NPF-14

Attached is Licensee Event Report 50-387/00-010-00. This report is being made pursuant to 10.CFR50.73(a)(2)(i)(B), 50.73(a)(2)(ii) and 50.73(a)(2)(v) in that it was discovered that both trains of the Control Room Emergency Outside Air Supply System were rendered inoperable by operating the Control Room Smoke Removal System.

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 1	05000387	1 OF 3

TITLE (4)
Operation Of Control Room Smoke Removal Fans Causes Both Trains of Control Room Emergency Outside Air Supply To Be Inoperable

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
									Susquehanna SES - Unit 2	05000388
08	24	00	00	-- 010 --	00	09	25	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)	X	50.73(a)(2)(i)		50.73(a)(2)(viii)
		20.2203(a)(1)	20.2203(a)(3)(i)	X	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)		50.73(a)(2)(iv)		OTHER
		20.2203(a)(2)(iii)	50.36(c)(1)	X	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)
Gerard M. Machalick – Senior Engineer, Licensing	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

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)

On August 24, 2000, with Unit 1 and Unit 2 in Mode 1 (Power Operation) at 100% power, control room operators observed the control structure at a negative differential pressure due to the operation of the Control Room Smoke Removal system. The smoke removal system was in service to exhaust odors resulting from welding associated with modification activities on ventilation ducts that were generated the previous day. It was later recognized that operation of the smoke removal system rendered both trains of the Control Room Emergency Outside Air Supply System (CREOASS) inoperable, which are required to maintain a positive pressure in the control structure in accident scenarios. The root cause of this event is personnel error, for failing to implement appropriate design changes or administrative controls on smoke removal system operation when the condition was identified in 1980. Corrective actions include revising the smoke removal system operating procedure to identify the impact on CREOASS operability, review of all control structure ventilation systems to verify no other adverse interaction exists between ventilation components, operator training and a design basis review to ensure control room habitability envelope and fire protection program requirements are satisfied. This event is reportable per 10CFR50.73(a)(2)(v), 10CFR50.73(a)(2)(i)(B), and 10CFR50.73(a)(2)(ii). There were no adverse consequences to the health and safety of the public at any time during this event.

FACILITY NAME (1)	DOCKET	LER NUMBER (6)			PAGE (3)
	05000	YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	
Susquehanna Steam Electric Station - Unit 1	387	00	-- 010 --	00	2 OF 3

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

EVENT DESCRIPTION

On August 24, 2000, with Unit 1 and Unit 2 in Mode 1 (Power Operation) at 100% power, control room operators observed the control structure at a negative differential pressure due to the operation of the Control Room Smoke Removal System (SRS). The SRS was placed in service in accordance with operating procedures to exhaust odors resulting from welding associated with modification activities on ventilation ducts. The welding occurred on August 23 and was stopped when smoke and odors were noticed in the control room. The SRS operation was not a planned activity, but was initiated to improve the control room atmosphere. When the negative differential pressure was observed, the smoke removal fans were shut down and administrative controls were then established for SRS operation. It was later recognized that operation of the smoke removal system rendered both trains of the Control Room Emergency Outside Air Supply System (CREOASS; EIIS CODE: VI) inoperable, which are required to maintain a positive pressure in the control structure in accident scenarios.

CAUSE OF EVENT

Smoke Removal System operation establishes an excess of exhaust flow in the control room envelope, which CREOASS would be unable to overcome. There are no design features which would automatically trip the SRS if CREOASS were initiated, nor were there administrative means in place to manually shutdown the system in that situation. Control room personnel did not recognize that the operation of the SRS would render the CREOASS inoperable. Operating procedures and operator training did not identify the adverse impact on CREOASS of operating the SRS. The purpose of the SRS is to exhaust smoke and gas after a fire has been extinguished in the control structure. The system is not intended to be operated during accident conditions. In 1980 it was identified that the smoke removal fans did not trip and dampers did not isolate in the event that CREOASS initiated. The evaluation of this situation concluded that multiple errors in damper and fan switch operation when aligning the system was highly unlikely during normal plant operation, but failed to identify operating restrictions to avoid adverse impacts on CREOASS operability. The root cause of this event is personnel error (utility, non-licensed), for failing to fully evaluate the situation and for failing to implement appropriate design changes or administrative controls on SRS operation.

REPORTABILITY/SAFETY SIGNIFICANCE

The event is reportable per 10CFR50.73(a)(2)(v), Event or Condition That Alone Could Prevent Fulfillment of a Safety Function, 10CFR50.73(a)(2)(i)(B), Technical Specification Prohibited Operation, and 10CFR50.73(a)(2)(ii), Operating Plant Found in Degraded or Unanalyzed Condition (Outside Design Basis). The CREOASS is required to be operable in Design Basis Accident (DBA) scenarios to provide a positive differential pressure in the control room. When a positive differential pressure condition is maintained, air infiltration is inhibited, limiting the radiation dose to control room operators during a DBA event. Because operation of the SRS would have prevented both trains of CREOASS from performing their safety function, this event constitutes a loss of safety system and operation outside of design basis per the guidance in NUREG-1022, Revision 1. Susquehanna Technical Specification LCO 3.7.3 requires

entry into LCO 3.0.3 if both trains of CREOASS are unavailable. LCO 3.0.3 requires action to initiate plant shutdown within 1 hour. The SRS was operated for greater than 2 hours, which constitutes an operation prohibited by the plant's Technical Specifications.

In the event that a DBA occurred when the SRS was in service, the CREOASS would not have been able to maintain a positive differential pressure in the control room envelope. This may have resulted in exceeding 10CFR50 Appendix A limits for control room personnel radiation exposure. A mitigating factor is that control room radiation monitors and alarms would identify higher than expected radiation levels, and it is likely that the situation would be corrected before dose limits were exceeded, limiting the significance of the event. Loss of the CREOASS safety function would not result in consequences to public health and safety. The CREOASS is not included in Susquehanna's Individual Plant Evaluation because there is no impact on Core Damage Frequency or Large Early Release Frequency due to CREOASS failure.

In accordance with the guidelines provided in NUREG-1022, Revision 1, the required submission date for this report is September 25, 2000.

CORRECTIVE ACTIONS

Corrective actions which have been completed are:

- Operability of both trains of the CREOASS was restored by stopping the operation of the smoke removal system.
- The operating procedure for the smoke removal system was revised to identify the impact on CREOASS operability.
- A design review of all control structure ventilation systems was conducted to verify no similar interaction exists for other ventilation components/subsystems.

Corrective actions which remain to be completed are:

- Operator training will be revised to include the operating impacts of the smoke removal system.
- A design basis review will be conducted for control structure ventilation system components and procedures to verify control room habitability envelope and fire protection program requirements are satisfied.

ADDITIONAL INFORMATION

Past Similar Events: None

Failed Component: None