

**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)  
Suppression Chamber Purge Valve Closure - Invalid ESF Actuation

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
4	3	98	98	-- 005	-- 00	5	4	98		05000
										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)(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)
Stephen J. Ellis - Senior Engineer, Licensing	717 / 542-3537

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

CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NPRDS	CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NPRDS
X	BB	RLY	G080	N					

SUPPLEMENTAL REPORT EXPECTED (14)

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

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

On April 3, 1998, at 1747 hours, with Unit 2 in Condition 1 (Power Operation) at 100% power, a Containment Atmospheric Control (CAC) valve used for Suppression Chamber purging was observed closed during a purging evolution. The CAC valve is a containment isolation valve, and thus its closure fulfills its design safety function, constituting an Engineered Safety Feature (ESF) actuation, reportable per 10CFR50.73(a)(2)(iv). It has been confirmed that no ESF initiation signal was present at the time the valve went closed. The cause of the valve closure was identified as high contact resistance on a set of relay contacts. The high resistance contacts allowed the relay to de-energize and the valve failed to the closed (safety) position. No adverse safety consequences occurred as a result of this closure, and safety significance was minimal. The health of the public was not compromised. The relay type, G.E. HMA, has a good operational history. The subject relay was cleaned, burnished, tested, and returned to service. One additional HMA relay, selected at random, was examined, but did not reveal any high resistance across its contacts. PP&L will evaluate the need for additional preventative maintenance activity for this style relay in the containment isolation circuitry.

9805140020 980504  
PDR ADDCK 05000388  
S PDR



1-4

**LICENSEE EVENT REPORT (LER)  
TEXT CONTINUATION**

FACILITY NAME (1)	DOCKET 05000	LER NUMBER (6)			PAGE (3)
		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	
Susquehanna Steam Electric Station - Unit 2	388	98	-- 005	-- 00	2 OF 3

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

**EVENT DESCRIPTION**

On April 3, 1998, at 1747 hours, with Unit 2 in Condition 1 (Power Operation) at 100% power, the Suppression Chamber Air Purge Valve, part of the Containment Atmospheric Control (CAC) System (EIS Code: BB), closed during a purge evolution. This CAC purge valve is a containment isolation valve and its closure fulfills its isolation function. The valve was re-opened following investigation for air leakage and it closed a second time. At this point, Operations entered the appropriate Limiting Condition for Operation (LCO) ACTION statement. Following this closure, a thorough investigation of the cause of the valve closure was initiated. It was confirmed that no isolation signal was present, nor was there any plant condition which would require this valve to isolate.

**CAUSE OF EVENT**

The cause of the valve closure has been identified as a high contact resistance on one set of relay contacts. The valve is a fail closed, normally closed valve. The relay in question energizes a solenoid that ports instrument air to the air actuator to overcome spring pressure which opens the valve. When the relay de-energized, as a result of the high contact resistance, the solenoid changed state, porting air out of the actuator, allowing the valve to fail closed under force of its actuator spring. No definitive cause for the high contact resistance was found, although a number of conditions could have contributed, the most likely being atmospheric conditions (humidity/dust) reacting with the relay contacts.

**REPORTABILITY/ANALYSIS**

As noted above, the CAC valve went closed during a purge evolution. This valve provides two design safety functions, containment isolation and suppression chamber purge isolation upon detection of a high radiation condition in the Standby Gas Treatment (EIS Code: BH) effluent. The event investigation confirmed no isolation signal was present, and the valve closed on an invalid actuation (i.e., equipment failure). Although the valve movement was not caused by a valid signal in this case, the closure of the valve is fulfillment of its design safety function, and is reportable as an Engineered Safety Feature (ESF) invalid actuation per 10CFR50.73(a)(2)(iv). The event investigation concluded that this is a random occurrence and there is no adverse safety impact. This conclusion is based on the operational history of this relay type (G.E. HMA). There are seven similar circuits in each unit, none of which have exhibited any similar problem, and the associated valves have a history of successful operation. There were no safety consequences to this event and the safety significance is minimal. The health and welfare of the public was not compromised.

In accordance with the guidelines provided in NUREG-1022, Revision 1, Section 5.1.1, the required submission date for this report was determined to be May 4, 1998.

**CORRECTIVE ACTIONS**

The contacts of the subject relay were cleaned and burnished, the relay was tested and then returned to service. The valve was successfully operated and the LCO cleared.



**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	98	-- 005	-- 00	3 OF 3

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

One other relay of the same type (G.E. HMA), selected at random, was examined, but did not reveal any high resistance. Based on the good operating history of this relay type, as well as the good valve operation history, no additional examination is required.

PP&L will evaluate the need to establish a preventative maintenance activity to inspect the HMA relays in the containment isolation circuitry.

**ADDITIONAL INFORMATION**

Past Similar Events: None

Failed Component: Relay: G.E. HMA  
Model #12HMA11B11



111