

Bryce L. Shriver
Vice President – Nuclear Site Operations

Susquehanna Steam Electric Station
P.O. Box 467, Berwick, PA 18603
Tel. 570.542.3120 Fax 570.542.1477
blshriver@papl.com



APR 24 2000

U.S. Nuclear Regulatory Commission
Attn: Document Control Desk
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SUSQUEHANNA STEAM ELECTRIC STATION
LICENSEE EVENT REPORT 50-387/00-003-00
PLA - 5188 FILE R41-2

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

Attached is Licensee Event Report 50-387/00-003-00. Multiple test failures were experienced during operating setpoint surveillance testing of Suppression Chamber-to-Drywell Vacuum Breakers. This report is being made pursuant to 10CFR50.73(a)(2)(i)(B) and NUREG-1022, Revision 1.

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

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

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 1

DOCKET NUMBER (2)

05000387

PAGE (3)

1 OF 3

TITLE (4)

Multiple Test Failures of Suppression Chamber-to-Drywell Vacuum Breakers

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
03	23	00	00	-- 003	-- 00	04	24	00	Susquehanna SES - Unit 2	05000388
									FACILITY NAME	DOCKET NUMBER
										05000
OPERATING MODE (9)		5	THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (Check one or more) (11)							
POWER LEVEL (10)		0	20.2201(b)		20.2203(a)(2)(v)		<input checked="" type="checkbox"/>		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)				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

SUPPLEMENTAL REPORT EXPECTED (14)

YES

(If yes, complete EXPECTED SUBMISSION DATE).

☒

NO

EXPECTED
SUBMISSION
DATE (15)

MONTH

DAY

YEAR

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

On March 23, 2000 with Unit 1 in Mode 5 (Refueling) and Unit 2 in Mode 1 (Power Operation) at 100% power, five of ten Unit 1 Suppression Chamber-to-Drywell Vacuum Breakers failed the opening setpoint surveillance test, required by Surveillance Requirement 3.6.1.6.3. The acceptable band for the opening setpoint is 0.250 to 0.525 psid. The five valves which failed had opening setpoints of 0.526 to 0.540 psid. The root cause of the event is ineffective corrective actions from previous events. Two appropriate actions had been identified during evaluations of previous events, but were not effectively captured in our corrective action process. Corrective actions include adjustments to the opening setpoint for all vacuum breakers and enhancements to our corrective action program. This event is reportable per 10CFR50.73(a)(2)(i)(B), operation or condition prohibited by the plant's Technical Specifications, based on the example provided in NUREG-1022, Revision 1 concerning multiple test failures. 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)
		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	
Susquehanna Steam Electric Station - Unit 1	05000 387	00	-- 003	-- 00	2 OF 3

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

EVENT DESCRIPTION

On March 23, 2000 with Unit 1 in Mode 5 (Refueling) and Unit 2 in Mode 1 (Power Operation) at 100% power, five of ten Unit 1 Suppression Chamber-to-Drywell Vacuum Breakers (vacuum breakers) failed the opening setpoint surveillance test, required by SR 3.6.1.6.3. The acceptable band for opening setpoint is 0.250 to 0.525 psid. The five valves which failed had opening setpoints of 0.526 to 0.540 psid.

CAUSE OF EVENT

The five Unit 1 vacuum breaker opening setpoint test failures were caused by setpoint drift. The most recent previous maintenance and testing activities were performed in March, 1998. The acceptable opening setpoint band at that time was 0.475-0.525 psid. Improved Technical Specifications (ITS) were implemented in October, 1998, and included a change to this opening setpoint band, widening the band to 0.250-0.525 psid. This wider band allows adjustment of the vacuum breakers lower in the opening setpoint band to accommodate setpoint drift. Since ITS was implemented after the last adjustment of the valves, the current refueling outage was the first opportunity to adjust the Unit 1 valves lower in the revised wider band.

REPORTABILITY/ANALYSIS

Surveillance Requirement 3.6.1.6.3 requires verifying the opening setpoint of the vacuum breakers from 0.250-0.525 psid, once every 24 months. Five of the ten vacuum breakers initially failed to open in this setpoint band. This event is reportable per 10CFR50.73(a)(2)(i)(B), operation or condition prohibited by the plant's Technical Specifications, based on the example provided in NUREG-1022, Revision 1 concerning multiple test failures.

The opening function of the vacuum breakers is to prevent excessive drywell negative pressure. The limiting accident analysis for these valves is an Inadvertent Spray Actuation – Drywell Depressurization (ISA), in which the vacuum breakers are assumed to begin to open at 1.80 psid. This analysis is based upon actual valve test data. The Technical Specification setpoint of 0.5 psid is based upon test data from an earlier configuration of the vacuum breakers, in which 1.0 psid was required across the valve system to begin opening. The valve system is two valves in series. The 0.5 psid setpoint is derived from the manufacturer's assumption that the 1.0 psid across the valve system was equally shared by the two valves (i.e., 0.50 psid across each valve).

The delta between the 1.80 psid as the pressure at which the valves start to open and the 1.0 psid assumed as the basis for the test limit represents the margin in the value used in the analysis. Applying the same assumption to the 1.8 psid assumed across the valve system in the ISA results in a value of 0.9 psid across each valve in the system. Therefore, 0.9 psid represents the highest opening pressure setpoint bounded by the accident analysis.

LICENSEE EVENT REPORT (LER)
TEXT CONTINUATION

FACILITY NAME (1)	DOCKET	LER NUMBER (6)			PAGE (3)
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TEXT (If more space is required, use additional copies of NRC Form 366A) (17)

The range of opening setpoints for the valves which failed the test in this event is 0.526-0.540 psid, which is slightly above the upper end of the T.S. setpoint band (0.525 psid). All of these valves opened significantly below the setpoint assumed in the accident analysis (0.9 psid), and would have functioned as intended in the event of any design basis accident.

Based on the evaluation above, the safety significance of this event is low, and the health and safety of the public was not compromised.

In accordance with the guidelines provided in NUREG-1022, Revision 1, the required submission date for this report is April 24, 2000.

Revision 1 to NUREG-1022, Event Reporting Guidelines included the addition of an example of multiple safety valves failing to pass setpoint testing. This was published in January, 1998. There have been two events of multiple vacuum breaker failures for the opening setpoint surveillance test since Revision 1 to NUREG-1022 has been in effect, which were not previously reported due to an administrative oversight. Our procedure which provides guidance on reportability determination has been revised to more clearly include the criteria for multiple test failures of NUREG-1022, Revision 1.

CORRECTIVE ACTIONS

Corrective actions that have been completed are:

- The acceptable opening setpoint band has been widened from 0.475-0.525 psid to 0.250-0.525 psid, allowing vacuum breaker opening setpoint adjustment lower to accommodate setpoint drift.
- All ten of the Unit 1 vacuum breakers have been adjusted and tested within the current acceptable opening setpoint band, at the lowest practical set pressure.

Corrective actions that are to be completed are:

- Revise the appropriate maintenance procedure to ensure future adjustments are made lower in the current acceptable opening setpoint band.
- Review results of next vacuum breaker opening setpoint surveillance testing to evaluate the effectiveness of revised maintenance strategy. Implement additional corrective actions, if appropriate.

ADDITIONAL INFORMATION

Past Similar Events Reported: None

Failed Component: None