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MAY 1 2002

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

SUSQUEHANNA STEAM ELECTRIC STATION
LICENSEE EVENT REPORT 50-387/2002-002-00
PLA - 5474 FILE R41-2

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

Attached is Licensee Event Report 50-387/2002-002-00, which discusses exceeding the Technical Specification limit for Main Steam Line valve leakage. This event is reportable in accordance with 10CFR50.73(a)(2)(ii)(A). This event had very low safety significance and there were no actual consequences to the health and safety of the public.

Richard Anderson for BLS

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 (7-2001)

U.S. NUCLEAR REGULATORY COMMISSION

APPROVED BY OMB NO. 3150-0104 EXPIRES 7-31-2004

Estimated burden per response to comply with this mandatory information collection request: 50 hours. Reported lessons learned are incorporated into the licensing process and fed back to industry. Send comments regarding burden estimate to the Records Management Branch (T-6 E6), U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001, or by internet e-mail to bjs1@nrc.gov, and to the Desk Officer, Office of Information and Regulatory Affairs, NEOB-10202 (3150-0104), Office of Management and Budget, Washington, DC 20503. If a means used to impose information collection does not display a currently valid OMB control number, the NRC may not conduct or sponsor, and a person is not required to respond to, the information collection.

LICENSEE EVENT REPORT (LER)

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

1. FACILITY NAME	2. DOCKET NUMBER	3. PAGE
Susquehanna Steam Electric Station - Unit 1	05000387	1 OF 3

4. TITLE

Main Steam Isolation Valve Total Leakage Exceeded Technical Specification Limit

5. EVENT DATE			6. LER NUMBER			7. REPORT DATE			8. OTHER FACILITIES INVOLVED	
MO	DAY	YEAR	YEAR	SEQUENTIAL NUMBER	REV NO	MO	DAY	YEAR	FACILITY NAME	DOCKET NUMBER
03	03	2002	2002	002	00	05	01	2002	Susq. SES - Unit 2	05000388
									FACILITY NAME	DOCKET NUMBER
										05000

9. OPERATING MODE	4
10. POWER LEVEL	0%

11. THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (Check all that apply)

	20.2201(b)		20.2203(a)(3)(ii)		50.73(a)(2)(ii)(B)		50.73(a)(2)(ix)(A)
	20.2201(d)		20.2203(a)(4)		50.73(a)(2)(iii)		50.73(a)(2)(x)
	20.2203(a)(1)		50.36(c)(1)(i)(A)		50.73(a)(2)(iv)(A)		73.71(a)(4)
	20.2203(a)(2)(i)		50.36(c)(1)(ii)(A)		50.73(a)(2)(v)(A)		73.71(a)(5)
	20.2203(a)(2)(ii)		50.36(c)(2)		50.73(a)(2)(v)(B)		OTHER Specify in Abstract below or in NRC Form 366A
	20.2203(a)(2)(iii)		50.46(a)(3)(ii)		50.73(a)(2)(v)(C)		
	20.2203(a)(2)(iv)		50.73(a)(2)(i)(A)		50.73(a)(2)(v)(D)		
	20.2203(a)(2)(v)		50.73(a)(2)(i)(B)		50.73(a)(2)(vii)		
	20.2203(a)(2)(vi)		50.73(a)(2)(i)(C)		50.73(a)(2)(viii)(A)		Maximum Power Level License Condition Exceeded
	20.2203(a)(3)(i)	X	50.73(a)(2)(ii)(A)		50.73(a)(2)(viii)(B)		

12. LICENSEE CONTACT FOR THIS LER

NAME	TELEPHONE NUMBER (Include Area Code)
Gerard M. Machalick - Nuclear Regulatory Affairs	570 / 542-3861

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

CAUSE	SYSTEM	COMPONENT	MANU-FACTURER	REPORTABLE TO EPIX	CAUSE	SYSTEM	COMPONENT	MANU-FA CTURER	REPORTABLE TO EPIX
B	SB	ISV	A585	Y					

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

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

On March 3, 2002 with Unit 1 in its twelfth refueling and inspection outage (Mode 4, Cold Shutdown; 0% Power), an evaluation of the data from the scheduled Main Steam Line (MSL) Local Leak Rate Testing determined that the as-found minimum pathway leakage for the Main Steam Isolation Valves (MSIV) exceeded the Technical Specification limit of 300 Standard Cubic Feet per Hour (SCFH). The total as-found MSL minimum pathway leakage, including subsequent test results from other valves in the MSL minimum pathway category, was 1065 SCFH. The cause of the MSIV leak rate test failures was a valve design that did not properly align seating surfaces during valve closure. Misalignment of the poppet to valve body seating surfaces allowed unacceptable leakage. Each MSIV has been modified with improved design features that will improve the MSIV alignment and sealing performance. This event is reportable as a degraded principal safety barrier per 10CFR50.73(a)(2)(ii)(A). Considering the results of extrapolation of design basis accident analysis, the projected dose results using realistic dose analysis, and the conservative nature of the test results, this event had very low safety significance. There were no actual consequences to the health and safety of the public as a result of this event.

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Susquehanna Steam Electric Station - Unit 1	05000387	2002	– 002 –	00	2 OF 3

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

EVENT DESCRIPTION

On March 3, 2002 with Unit 1 in its twelfth refueling and inspection outage (Mode 4, Cold Shutdown; 0% Power), an evaluation of the data from the scheduled Main Steam Line (MSL; EIIS Code: SB) Local Leak Rate Testing (LLRT) determined that the as-found minimum pathway leakage for the Main Steam Isolation Valves (MSIV; EIIS Code: BD) exceeded the Technical Specification limit of 300 Standard Cubic Feet per Hour (SCFH). The total as-found MSL minimum pathway leakage, including subsequent test results from other valves in the MSL minimum pathway category, was 1065 SCFH.

In order to accommodate extensive activities planned for all eight Unit 1 MSIVs during the refueling outage, the LLRT strategy employed an 'in-between' pressurized test for each of the four main steam lines, rather than individual tests on the valves. The test measured a leak rate for each pair of MSIVs, and this leak rate was conservatively assigned as the minimum pathway leakage for that penetration.

CAUSE OF EVENT

The cause of the MSIV leak rate test failures was a valve design that did not properly align seating surfaces during valve closure. Misalignment of the poppet to valve body seating surfaces allowed unacceptable leakage. There have been numerous leak rate test failures of MSIVs at Susquehanna. As a result of this historical trend, all eight Unit 1 MSIVs received extensive refurbishment and improvement during this outage.

ANALYSIS / SAFETY SIGNIFICANCE

The Technical Specification limit of 300 SCFH has been demonstrated in Design Basis Accident - Loss of Coolant Accident (DBA-LOCA) analysis to maintain accident doses to control room operators and members of the public less than regulatory limits. Extrapolation of the DBA-LOCA analysis for actual as-found leakage confirmed that doses to control room operators and to members of the public would remain within the regulatory limits.

Since the DBA uses very conservative assumptions such as fuel failure at the start of the accident, it is useful to consider the results of the realistic analysis to assess safety significance. Realistic analysis of the LOCA for the reported minimum pathway leakage indicates that actual doses would be less than one percent of the limits.

Due to the chosen test method, it is conservative to consider all of the measured leakage as minimum pathway leakage. The minimum pathway leak rate would normally be the smaller of the individual test results for each pair of isolation valves in a penetration. It is likely that each pair of valves had one valve that had more leakage than the other. If tests had been performed to measure each valve's leakage, the calculated minimum path leakage would likely have been less. Historical LLRT data supports this assessment.

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

Considering the results of extrapolation of DBA analysis, the projected dose results using realistic dose analysis and the conservative nature of the test results, this event had very low safety significance. There were no actual consequences to the health and safety of the public as a result of this event.

This event is reportable as a degraded principal safety barrier per 10CFR50.73(a)(2)(ii)(A). In accordance with guidance in NUREG-1022, Revision 2, the due date for this report is May 2, 2002.

CORRECTIVE ACTIONS

The corrective actions that have been completed will improve the MSIV alignment and sealing performance. Each Unit 1 MSIV has been modified with the following improved design features:

- Nose-guided poppet
- Stem and poppet anti-rotation feature
- Backseated poppet
- Floating pilot poppet
- Enhanced stem guide
- Single piece forged stem

These improvements have been recommended by the valve manufacturer and have improved MSIV performance and reliability at other plants.

The total as-left minimum path leakage measured after the modifications was approximately 10 SCFH for all four main steam lines.

All Unit 2 MSIVs are scheduled for the same improvements during the Spring, 2003 outage.

ADDITIONAL INFORMATION

Past Similar Events:	LER 50/387 2000-002-00 LER 50/388 1999-001-00
Failed Component:	MSIVs, HV-141F022A/B/C/D and HV-141F028A/B/C/D
Manufacturer:	Atwood and Morrill Co., Inc.
Model:	21190-H