Robert A. Saccone
Vice President – Nuclear Operations

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MAY 19 2005

U.S. Nuclear Regulatory Commission
Attn: Document Control Desk
Mail Stop OP1-17
Washington, DC 20555

SUSQUEHANNA STEAM ELECTRIC STATION
LICENSEE EVENT REPORT 50-388/2005-001-00
LICENSE NO. NPF-22
PLA-5893 **Docket No. 50-388**

Attached is Licensee Event Report (LER) 50-388/2005-001-00. This event was determined to be reportable per 10 CFR 50.73(a)(2)(ii)(A).

On March 20, 2005, during the performance of the Unit 2 ASME Class 1 Boundary Leakage Test, a socket weld at the connection to the bonnet vent piping for the "B" Reactor Recirculation Pump Discharge Valve HV243F031B was found leaking approximately 10 drops per minute. Subsequent investigation revealed a crack in the toe of the weld at the valve's bonnet vent socket weld. The connection was an abandoned piece of ¾-inch piping that contained a 16-inch long pipe stub that had been cut and capped in 1997 due to a previous vibration-induced weld failure. This condition constituted a degradation of the reactor coolant pressure boundary, and on March 21, 2005, an ENS Notification (#41506) was made to the NRC.

This event resulted in no actual adverse consequences to the health and safety of the public. No commitments are associated with this LER.

Robert Saccone
Vice President – Nuclear Operations

Attachment

IE22

cc: Mr. S. Collins
Regional Administrator
U.S. Nuclear Regulatory Commission
475 Allendale Road
King of Prussia, PA 19406

Mr. A. Blamey
Sr. Resident Inspector
U.S. Nuclear Regulatory Commission
P.O. Box 35
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Mr. R. Osborne
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P. O. Box 8469
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NRC FORM 366 (6-2004)

U.S. NUCLEAR REGULATORY COMMISSION

APPROVED BY OMB: NO. 3150-0104 EXPIRES: 06/30/2007

Estimated burden per response to comply with this mandatory 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 and FOIA/Privacy Service Branch (T-5 F52), U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001, or by internet e-mail to infocollects@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 an 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 2	05000388	1 OF 3

4. TITLE Degradation of Primary Coolant Pressure Boundary due to Recirculation Pump Discharge Valve Bonnet Vent Connection Weld Flaw

5. EVENT DATE			6. LER NUMBER			7. REPORT DATE			8. OTHER FACILITIES INVOLVED	
MONTH	DAY	YEAR	YEAR	SEQUENTIAL NUMBER	REV NO.	MONTH	DAY	YEAR	FACILITY NAME	DOCKET NUMBER
3	20	2005	2005	01	00	5	12	2005	FACILITY NAME	DOCKET NUMBER

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)
- ☐ 20.2201(d)
- ☐ 20.2203(a)(1)
- ☐ 20.2203(a)(2)(i)
- ☐ 20.2203(a)(2)(ii)
- ☐ 20.2203(a)(2)(iii)
- ☐ 20.2203(a)(2)(iv)
- ☐ 20.2203(a)(2)(v)
- ☐ 20.2203(a)(2)(vi)
- ☐ 20.2203(a)(3)(i)
- ☐ 20.2203(a)(3)(ii)
- ☐ 20.2203(a)(4)
- ☐ 50.36(c)(1)(i)(A)
- ☐ 50.36(c)(1)(ii)(A)
- ☐ 50.36(c)(2)
- ☐ 50.46(a)(3)(ii)
- ☐ 50.73(a)(2)(i)(A)
- ☐ 50.73(a)(2)(i)(B)
- ☐ 50.73(a)(2)(i)(C)
- ☒ 50.73(a)(2)(ii)(A)
- ☐ 50.73(a)(2)(ii)(B)
- ☐ 50.73(a)(2)(iii)
- ☐ 50.73(a)(2)(iv)(A)
- ☐ 50.73(a)(2)(v)(A)
- ☐ 50.73(a)(2)(v)(B)
- ☐ 50.73(a)(2)(v)(C)
- ☐ 50.73(a)(2)(v)(D)
- ☐ 50.73(a)(2)(vii)
- ☐ 50.73(a)(2)(viii)(A)
- ☐ 50.73(a)(2)(viii)(B)
- ☐ 50.73(a)(2)(ix)(A)
- ☐ 50.73(a)(2)(x)
- ☐ 73.71(a)(4)
- ☐ 73.71(a)(5)
- ☐ OTHER

Specify in Abstract below or in NRC Form 366A

12. LICENSEE CONTACT FOR THIS LER

FACILITY NAME	TELEPHONE NUMER *(Include Area Code)*
Dayne R. Brophy, Senior Engineer – Nuclear Regulatory Affairs	(570) 542-3365

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

CAUSE	SYSTEM	COMPONENT	MANU-FACTURER	REPORTABLE TO EPIX	CAUSE	SYSTEM	COMPONENT	MANU-FACTURER	REPORTABLE TO EPIX

14. SUPPLEMENTAL REPORT EXPECTED

☐ YES *(If yes, complete 15. EXPECTED SUBMISSION DATE)* ☒ NO

15. EXPECTED SUBMISSION DATE

MONTH	DAY	YEAR

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

On March 20, 2005, during the performance of the Unit 2 ASME Class 1 Boundary Leakage Test, a socket weld at the connection to the abandoned bonnet vent piping for the "B" Reactor Recirculation Pump Discharge Valve HV243F031B was found leaking approximately 10 drops per minute. Subsequent investigation revealed a crack in the toe of the weld at the valve's bonnet vent socket weld. The connection was an abandoned piece of ¾-inch piping that contained a 16-inch long pipe stub that had been cut and capped in 1997 due to a previous vibration-induced weld failure. This condition constituted a degradation of the reactor coolant pressure boundary, and on March 21, 2005, an ENS Notification (#41506) was made to the NRC.

The cause of the weld failure was due to inadequate implementation of GE SIL 512 recommendations. The cracked weld was repaired by removing the pipe stub and welding a plug directly into the bonnet connection. A new review of Unit 1 and Unit 2 recirculation lines identified by GE SIL 512 will be performed. The original Recirculation gate valve vent, drain, and stem leak-off lines, previously abandoned will be plugged at the welded joint. Other vibration-prone small bore piping will also be evaluated for susceptibility to weld cracking and corrective actions taken as necessary to prevent future weld failures. There were no safety consequences or compromises to public health and safety as a result of the failed weld.

LICENSEE EVENT REPORT (LER)

1. FACILITY NAME	2. DOCKET	6. LER NUMBER			3. PAGE
		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	
Susquehanna Steam Electric Station Unit 2	05000388	2005	-- 01	-- 00	2 OF 3

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

PLANT CONDITIONS AT TIME OF EVENT

Unit 1, Mode 1, 100%
Unit 2, Mode 4, 0%

EVENT DESCRIPTION

On March 20, 2005, during the performance of the Unit 2 ASME Class 1 Boundary Leakage Test, a socket weld at the connection to the bonnet vent piping for the "B" Reactor Recirculation Pump Discharge Valve HV243F031B (EIIS: AD) was found leaking approximately 10 drops per minute. Subsequent investigation revealed a crack in the toe of the weld at the valve's bonnet vent socket weld. The connection was an abandoned piece of ¾-inch piping that contained a 16-inch long pipe stub that had been cut and capped in 1997 due to a previous vibration-induced weld failure.

This condition constituted pressure boundary leakage as defined in Technical Requirement 3.4.2 and TRO Action 3.4.2.C was entered. On March 21, 2005, an ENS Notification (#41506) was made to the NRC. Based on guidance provided in NUREG-1022, Rev. 2, this material defect in the primary coolant boundary is unacceptable under ASME Code requirements and is reportable under 10 CFR 50.73(a)(2)(ii)(A).

CAUSE OF THE EVENT

The cause of the weld failure was due to inadequate implementation of GE SIL 512 recommendations. GE SIL 512 identified preventative measures for socket welds associated with cantilevered branch lines attached to recirculation gate valves. The GE SIL recommended plugging the branch lines or minimizing the relative motion of the branch line by strapping the line to the recirculation pipe. In 1997, PPL cut the ¾-inch line and capped it leaving a 16-inch long pipe stub. However, the GE SIL recommended removing the line at the point of highest fatigue and plugging it.

ANALYSIS / SAFETY SIGNIFICANCE

Actual Consequences

There were no safety consequences or compromises to public health and safety as a result of the failed weld. With the reactor shutdown in Mode 4, the available systems were fully capable of compensating for the leakage. Based on the location of the flaw, the leak path was also capable of being isolated.

Potential Consequences

In Mode 4, a complete weld failure would have resulted in an isolation of the leak path and a controlled vessel depressurization by operators. Auxiliary systems, such as control rod drive and low pressure emergency core cooling systems, were also available to maintain vessel inventory, if required.

LICENSEE EVENT REPORT (LER)

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

During Mode 1 operation, the weld flaw would have resulted in increased drywell unidentified leakage and an eventual failure of the 16-inch long pipe stub. This loss of reactor vessel inventory is bounded by the PPL analysis as described in Chapter 15 of the FSAR. Small pipe break LOCA events, including breaks on this particular line, have been evaluated as part of PPL's PRA model. These events contribute less than 2% of the risk of core damage frequency (CDF) and are evaluated as an insignificant contributor (<1.0E-05%) to the large early release frequency. This particular line makes up approximately 10% of the total small liquid LOCA event frequency; therefore, the CDF for this particular line break would contribute less than 0.2% of the overall CDF.

CORRECTIVE ACTIONS

Completed Actions

The cracked weld was repaired by removing the pipe stub and welding a plug directly into the bonnet connection.

A review of other large bore ASME Class 1 gate valves (not associated with the GE SIL) inside Unit 1 and Unit 2 containment was performed to determine if similar small pipe connections existed. No similar connections were found.

Planned Actions

A new review of Unit 1 and Unit 2 recirculation lines identified by GE SIL 512 will be performed. All recirculation gate valve vent, drain, and stem leak-off lines, previously abandoned will be plugged at the welded joint. Other vibration-prone small bore piping will also be evaluated for susceptibility to weld cracking and corrective actions taken as necessary to prevent future weld failures.

ADDITIONAL INFORMATION

Past Similar Events: Docket No. 50-388, LER 93-009 and LER 97-006