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AUG 02 2012

U. S. Nuclear Regulatory Commission
Attn: Document Control Desk
Mail Stop OP1-17
Washington, DC 20555-0001

**SUSQUEHANNA STEAM ELECTRIC STATION
LICENSEE EVENT REPORT 50-387/2012-005-00
LICENSE NO. NPF-14
PLA-6885**

Docket No 50-387

Attached is Licensee Event Report (LER) 50-387/2012-005-00. This event was determined to be a Common-Cause Inoperability of Independent Trains or Channels and reportable in accordance with 10 CFR 50.73(a)(2)(vii) in that two (2) main safety relief valves (SRVs) were inoperable during the past operating cycle.

There were no actual consequences to the health and safety of the public as a result of this event.

No regulatory commitments are associated with this LER.

A handwritten signature in blue ink, appearing to read "Jeffrey M. Helsel", is written over a faint, larger version of the same signature.

J. M. Helsel

Attachment: LER 50-387/2012-005-00

Copy: NRC Region I
Mr. P. W. Finney, NRC Sr. Resident Inspector
Ms. C. J. Sanders, NRC Project Manager
Mr. L. J. Winker, DEP/BRP

| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
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| NRC FORM 366 (10-2010) | | U.S. NUCLEAR REGULATORY COMMISSION | | | APPROVED BY OMB: NO. 3150-0104 Estimated burden per response to comply with this mandatory collection request: 80 hours. Reported lessons learned are incorporated into the licensing process and fed back to industry. Send comments regarding burden estimate to the FOIA/Privacy Section (T-5 F53), U. S. Nuclear Regulatory Commission, Washington, DC 20555-0001, or by internet e-mail to infocollects.resources@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) | | | | | EXPIRES:10/31/2013 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1. FACILITY NAME Susquehanna, Unit 1 | | | | | 2. DOCKET NUMBER 05000387 | | 3. PAGE 1 OF 3 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 4. TITLE Valve Internal Misalignment Resulting in Multiple Inoperable Main Steam Safety Relief Valves | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 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 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 06 | 12 | 2012 | 2012 | - 005 | - 00 | 8 | 2 | 2012 | FACILITY NAME | DOCKET NUMBER | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 9. OPERATING MODE 5 | | 11. THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (Check all that apply) <table style="width:100%; border: none;"> <tr> <td><input type="checkbox"/> 20.2201(b)</td> <td><input type="checkbox"/> 20.2203(a)(3)(i)</td> <td><input type="checkbox"/> 50.73(a)(2)(i)(C)</td> <td><input checked="" type="checkbox"/> 50.73(a)(2)(vii)</td> </tr> <tr> <td><input type="checkbox"/> 20.2201(d)</td> <td><input type="checkbox"/> 20.2203(a)(3)(ii)</td> <td><input type="checkbox"/> 50.73(a)(2)(ii)(A)</td> <td><input type="checkbox"/> 50.73(a)(2)(viii)(A)</td> </tr> <tr> <td><input type="checkbox"/> 20.2203(a)(1)</td> <td><input type="checkbox"/> 20.2203(a)(4)</td> <td><input type="checkbox"/> 50.73(a)(2)(ii)(B)</td> <td><input type="checkbox"/> 50.73(a)(2)(viii)(B)</td> </tr> <tr> <td><input type="checkbox"/> 20.2203(a)(2)(i)</td> <td><input type="checkbox"/> 50.36(c)(1)(i)(A)</td> <td><input type="checkbox"/> 50.73(a)(2)(iii)</td> <td><input type="checkbox"/> 50.73(a)(2)(ix)(A)</td> </tr> <tr> <td><input type="checkbox"/> 20.2203(a)(2)(ii)</td> <td><input type="checkbox"/> 50.36(c)(1)(ii)(A)</td> <td><input type="checkbox"/> 50.73(a)(2)(iv)(A)</td> <td><input type="checkbox"/> 50.73(a)(2)(x)</td> </tr> <tr> <td><input type="checkbox"/> 20.2203(a)(2)(iii)</td> <td><input type="checkbox"/> 50.36(c)(2)</td> <td><input type="checkbox"/> 50.73(a)(2)(v)(A)</td> <td><input type="checkbox"/> 73.71(a)(4)</td> </tr> <tr> <td><input type="checkbox"/> 20.2203(a)(2)(iv)</td> <td><input type="checkbox"/> 50.46(a)(3)(ii)</td> <td><input type="checkbox"/> 50.73(a)(2)(v)(B)</td> <td><input type="checkbox"/> 73.71(a)(5)</td> </tr> <tr> <td><input type="checkbox"/> 20.2203(a)(2)(v)</td> <td><input type="checkbox"/> 50.73(a)(2)(i)(A)</td> <td><input type="checkbox"/> 50.73(a)(2)(v)(C)</td> <td><input type="checkbox"/> OTHER</td> </tr> <tr> <td><input type="checkbox"/> 20.2203(a)(2)(vi)</td> <td><input type="checkbox"/> 50.73(a)(2)(i)(B)</td> <td><input type="checkbox"/> 50.73(a)(2)(v)(D)</td> <td>Specify in Abstract below or in NRC Form 366A</td> </tr> </table> | | | | | | | | | <input type="checkbox"/> 20.2201(b) | <input type="checkbox"/> 20.2203(a)(3)(i) | <input type="checkbox"/> 50.73(a)(2)(i)(C) | <input checked="" type="checkbox"/> 50.73(a)(2)(vii) | <input type="checkbox"/> 20.2201(d) | <input type="checkbox"/> 20.2203(a)(3)(ii) | <input type="checkbox"/> 50.73(a)(2)(ii)(A) | <input type="checkbox"/> 50.73(a)(2)(viii)(A) | <input type="checkbox"/> 20.2203(a)(1) | <input type="checkbox"/> 20.2203(a)(4) | <input type="checkbox"/> 50.73(a)(2)(ii)(B) | <input type="checkbox"/> 50.73(a)(2)(viii)(B) | <input type="checkbox"/> 20.2203(a)(2)(i) | <input type="checkbox"/> 50.36(c)(1)(i)(A) | <input type="checkbox"/> 50.73(a)(2)(iii) | <input type="checkbox"/> 50.73(a)(2)(ix)(A) | <input type="checkbox"/> 20.2203(a)(2)(ii) | <input type="checkbox"/> 50.36(c)(1)(ii)(A) | <input type="checkbox"/> 50.73(a)(2)(iv)(A) | <input type="checkbox"/> 50.73(a)(2)(x) | <input type="checkbox"/> 20.2203(a)(2)(iii) | <input type="checkbox"/> 50.36(c)(2) | <input type="checkbox"/> 50.73(a)(2)(v)(A) | <input type="checkbox"/> 73.71(a)(4) | <input type="checkbox"/> 20.2203(a)(2)(iv) | <input type="checkbox"/> 50.46(a)(3)(ii) | <input type="checkbox"/> 50.73(a)(2)(v)(B) | <input type="checkbox"/> 73.71(a)(5) | <input type="checkbox"/> 20.2203(a)(2)(v) | <input type="checkbox"/> 50.73(a)(2)(i)(A) | <input type="checkbox"/> 50.73(a)(2)(v)(C) | <input type="checkbox"/> OTHER | <input type="checkbox"/> 20.2203(a)(2)(vi) | <input type="checkbox"/> 50.73(a)(2)(i)(B) | <input type="checkbox"/> 50.73(a)(2)(v)(D) | Specify in Abstract below or in NRC Form 366A |
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| <input type="checkbox"/> 20.2203(a)(2)(v) | <input type="checkbox"/> 50.73(a)(2)(i)(A) | <input type="checkbox"/> 50.73(a)(2)(v)(C) | <input type="checkbox"/> OTHER | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| <input type="checkbox"/> 20.2203(a)(2)(vi) | <input type="checkbox"/> 50.73(a)(2)(i)(B) | <input type="checkbox"/> 50.73(a)(2)(v)(D) | Specify in Abstract below or in NRC Form 366A | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 10. POWER LEVEL 000 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 12. LICENSEE CONTACT FOR THIS LER | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| NAME T. A. Case Jr. – Senior Engineer, Nuclear Regulatory Affairs | | | | | | | | TELEPHONE NUMBER (Include Area Code) (570) 542-3606 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 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 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
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| 14. SUPPLEMENTAL REPORT EXPECTED | | | | | | 15. EXPECTED SUBMISSION DATE | | MONTH | DAY | YEAR | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| <input type="checkbox"/> YES (If yes, complete 15. EXPECTED SUBMISSION DATE) <input checked="" type="checkbox"/> NO | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| ABSTRACT (Limit to 1400 spaces, i.e., approximately 15 single-spaced typewritten lines) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| <p>During the Susquehanna Unit 1 17th Refueling and Inspection Outage, two (2) Main Steam Safety Relief Valves (SRVs) failed to meet the setpoint criteria of +3/-5% set forth in Technical Specification 3.4.3. The two SRVs actuated at a setpoint less than the -5% criteria during off-site testing on April 24 and April 25, 2012. The cause of the lower setpoint actuation is attributed to possible misalignment of the valve internals due to post-installation valve actuation using the actuator assembly. This event was determined to be a Common-Cause Inoperability of Independent Trains or Channels and reportable under 10 CFR 50.73(a)(2)(vii) due to having more than one failure caused by misalignment of the valve internals. The SRVs remained functional and would have relieved pressure. There were no actual adverse consequences to the fuel, any plant equipment, or to the health and safety of the public as a result of this event. To correct the condition, the SRVs were replaced with SRVs having a setpoint tolerance of +/- 1% of nameplate setpoint pressure. The SRVs that failed their setpoint tolerance will be refurbished to have an actuation pressure within +/- 1% of nameplate pressure. Pending a license amendment and In-Service Testing (IST) Relief Request, the procedures for post-installation testing of SRVs will be modified to test the SRVs using alternative methods.</p> | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

(10-2010)

LICENSEE EVENT REPORT (LER) CONTINUATION SHEET

| 1. FACILITY NAME | 2. DOCKET | 6. LER NUMBER | | | 3. PAGE |
|---------------------|-----------|---------------|----------------------|--------------------|---------|
| Susquehanna, Unit 1 | 05000387 | YEAR | SEQUENTIAL NUMBER | REVISION NUMBER | 2 OF 3 |
| | | 2012 | - 005 | - 00 | |

NARRATIVE

EVENT DESCRIPTION

While in Mode 5, Refueling, in shutdown temperature and pressure bands, two (2) Main Steam Safety Relief Valves (SRVs) (EIIIS Code: SB and RV) failed to meet the setpoint criteria of +3/-5% set forth in Technical Specification 3.4.3. The two SRVs actuated at a pressure less than the -5% setpoint criteria.

The affected SRVs were installed on March 17, 2008 during the Susquehanna Unit 1 15th Refueling and Inspection Outage. They were tested prior to the subsequent post-outage start-up. The tests included stroking the valves using the valves' actuator assemblies in accordance with station procedures. The SRVs were removed from the plant on April 11, 2012 and sent to Wyle Labs for routine testing and refurbishment. The valves were tested by Wyle Labs on April 24 and April 25, 2012. The following are the April 24 and April 25, 2012 test results:

| Valve Serial # | Setpoint (psig) | As Found (psig) | Deviation |
|----------------|-----------------|-----------------|-----------|
| N63790-00-0112 | 1205 | 1142 | -5.23% |
| N63790-00-0133 | 1195 | 1133 | -5.19% |

On June 12, 2012, based on the conclusions of the component failure analysis performed by the valve manufacturer, it was identified by Susquehanna personnel that the two SRVs actuated below their required setpoints because of a misalignment of valve internals. Having two SRVs inoperable due to the same cause constitutes a Common-Cause Inoperability of Independent Trains or Channels and is reportable under 10 CFR 50.73(a)(2)(vii). Each of the SRVs remained functional and would have relieved pressure. There were no actual adverse consequences to the fuel, any plant equipment, or to the health and safety of the public as a result of this event.

CAUSE OF THE EVENT

The cause of the event was determined to be two SRVs inoperable at the same time during the operating cycle. The inoperability of the SRVs was apparently caused by misalignment of valve internals due to actuation of the valves, prior to start-up with the actuator assembly. Upon de-pressurization of the accumulator and subsequent closing of the main valve, a misalignment of the valve internals may have occurred.

ANALYSIS/SAFETY SIGNIFICANCE

This event was determined to be reportable under 10 CFR 50.73(a)(2)(vii) in that two (2) SRVs were inoperable at the same time during the past operating cycle due to misalignment of valve internals. There were no actual adverse consequences to the fuel, any plant equipment, or to the health and safety of the public as a result of the 2 SRVs not lifting within +3%/-5% of their design set point. The SRVs remained functional and would have relieved pressure. There were no safety or operational concerns associated with premature SRV lift since all SRVs tested lifted at pressures that were greater than the minimum relief mode lift pressure and because there was no effect to the manual operation of the SRVs. Therefore, the SRVs did not challenge the operators due to inadvertent actuation or prevent them from actuating the valves and still provided reactor pressure boundary overpressurization protection.

(10-2010)

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| Susquehanna, Unit 1 | 05000387 | YEAR | SEQUENTIAL NUMBER | REVISION NUMBER | 3 OF 3 |
| | | 2012 | - 005 | - 00 | |

NARRATIVE**CORRECTIVE ACTIONS**

The following corrective actions have been completed:

- The SRVs were replaced with SRVs having a setpoint tolerance of +/- 1% of nameplate setpoint pressure.

The following corrective action is planned:

- The SRVs that failed their setpoint tolerance will be refurbished to have an actuation pressure within +/- 1% of nameplate setpoint pressure.
- Pending a license amendment and In-Service Testing (IST) Relief Request, procedures for post-installation testing of SRVs will be modified to test the SRVs using alternative methods.

No regulatory commitments are associated with this report.

ADDITIONAL INFORMATION**Component Information:**

Component: Main Steam Safety Relief Valve
 Manufacturer: Crosby Valve and Gage Co.
 Model Number: HB-65-BP-DF
 Size: 6R10

Previous Similar Events:

- LER 2000-007-00, Docket No. 387/License No. NPF-14, "Multiple Test Failures of Main Steam Safety Relief Valves"
- LER 2001-005-00, Docket No. 388/License No. NPF-22, "Multiple Test Failures of Main Steam Safety Relief Valves"
- LER 2009-001-00, Docket No. 388/License No. NPF-22, "Multiple Test Failures of Main Steam Safety Relief Valves"
- LER 2011-001-00, Docket No. 388/License No. NPF-22, "Multiple Test Failures of Main Steam Safety Relief Valves"