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DEC 05 2011

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

**SUSQUEHANNA STEAM ELECTRIC STATION
LICENSEE EVENT REPORT 50-388/2011-004-00
LICENSE NO. NPF-22
PLA-6790**

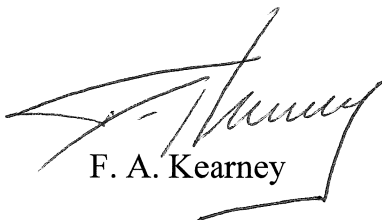
Docket No. 50-388

Attached is Licensee Event Report (LER) 50-388/2011-004-00. The event involved fluctuations in the Unit 2 High Pressure Coolant Injection System (HPCI) electronic governor that resulted in Unit 2 HPCI being declared inoperable. This event was determined to be reportable under 10CFR50.73(a)(2)(v)(D) as a condition that could have prevented the fulfillment of a safety function.

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.

Sincerely,



F. A. Kearney

Attachment

Copy: NRC Region I
Mr. P. W. Finney, NRC Sr. Resident Inspector
Mr. R. R. Janati, DEP/BRP
Mr. B. K. Vaidya, NRC Project Manager

LICENSEE EVENT REPORT (LER)

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

| | | |
|--|-------------------------------------|--------------------------|
| 1. FACILITY NAME Susquehanna Steam Electric Station Unit 2 | 2. DOCKET NUMBER 05000388 | 3. PAGE 1 OF 3 |
|--|-------------------------------------|--------------------------|

4. TITLE
Unit 2 HPCI Inoperability

| 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 |
| 10 | 06 | 2011 | 2011 | - 004 - | 00 | 12 | 05 | 2011 | | 05000 |
| | | | | | | | | | FACILITY NAME | DOCKET NUMBER |
| | | | | | | | | | | 05000 |

9. OPERATING MODE
1

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

| | | | |
|---|---|---|---|
| <input type="checkbox"/> 20.2201(b) | <input type="checkbox"/> 20.2203(a)(3)(i) | <input type="checkbox"/> 50.73(a)(2)(i)(C) | <input 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 checked="" type="checkbox"/> 50.73(a)(2)(v)(D) | Specify in Abstract below or in NRC Form 366A |

12. LICENSEE CONTACT FOR THIS LER

| | |
|---|--|
| Name Cornelius T. Coddington, Senior Engineer - Nuclear Regulatory Affairs | Telephone Number (Include Area Code) (610) 774-4019 |
|---|--|

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

| CAUSE | SYSTEM | COMPONENT | MANUFACTURER | REPORTABLE TO EPIX | CAUSE | SYSTEM | COMPONENT | MANUFACTURER | REPORTABLE TO EPIX |
|-------|--------|---------------|---------------|--------------------|-------|--------|-----------|--------------|--------------------|
| B | BJ | Toggle Switch | Cutler Hammer | N | | | | | |

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 October 6, 2011, Susquehanna Steam Electric Station Unit 2 High pressure Coolant Injection System (HPCI) (EIS: BJ) was declared inoperable due to fluctuations occurring on the output signal of the HPCI pump electronic governor. These fluctuations were occurring while the system was in standby and were an early indication of potential governor failure. The governor output signal fluctuations were discovered by the system engineer while performing system trending analysis via the plant computer points. HPCI was declared inoperable and LCO 3.5.1 was entered. The direct cause of the electronic governor output signal fluctuations was a buildup of resistance across the Overspeed Test Controller subcomponent. The root cause was determined to be an incorrect component criticality code which did not identify periodic maintenance under Susquehanna SES's preventive maintenance program. Immediate corrective action was to replace the Overspeed Test Controller. Additional corrective actions include reclassification of the component criticality code, evaluation of the removal of the Overspeed Test Controller and periodically exercising the Overspeed controller test switches.

The Unit 1 HPCI and Unit 1 and Unit 2 Reactor Core Isolation Cooling System (RCIC) were unaffected as the electronic governor for this equipment was stable and trending as expected.

This event is being reported in accordance with 10 CFR 50.73(a)(2)(v)(D) due to a condition that could have prevented the fulfillment of a safety function.

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

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

| 1. FACILITY NAME | 2. DOCKET | 6. LER NUMBER | | | 3. PAGE |
|---|-----------|---------------|-------------------|-----------------|---------|
| Susquehanna Steam Electric Station Unit 2 | 05000388 | YEAR | SEQUENTIAL NUMBER | REVISION NUMBER | 2 OF 3 |
| | | 2011 | - 004 - | 00 | |

NARRATIVE

EVENT DESCRIPTION

On October 6, 2011, Susquehanna Steam Electric Station Unit 2 High pressure Coolant Injection System (HPCI) (EIS: BJ) was declared inoperable due to fluctuations occurring on the output signal of the HPCI pump electronic governor. These fluctuations were occurring while the system was in standby and were an early indication of potential governor failure. The governor output signal fluctuations were discovered by the system engineer while performing system trending analysis via the plant computer points. HPCI was declared inoperable and LCO 3.5.1 was entered.

CAUSE OF THE EVENT

The direct cause of the electronic governor output signal fluctuations was a buildup of resistance across the Overspeed Test Controller subcomponent. The root cause was determined to be an incorrect component criticality code which did not identify the need for periodic maintenance of the Overspeed Test Controller under Susquehanna SES's preventive maintenance program. In addition, several causal factors were identified:

- The overspeed test controller was not periodically exercised resulting in unanticipated high contact resistance.
- The application of the switch used in the Overspeed Test Controller, while acceptable, was less than optimum. The switch was designed for 'heavy-duty' control applications; however, the switch is used in a low level control loop application.

ANALYSIS/SAFETY SIGNIFICANCE

This event is being reported in accordance with 10 CFR 50.73(a)(2)(v)(D) due to a condition that could have prevented the fulfillment of a safety function.

Actual Consequences

The actual undesired condition for the event was that the Unit 2 HPCI was declared inoperable and LCO 3.5.1 was entered at 1140 EDT on 10/06/2011.

Potential Consequences:

The potential undesired condition for the event is the Unit 2 HPCI system may have been unable to produce its design flow rate and its response time may not have met design basis requirements under a postulated accident condition. The Cumulative Incremental Core Damage Probability (ICDP) and Incremental Large Early Release Probability (ILERP) over the timeframe of potential HPCI unavailability yielded results below the NRC guidance threshold for significance as defined in IMC 0609, Appendix K.

LICENSEE EVENT REPORT (LER) CONTINUATION SHEET

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|---|-----------|---------------|-------------------|-----------------|---------|
| Susquehanna Steam Electric Station Unit 2 | 05000388 | YEAR | SEQUENTIAL NUMBER | REVISION NUMBER | 3 OF 3 |
| | | 2011 | --004-- | 00 | |

NARRATIVECORRECTIVE ACTIONS

The following corrective actions have been completed:

- The Overspeed Test Controller was replaced and the HPCI governor control system calibration was completed.
- Shiftily monitoring of the Unit 1 and Unit 2 HPCI and Reactor Core Isolation Cooling system (RCIC) Electronic Governor Module (EG-M) and ramp generator and signal converter (RGSC) output trend graphs was instituted.
- Independent failure analysis of the suspect overspeed test controller was conducted.

The following corrective actions are planned:

- Validate and correct as necessary component criticality codes for all Unit 1, Unit 2, and common criticality 5 and 6 components in safety related systems.
- Perform a 25% sampling of Unit 1, Unit 2, and common criticality 3 and 4 components in safety related systems to validate and correct as necessary the component criticality codes. If more than 10 components in the initial sample are identified as being coded improperly, 100% of the population will be reviewed.
- Periodic exercise of the Unit 1 and Unit 2 overspeed test controller test switches. [Note: the Unit 1 and Unit 2 RCIC systems do not have an overspeed test controller subcomponent.
- Evaluate the feasibility of removing the overspeed test controller from the Unit 1 and Unit 2 HPCI governor control circuits.
- Revise department procedures to consider the failure mode (electrical contacts in a low voltage circuit experienced a resistance increase over time) when classifying the criticality of new components added to the plant.

No regulatory commitments are associated with this report.

ADDITIONAL INFORMATIONFailed Component Information:

Component: SY-25681 Toggle Switch

Model: 7674K5

Manufacturer: Cutler Hammer.

Previous Similar Events:

None