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JUL 12 2012



U. S. Nuclear Regulatory Commission
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**SUSQUEHANNA STEAM ELECTRIC STATION
LICENSEE EVENT REPORT 50-387/2012-006-00
LICENSE NO. NPF-14
PLA-6879**

Docket No 50-387

Attached is Licensee Event Report (LER) 50-387/2012-006-00. The event involved the Unit 1 "D" Outboard Main Steam Isolation Valve (MSIV) exceeding its Technical Specification (TS) leakage limit. This event is being reported in accordance with 10 CFR 50.73(a)(2)(i)(B) as a condition prohibited by Technical Specifications. The Unit 1 "D" Outboard MSIV also exceeded the TS leakage criteria during the previous refueling outage in 2010, and this LER also is intended to meet the reporting requirements for that event.

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 dark ink, appearing to read "Jeffrey M. Helsel", is written over the printed name. The signature is fluid and cursive, with the first and last names being more prominent.

J. M. Helsel

Attachment: LER 50-387/2012-006-00

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

LICENSEE EVENT REPORT (LER)

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

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.

1. FACILITY NAME

Susquehanna Steam Electric Station Unit 1

2. DOCKET NUMBER

05000387

3. PAGE

1 OF 3

4. TITLE

"D" Outboard Main Steam Isolation Valve Leakage

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
04	09	2012	2012	- 006	- 00	07	12	2012	FACILITY NAME	DOCKET NUMBER 05000

9. OPERATING MODE

5

10. POWER LEVEL

0%

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 checked="" 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 |

12. LICENSEE CONTACT FOR THIS LER

FACILITY NAME

C. E. Manges, Jr., Senior Engineer - Nuclear Regulatory Affairs

TELEPHONE NUMBER (Include Area Code)

(570) 542-3089

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
D	SB	ISV	A585	Yes					

14. SUPPLEMENTAL REPORT EXPECTED

☐ YES (If yes, complete 15. EXPECTED SUBMISSION DATE) ☒ NO15. EXPECTED
SUBMISSION
DATE

MONTH	DAY	YEAR

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

On April 9, 2012, during local leak rate testing (LLRT) of Main Steam Line Isolation Valve (MSIV) Penetration Number X-7D, the Unit 1 "D" Main Steam Line Boundary would not pressurize to 25 psig due to excessive leakage. As a result of the testing and subsequent troubleshooting, Susquehanna discovered that the leak rate for the Unit 1 "D" Outboard Isolation Valve exceeded 150 standard liters per minute. This condition, which was considered to have existed during the previous operating cycle, was a failure to meet Technical Specification (TS) 3.6.1.3. A similar occurrence that involved exceeding the TS limit for the "D" MSIV during the previous refueling outage in 2010 was also identified and is being reported in this LER.

The causes of the 2012 event were imperfections in the seating surface and a less than adequate rework procedure. The cause of the 2010 event was a valve body seat with a poor contact area. This coupled with the X-7D as-left penetration leakage having minimal margin to the TS limit, contributed to the as-found testing failure in the next refueling outage.

Key corrective actions that are planned include: 1) benchmarking industry best practices for MSIV reworks, 2) revising the MSIV rework procedure, 3) evaluating replacing, instead of reworking, the poppet assembly for MSIVs that have failed their as-found LLRT, and 4) performing a root cause evaluation for these events.

There were no adverse consequences to the health and safety of the public as a result of this event. This event is being reported under 10 CFR 50.73(a)(2)(i)(B) as a condition prohibited by Technical Specifications.

(10-2010)

LICENSEE EVENT REPORT (LER) CONTINUATION SHEET

1. FACILITY NAME	2. DOCKET	6. LER NUMBER			3. PAGE
Susquehanna Steam Electric Station Unit 1	05000387	YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	2 OF 3
		2012	- 006	- 00	

NARRATIVEEVENT DESCRIPTION

On April 9, 2012, during local leak rate testing (LLRT) of Main Steam Line Isolation Valve (MSIV) [EIS Code: SB] Penetration Number X-7D, the Unit 1 "D" Main Steam Line Boundary would not pressurize to 25 psig due to excessive leakage. As a result of the testing and subsequent troubleshooting, Susquehanna discovered that the leak rate for the Unit 1 "D" Outboard Isolation Valve exceeded 150 standard liters per minute (SLM). This condition, which was considered to have existed during the previous operating cycle, was a failure to meet Technical Specification 3.6.1.3. As a result, this condition is being reported in accordance with 10 CFR 50.73(a)(2)(i)(B) as a condition prohibited by Technical Specifications.

The sequence of events leading up to the LLRT failure is as follows:

Event during the 2010 Unit 1 refueling outage:

- March 11, 2010 at 0350 - "D" Outboard (OB) MSIV leakage exceeded 71 SLM during testing.
- March 24, 2010 at 0700 - the "D" MSIV was reworked in accordance with procedures
- March 25, 2010 at 1800 - after rework, the As-Left LLRT for the "D" OB MSIV was 33.28 SLM

Between the rework in the 2010 refueling outage and the failed As-Found LLRT in 2012 refueling outage, the "D" OB MSIV was stroked approximately twelve times for Unit 1 start-up, shutdown, surveillances, and post maintenance testing.

Events during Unit 1 2012 refueling outage:

- April 9, 2012 at 0200 - the volume between the "D" MSIVs would not pressurize to 25 psig during testing.
- April 9, 2012 at 1000 - based on troubleshooting, the leakage on the inboard side of all of the MSIVs, which even though this volume has multiple leakage paths including the four MSIVs, MSL drain valves, HPCI and RCIC steam supplies, etc, was less than 20 SLM
- April 9, 2012 at 1146 - the leakage through the OB MSIV was determined to be greater than 150 SLM which violates the Technical Specification limit of 47.187 SLM.
- May 19, 2012 - an apparent cause analysis was completed for the event. This is considered the date of discovery.

The event during the 2010 Unit 1 refueling outage should have been reported in accordance with 10 CFR 50.73(a)(2)(i)(B) but was not reported as required. As a result, this LER will provide the required information associated with the 2010 event and will constitute the required report for that event.

CAUSE OF THE EVENT

Each of the events is addressed separately below:

Event in 2012

The direct cause of the component failure was:

- Excessive leakage of the "D" OB MSIV due to imperfections in the MSIV seating surfaces.

Less than adequate maintenance done on the in-body seat and the pilot poppet seats caused the "D" OB MSIV to fail.

The cause of the event was determined to be as follows:

- The MSIV rework procedure has vague or inadequate guidance on how to properly rework the MSIVs. The procedure has vague steps and human performance traps that, unless the performer is highly experienced, would result in improper machining/boring bar set up and improper valve inspection methodology.

(10-2010)

LICENSEE EVENT REPORT (LER) CONTINUATION SHEET

1. FACILITY NAME	2. DOCKET	6. LER NUMBER			3. PAGE
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NARRATIVEEvent in 2010

The causes of the event was determined to be as follows:

- The valve body seat had poor contact area at the lower segment (6 o'clock location)
- The X-7D as-left penetration leakage having minimal margin to the TS limit, contributed to the as-found testing failure in the next refueling outage.

ANALYSIS/SAFETY SIGNIFICANCEActual Consequences:

The actual safety consequence of the "D" inboard MSIV LLRT failures is minimal. The MSIVs have a safety function to close to prevent a large release of radiation to the site boundary under accident conditions. As-Found and As-Left LLRTs of "D" Main Steam Line Penetration X-7D in both 2010 and 2012 demonstrated that "D" inboard MSIV penetration would have performed satisfactorily to prevent the release of radioactive materials through penetration X-7D.

Potential Consequences:

The potential consequence is that, in the event of a LOCA combined with a failure of the "D" Inboard MSIV to isolate, the "D" Outboard MSIV would not have isolated Penetration X-7D sufficiently to prevent fission products from being released. This potential consequence involves multiple safety system failures both to cause the LOCA and then to create the release path.

CORRECTIVE ACTIONS

Key corrective actions:

1. Engineering will benchmark industry best practices for MSIV reworks.
2. The MSIV rework procedure will be revised to address the identified issues.
3. Replacing, instead of reworking, the poppet assembly for MSIVs that have failed their As-Found LLRT will be evaluated.
4. A root cause evaluation will be performed for these events.

PREVIOUS SIMILAR EVENTS

The following LER was also the result of:

A cause of this LER was a less than adequate procedure. The following recent LERs identified similar causes:

LER 387/2011-002, "Unit 1 Manual Scram Due to Unisolable Extraction Steam System Leak" identified deficient work instructions as one of the causes.

LER 388/2011-003, "Unit 2 Scram due to Main Turbine Trip during ICS Surveillance Testing" identified conflicting and unclear procedure requirements and less than adequate reinforcement of management expectations for work package content as one of the causes.

LER 388/2011-002, "Condition Prohibited by Technical Specification Due to Unknown RCIC Inoperability" identified test procedures that did not test all aspects of the system that were relied upon for operability.