

LICENSEE EVENT REPORT (LER)

ESTIMATED BURDEN PER RESPONSE TO COMPLY WITH THIS INFORMATION COLLECTION REQUEST: 50.0 HRS. FORWARD COMMENTS REGARDING BURDEN ESTIMATE TO THE RECORDS AND REPORTS MANAGEMENT BRANCH (P-530), U7.S. NUCLEAR REGULATORY COMMISSION, WASHINGTON, DC 20555, AND TO THE PAPERWORK REDUCTION PROJECT (3150-0104), OFFICE OF MANAGEMENT AND BUDGET, WASHINGTON, DC 20503.

FACILITY NAME (1) Susquehanna Steam Electric Station - Unit 1 DOCKET NUMBER(2) 0 5 0 0 0 3 8 7 1 PAGE (3) OF 0 4

TITLE (4) Operation Prohibited By Technical Specification - Loss Of MSRV Acoustic Monitor

EVENT DATE (5) 0 9 1 0 9 7 9 7 LER NUMBER (6) 0 2 0 0 0 0 REPORT DATE (7) 1 0 1 3 9 7 OTHER FACILITIES INVOLVED (8) FACILITY NAMES DOCKET NUMBER(S) 0 5 0 0 0

OPERATING MODE (9) 1 THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR 1 : (Check one or more of the following) (11) 20.402(b) 20.405(a)(1)(X) 20.405(a)(1)(ii) 20.405(a)(1)(iii) 20.405(a)(1)(iv) 20.405(a)(1)(v) 20.405(a)(1)(vi) 20.405(c) 50.36(c)(1) 50.36(c)(2) 50.73(a)(2)(i) 50.73(a)(2)(ii) 50.73(a)(2)(iii) 50.73(a)(2)(iv) 50.73(a)(2)(v) 50.73(a)(2)(vi) 50.73(a)(2)(vii) 50.73(a)(2)(viii) 50.73(a)(2)(ix) 50.73(a)(2)(x) 73.71(b) 73.71(c) OTHER (Specify in Abstract below and in Text, NRC Form 366A)

NAME Stephen J. Ellis - Nuclear Licensing Engineer TELEPHONE NUMBER 7 1 7 5 4 2 - 3 5 3 7

Table with 12 columns: CAUSE, SYSTEM, COMPONENT, MANUFACTURER, REPORTABLE TO NPRDS, CAUSE, SYSTEM, COMPONENT, MANUFACTURER, REPORTABLE TO NPRDS. Contains multiple empty rows.

SUPPLEMENTAL REPORT EXPECTED (14) YES (If yes, complete EXPECTED SUBMISSION DATE) X NO EXPECTED SUBMISSION DATE (15) 0 7 0 1 9 8

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

On September 10, 1997, at 1750 hours, with Unit 1 in Condition 1 (Power Operation) at 100% Power, the acoustic monitor for the 'S' Main Steam Relief Valve (MSRV) was declared inoperable and Technical Specification 3.3.7.5, ACTION 80, and 3.4.2.c ACTION were entered. Repair of the acoustic monitor requires a primary containment entry. Operators, using guidance from the appropriate off-normal procedure, were able to assure that the 'S' MSRV was closed. Enforcement Discretion was requested by PP&L and granted by the NRC for continued operation until an outage of sufficient duration, not to exceed the Unit 1 10th Refuel Outage. This event is reportable per 10CFR50.73(a)(2)(i)(B), in that Susquehanna Unit 1 was in a condition prohibited by Technical Specification when it remained at power operation beyond the limit specified in the ACTION statements of Technical Specifications. Although a definitive cause of the failure can not be identified at this time, the most likely cause appears to be a failing charge converter, which is inaccessible during power operation due to its location in containment. Final determination will be made following repair. Operation with the 'S' acoustic monitor inoperable does not create a significantly degraded condition in the Station's ability to protect the health and welfare of the public and the ability of the plant to shut down safely is unaffected. The following actions have been completed: troubleshooting to the extent possible, request for Enforcement Discretion (granted), and alarm removed from service. The final repair or upgrade of the equipment is scheduled for the next outage, of sufficient length to allow drywell entry and not to exceed the Unit 1 10th Refuel Outage.

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

FACILITY NAME (1)	DOCKET NUMBER (2)	LER NUMBER (6)						PAGE (3)					
Unit 1		YEAR		SEQUENTIAL NUMBER		REVISION NUMBER							
Susquehanna Steam Electric Station	0   5   0   0   0   3   8   7	9	7	—	0	2	0	—	0	0	2	OF	4

TEXT (If more space is required, use additional NRC Form 366A's) (17)

**EVENT DESCRIPTION**

On September 10, 1997, at 1750 hours, with Unit 1 in Condition 1 (Power Operation) at 100% Power, the Unit 1 Control Room received a spurious open Main Steam Relief Valve (MSRV) (EIS Code: SB) alarm for the 'S' MSR. The acoustic monitor for the 'S' MSR indicated that the valve was approximately 25% open. The Control Room operators (utility; licensed), using guidance from the appropriate off-normal (ON) procedure, determined that the 'S' MSR was not open. Parameter trends used to conclude that this MSR was not open included: MSR tailpipe temperature, suppression pool temperature, suppression pool level, main generator megawatts, reactor pressure, reactor water level, and feedwater flow - steam flow mismatch. All other MSR acoustic monitors are operable.

Significant effort was expended in troubleshooting this condition. All components exterior to the drywell were tested and ruled out as the cause of the erratic operation of the 'S' acoustic monitor. As a result of this investigation, the failed (or failing) component has been determined to be inside the drywell.

As a result of the spurious alarming, the 'S' acoustic monitor was declared inoperable, and Limited Conditions of Operation (LCO) 3.4.2.c and 3.3.7.5, ACTION 80, were entered. Technical Specification 3.3.7.5, ACTION 80, requires the acoustic monitor to be restored to service within 48 hours or be in Hot Shutdown within the next 12 hours.

In order to repair the acoustic monitor, a containment entry is necessary. This would require a Unit shutdown and the containment to be de-inerted. Enforcement Discretion was requested on September 11, 1997 and verbally granted on September 12, 1997 (granted in writing September 23, 1997) for continued operation until an outage of sufficient length to affect repairs, not to exceed the Unit 1 10th Refuel Outage, scheduled for Spring 1998.

On September 16, 1997, following several days with no alarms, the acoustic monitor began to erratically alarm at a frequency of 5 to 6 times per hour. This represented a potential operational nuisance. The temporary modification program (Bypass Program) was used to remove the 'S' acoustic monitor from service and eliminate the nuisance alarm.

**CAUSE OF EVENT**

As noted above, it has been determined that the faulty component is inside of the Unit 1 containment, so a specific root cause is not known at this time. The manufacturer of the acoustic monitor has been contacted. The mode of failure, that is, the spurious nature of alarms, was discussed with the vendor and

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		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER						
Unit 1										
Susquehanna Steam Electric Station	0   5   0   0   0   3   8   7	9   7	—   0   2   0	—   0   0			3	OF	4	

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they could not identify a positive cause. The vendor suggested that the most likely cause of the monitor's spurious operation is that the charge converter was failing.

Upon entry into the drywell to effect repairs, a definitive cause of the failure will be determined. A supplement to this Licensee Event Report will be submitted documenting our findings.

**REPORTABILITY/ANALYSIS**

This event was determined to be reportable per 10CFR50.73(a)(2)(i)(B), in that Susquehanna Unit 1 was in a condition prohibited by Technical Specification when it continued to operate in Condition 1 with an inoperable MSR/V acoustic monitor. Technical Specifications 3.3.7.5 and 3.4.2 require all MSR/V acoustic monitors to be operable in Conditions 1 and 2. Enforcement Discretion for continued operation was granted September 12, 1997, allowing the operation of the unit beyond the time limits specified in the ACTION statements of the applicable LCOs. Operation outside of these limits constitutes a condition prohibited by the Technical Specifications. Unit 1 exceeded the LCO time limits on September 13, 1997.

The ability of the plant to shutdown in a safe manner is not compromised. All of the Unit's MSR/Vs are operable and are closed. The acoustic monitor provides no automatic initiation or isolation function, but only provides valve position indication. The 'S' MSR/V has been determined to be closed based on alternate indications, all of which indicate no abnormal condition for this equipment. The following parameter trends were observed, per the off-normal procedure, to assure the valve is closed: MSR/V tailpipe temperature, suppression pool temperature, suppression pool level, loss of generator megawatts, decreasing reactor pressure, changing reactor water level, and indicated feedwater flow greater than steam flow. Also, failure of the acoustic monitor will not: affect any operation of the MSR/Vs, prevent the operators from identifying an open MSR/V, increase the probability of a stuck open MSR/V, affect the consequences of an open MSR/V, or cause any unanalyzed failure or misoperation of plant equipment or an engineered safety feature. As such, operation of Unit 1 with the 'S' MSR/V acoustic monitor inoperable does not create a significant degradation in the Station's ability to protect the health and safety of the public and/or plant personnel.

In accordance with the guidance provided in NUREG 1022, Supplement 1, the required submission date for this report was determined to be October 13, 1997.

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		YEAR 9   7	SEQUENTIAL NUMBER —   0   2   0	REVISION NUMBER —   0   0				4	OF	4

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**CORRECTIVE ACTIONS**

The following corrective actions have been completed:

- Troubleshooting to the extent possible with the unit at Power.
- Obtained Enforcement Discretion to allow the plant to continue to operate until the next outage of sufficient duration to allow for drywell access, but no later than the Unit 1 10th Refuel Outage.
- Installed temporary modification (bypass) to remove the 'S' Acoustic Monitor from service.

The following actions are scheduled for completion:

- Determine cause and repair/replace 'S' MSR/V acoustic monitor. As a contingency, a modification has been developed and is available for implementation, should it be found during final investigation that the existing equipment can not be repaired. The modification replaces the existing equipment with an improved model.
- Evaluate the need for modification/upgrade of the MSR/V position monitoring equipment, based on performance history, for replacement parts availability and other operational factors.

**ADDITIONAL INFORMATION**

Failed Component Identification: This Information will be provided once the final determination of the monitor failure is completed.

Past Similar Events: A review of past LERs for the station identified one previous failure of the MSR/V acoustic monitor:

LER 50-388/94-003-00 - Unit 2 MSR/V Acoustic Monitor Failure