

REGULATOR INFORMATION DISTRIBUTION SYSTEM (RIDS)

ACCESSION NBR:9611260203 DOC.DATE: 96/11/19 NOTARIZED: NO DOCKET #
 FACIL:50-387 Susquehanna Steam Electric Station, Unit 1, Pennsylv 05000387
 AUTH:NAME AUTHOR AFFILIATION
 CODDINGTON,C.T. Pennsylvania Power & Light Co.
 KUCZYNSKI,G.J. Pennsylvania Power & Light Co.
 RECIP.NAME RECIPIENT AFFILIATION

SUBJECT: LER 96-014-00:on 961020,acoustic monitor for MS SRV L
 declared inoperable.Caused by broken wire in cable
 connector.Broken wire connectors reworked & failed charge
 converter replaced.W/961119 ltr.

DISTRIBUTION CODE: IE22T COPIES RECEIVED:LTR 1 ENCL 1 SIZE: 5
 TITLE: 50.73/50.9 Licensee Event Report (LER), Incident Rpt, etc.

NOTES:

05000387

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Pennsylvania Power & Light Company

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November 19, 1996

U.S. Nuclear Regulatory Commission
Document Control Desk
Washington, DC 20555

SUSQUEHANNA STEAM ELECTRIC STATION
LICENSEE EVENT REPORT 50-387/96-014-00
PLAS - 689 FILE R41-2

Docket No. 50-387
License No. NPF-14

Attached is Licensee Event Report 50-387/96-014-00. This event was determined to be reportable per 10CFR50.73(a)(2)(i) in that the Susquehanna Steam Electric Station - Unit 1 completed a reactor shutdown as required by the unit's Technical Specifications due to the failure of the acoustic monitor for the 'L' Main Steam Safety/Relief Valve during unit startup.


G. J. Kuczynski
Plant Manager - Susquehanna SES

Attachment

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

Mr. Kenneth M. Jenison
Sr. Resident Inspector
U. S. Nuclear Regulatory Commission
P. O. Box 35
Berwick, PA 18603-0035

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PDR ADDCK 05000387
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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), U.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
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TITLE (4)
Technical Specification Required Shutdown

EVENT DATE (5)			LER NUMBER (6)			REPORT DATE (7)			OTHER FACILITIES INVOLVED (8)																			
MONTH	DAY	YEAR	YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	MONTH	DAY	YEAR	FACILITY NAMES		DOCKET NUMBER(S)																	
1	0	2	0	9	6	9	6	0	1	4	0	0	0	0	0	0												

OPERATING MODE (9) 2	THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR Y: (Check one or more of the following) (11)											
POWER LEVEL (10) 0 0 1	20.402(b)			20.405(c)			50.73(a)(2)(v)			73.71(b)		
	20.405(a)(1)(X)			50.38(c)(1)			50.73(a)(2)(v)			73.71(c)		
	20.405(a)(1)(B)			50.38(c)(2)			50.73(a)(2)(v)			OTHER (Specify in Abstract below and in Text, NRC Form 366A)		
	20.405(a)(1)(W)			X			50.73(a)(2)(i)					
	20.405(a)(1)(V)			50.73(a)(2)(f)			50.73(1)(2)(v)(B)					
20.405(a)(1)(X)			50.73(a)(2)(II)			50.73(a)(2)(c)						

(LICENSEE CONTACT FOR THIS LER (12))

NAME Comelius T. Coddington - Sr. Project Engineer, Nuclear Licensing	TELEPHONE NUMBER
	AREA CODE: 7 1 7 NUMBER: 5 4 2 - 3 2 8 9

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

CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NPRDS	CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NPRDS

SUPPLEMENTAL REPORT EXPECTED (14)

<input type="checkbox"/> YES (If yes, complete EXPECTED SUBMISSION DATE)	<input checked="" type="checkbox"/> NO	EXPECTED SUBMISSION DATE (15)	MONTH	DAY	YEAR

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

On October 19, 1996, at 1508 hours with Unit 1 starting up in Condition 2 at 1% power, the acoustic monitor for the 'L' Main Steam Safety/Relief Valve (SRV) illuminated, indicating the SRV was open. The acoustic monitor was declared inoperable and Technical Specification 3.3.7.5, action 80b was entered. Repair of the monitor required a primary containment entry; therefore, the unit was manually scrammed on October 20, 1996, at 0136 hours from 1% power. All control rods inserted fully. There were no SRV lifts, Emergency Core Cooling System (ECCS) injections, or diesel generator starts as a result of the manual scram. The shutdown of the unit is reportable per 10CFR50.73(a)(2)(i) in that the Susquehanna SES Unit 1 completed a reactor shutdown as required by the unit's Technical Specifications. During surveillance testing prior to the shutdown of Unit 1, the acoustic monitor for the 'G' Main Steam Safety/Relief Valve (SRV) was declared inoperable. During the repair and investigation activities, the acoustic monitor for the 'R' Main Steam Safety/Relief Valve (SRV) was found not to be functioning. The failures of the acoustic monitors were due to broken wires in the cable connector, low sensitivity on detection circuitry and failed charge converter. The acoustic monitors were repaired and a functional test of all acoustic monitors was successfully performed. In addition to the physical failures of the acoustic monitors, there was less than adequate corrective action from previous events in that the corrective actions improved the acoustic monitor connector but did not address controlling work activities in the area of the acoustic monitors prior to, during or following acoustic monitor functional testing, nor was the design of the entire acoustic monitor system reviewed or analyzed. Additional corrective actions include performing a failure analysis on the cable connector, discussing with vendor on improving connector design, performing a preventative maintenance review of the acoustic monitoring system, and performing a review of work plans, scheduling of functional testing and control of access to the acoustic monitors.

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

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), U.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) Unit 1 Susquehanna Steam Electric Station	DOCKET NUMBER (2) 0 5 0 0 0 3 8 7	LER NUMBER (6)						PAGE (3)		
		YEAR	SEQUENTIAL NUMBER			REVISION NUMBER				
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TEXT (If more space is required, use additional NRC Form 366A's) (17)

EVENT DESCRIPTION

On October 19, 1996, at 1508 hours with Unit 1 starting up in Condition 2 at 1% power, the acoustic monitor light for the 'L' Main Steam Safety/Relief Valve (SRV) (EIS Code: SB) illuminated, indicating the SRV was open. The off-normal procedure was immediately performed and alternate control room indications were used to confirm the SRV was closed. The SRV tailpipe temperature indication did not change and reactor pressure remained steady. The acoustic monitor was declared inoperable and Technical Specification 3.3.7.5, action 80b was entered.

Repair of the monitor required a primary containment entry; therefore, the unit was manually scrammed on October 20, 1996, at 0136 hours from 1% power. All control rods inserted fully. There were no SRV lifts, ECCS injections, or diesel generator starts as a result of the manual scram. The shutdown of the unit is reportable per 10CFR50.73(a)(2)(i) in that the Susquehanna SES Unit 1 completed a reactor shutdown as required by the unit's Technical Specifications.

During surveillance testing prior to the shutdown of Unit 1, the acoustic monitor for the 'G' Main Steam Safety/Relief Valve (SRV) was declared inoperable. During SRV testing, the acoustic monitor did not respond when the 'G' SRV was opened. Following the unit shutdown and during the repair/investigation activities of the acoustic monitors for the 'L' and 'G' Main Steam Safety/Relief Valves, the acoustic monitor for the 'R' Main Steam Safety/Relief Valve was found not to be functioning.

CAUSE OF EVENT

The cause of the failure of the acoustic monitor for the 'L' Main Steam Safety/Relief Valve was due to a broken wire in the cable connector. The most likely cause for the broken wire was due to outage activities since there was work in the acoustic monitor area following the successful functional test of the acoustic monitors.

The exact cause of the failure of the acoustic monitor for the 'G' Main Steam Safety/Relief Valve to alarm could not be found. The most likely cause is due to low flow through the SRV at low reactor pressure. This acoustic monitor has a low gain (less sensitivity); therefore, if there is insufficient flow to vibrate the tailpipe, the acoustic monitor will not alarm.

The acoustic monitor for the 'R' Main Steam Safety/Relief Valve was not functioning due to a broken connector wire and a failed charge converter. The most likely cause for the broken wire was due to outage activities since there was work in the area following successful testing of the acoustic monitors. The cause of the failed charge converter is unknown. The converter is sensitive to static and can be affected by

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FACILITY NAME (1) Unit 1 Susquehanna Steam Electric Station	DOCKET NUMBER (2) 0 5 0 0 0 3 8 7	LER NUMBER (8)						PAGE (3)		
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TEXT (If more space is required, use additional NRC Form 366A's) (17)

powering the unit on and off. It is also possible that the charge converter failed due to the failed cable or due to end of life.

In addition to the physical failures of the acoustic monitors, the following factors contributed to the event:

- There was less than adequate scheduling/procedure control to ensure work activities which could damage the acoustic monitors were completed prior to the acoustic monitor system functional testing.
- There was less than adequate corrective action from previous events in that the corrective actions improved the acoustic monitor connector but did not address controlling work activities in the area of the acoustic monitors prior to, during or following acoustic monitor functional testing.
- The design of the acoustic monitor system may be less than adequate and susceptible to damage due to mishandling. The cable connector was improved but the entire system was not reviewed or analyzed.

REPORTABILITY/ANALYSIS

This event was determined to be reportable per 10CFR50.73(a)(2)(i) in that the Susquehanna SES Unit 1 completed a reactor shutdown as required by the unit's Technical Specifications. Technical Specification 3.3.7.5 requires all Main Steam Safety/Relief Valve acoustic monitors to be operable in operational conditions 1 and 2. Since the acoustic monitors could not be restored to operable status within the time frame specified in the Technical Specifications, the unit was shutdown as required by the Technical Specifications.

The failure of the acoustic monitors does not affect the safety function of the SRVs. The position of the SRVs can be confirmed by indications other than the acoustic monitors. These indications included SRV tailpipe temperature and reactor pressure. The loss of the acoustic monitors does not affect the health and safety of the public.

In accordance with the guidance provided in NUREG 1022, Supplement 1, Item 14.1, the required submission date for this report was determined to be November 19, 1996.

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

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), U.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) Unit 1 Susquehanna Steam Electric Station	DOCKET NUMBER (2) 0 5 0 0 0 3 8 7	LER NUMBER (6)						PAGE (3)					
		YEAR		SEQUENTIAL NUMBER		REVISION NUMBER							
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TEXT (If more space is required, use additional NRC Form 366A's) (17)

CORRECTIVE ACTIONS

The broken wire connectors were reworked and the failed charge converter replaced. Following the repairs, an inspection and functional and surveillance testing on all the acoustic monitors was performed. Personnel access to the area was restricted during and following the repairs and retesting.

The following corrective actions are being performed:

- Determine corrective actions to improve connector design.
- Perform failure analysis of a failed acoustic monitor cable connector.
- Determine improvements to connector work plan.
- Perform a Preventative Maintenance review of the Acoustic Monitoring System.
- Implement as necessary, procedure/schedule changes to ensure Acoustic Monitor functional test is completed following all Drywell work activities.
- Implement method for controlling access in the area of the acoustic monitors during forced outages.

ADDITIONAL INFORMATION

Past Similar Events: Docket No. 50-388 LER 94-003-00
50-388 LER 95-014-00

Failed Component: None