

# ACCELERATED DISTRIBUTION DEMONSTRATION SYSTEM

## REGULATORY INFORMATION DISTRIBUTION SYSTEM (RIDS)

ACCESSION NBR: 9103150241    DOC. DATE: 91/03/11    NOTARIZED: NO    DOCKET #  
 FACIL: 50-387 Susquehanna Steam Electric Station, Unit 1, Pennsylv    05000387  
 AUTH. NAME    AUTHOR AFFILIATION  
 RYDER, T.S.    Pennsylvania Power & Light Co.  
 STANLEY, H.G.    Pennsylvania Power & Light Co.  
 RECIP. NAME    RECIPIENT AFFILIATION

SUBJECT: LER 91-002-00: on 910207, HPCI outboard steam supply line  
 isolation valve failed to open during testing. HPCI declared  
 inoperable. Causes unknown. Extensive investigation of problem  
 performed following event. Testing increased. W/910311 ltr.

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

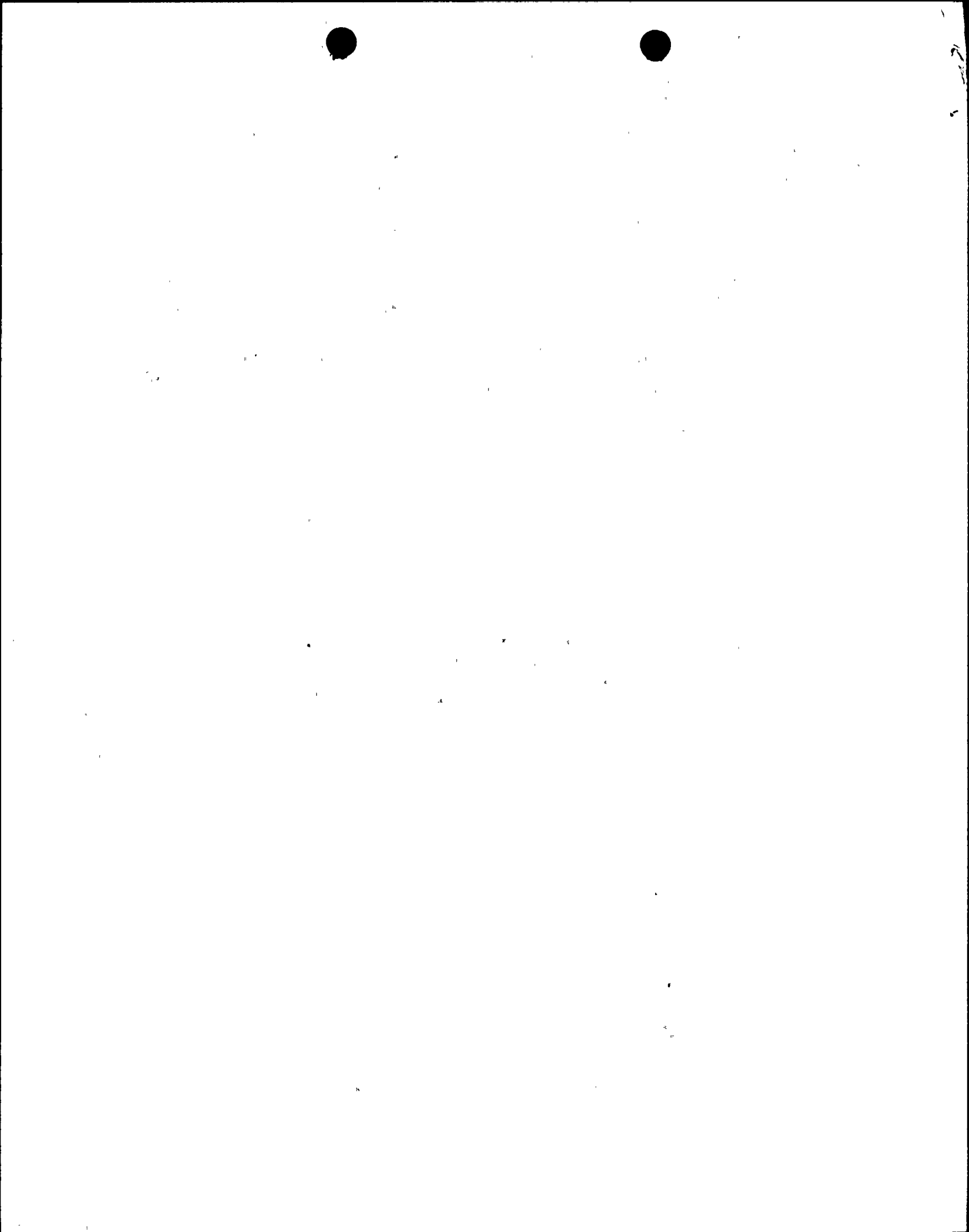
NOTES: LPDR 1 cy Transcripts. 05000387

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INTERNAL:	ACNW	2		2					
	AEOD/DOA	1		1					
	AEOD/ROAB/DSP	2		2					
	NRR/DET/EMEB 7E	1		1					
	NRR/DLPQ/LPEB10	1		1					
	NRR/DREP/PRPB11	2		2					
	NRR/DST/SICB 7E	1		1					
	NRR/DST/SRXB 8E	1		1					
	RES/DSIR/EIB	1		1					
EXTERNAL:	EG&G BRYCE, J.H	3		3					
	NRC PDR	1		1					
	NSIC MURPHY, G.A	1		1					
	ACRS	2		2					
	AEOD/DSP/TPAB	1		1					
	NRR/DET/ECMB 9H	1		1					
	NRR/DLPQ/LHFB11	1		1					
	NRR/DOEA/OEAB	1		1					
	NRR/DST/SELB 8D	1		1					
	NRR/DST/SPLB8D1	1		1					
	REG FILE 02	1		1					
	RGNT FILE 01	1		1					
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**Pennsylvania Power & Light Company**

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March 11, 1991

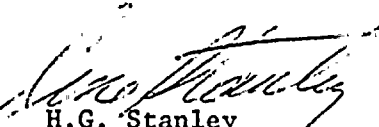
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SUSQUEHANNA STEAM ELECTRIC STATION  
LICENSEE EVENT REPORT 91-002-00  
FILE R41-2  
PLAS -473

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

Attached is Licensee Event Report 91-002-00. This report is being made pursuant to 10CFR50.73(a)(2)(v), in that HPCI was determined to be inoperable resulting in the loss of a single train safety system.

  
H.G. Stanley  
Superintendent of Plant - Susquehanna

TSR/mjm

cc: Mr. T. T. Martin  
Regional Administrator, Region I  
U.S. Nuclear Regulatory Commission  
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PDR ADOCK 05000387  
S PDR

TF-20



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-630), 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) <b>Susquehanna Steam Electric Station - Unit 1</b>	DOCKET NUMBER (2) <b>0 5 0 0 0 3 8 7</b>	PAGE (3) <b>1 OF 0 4</b>
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TITLE (4) **HPCI System Declared Inoperable Due to Failure of Outboard Steam Supply Line Isolation Valve to Stroke Open**

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)
0 2	0 7	9 1	9 1	0 0 2	0 0	0 3	1 1	9 1		0 5 0 0 0

OPERATING MODE (9) <b>1</b>	THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (Check one or more of the following) (11)				
POWER LEVEL (10) <b>1 0 0</b>	<input type="checkbox"/> 20.402(b)	<input type="checkbox"/> 20.405(c)	<input type="checkbox"/> 50.73(a)(2)(iv)	<input type="checkbox"/> 73.71(b)	OTHER (Specify in Abstract below and in Text, NRC Form 368A)
	<input type="checkbox"/> 20.405(a)(1)(i)	<input type="checkbox"/> 50.36(c)(1)	<input checked="" type="checkbox"/> 50.73(a)(2)(v)	<input type="checkbox"/> 73.71(c)	
	<input type="checkbox"/> 20.405(a)(1)(ii)	<input type="checkbox"/> 50.36(c)(2)	<input type="checkbox"/> 50.73(a)(2)(vi)		
	<input type="checkbox"/> 20.405(a)(1)(iii)	<input type="checkbox"/> 50.73(a)(2)(i)	<input type="checkbox"/> 50.73(a)(2)(vii)(A)		
	<input type="checkbox"/> 20.405(a)(1)(iv)	<input type="checkbox"/> 50.73(a)(2)(ii)	<input type="checkbox"/> 50.73(a)(2)(vii)(B)		
	<input type="checkbox"/> 20.405(a)(1)(v)	<input type="checkbox"/> 50.73(a)(2)(iii)	<input type="checkbox"/> 50.73(a)(2)(ix)		

LICENSEE CONTACT FOR THIS LER (12)

NAME <b>T.S. Ryder, Power Production Engineer</b>	TELEPHONE NUMBER
	AREA CODE: <b>7 1 7</b> NUMBER: <b>5 4 2 1 - 3 2 3 5</b>

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

CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NRC	CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NRC

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

On February 7, 1991 with Unit 1 operating in Condition 1 at 100% power, the HPCI Outboard Steam Supply Line Isolation Valve failed to open during a routine valve exercising surveillance test. After further attempts to open the valve were unsuccessful, HPCI was declared INOPERABLE. The event has been determined to be reportable per 10CFR50.73(a)(2)(v) in that the inoperability of HPCI is a loss of a single train safety system. A few hours later the valve was successfully opened even though no corrective maintenance had been performed. The cause of this event was unable to be determined although there was an apparent intermittent malfunction in the valve open control circuit which has not repeated. Extensive inspections of the control circuit wiring, relays, and terminations were completed and no discrepancies were found that could explain the event. The valve has been stroked successfully a number of times since the event. However, the frequency for the valve exercising surveillance test for this valve will be increased to monthly for the next quarter to ensure proper operation.

LICENSEE EVENT REPORT (LER)  
TEXT CONTINUATION

ESTIMATED BURDEN PER RESPONSE TO COMPLY WITH THIS INFORMATION COLLECTION REQUEST: 60.0 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 (8)			PAGE (3)	
		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER		
		9   1	-   0   0   2	-   0   0	0   2	OF 0   4

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

DESCRIPTION OF EVENT

On February 7, 1991 with Unit 1 operating in Condition 1 at 100% power, a High Pressure Coolant Injection (HPCI, EIIIS Code: BJ) valve exercising test was being performed as a routine quarterly surveillance. After successfully closing the HPCI Outboard Steam Supply Line Isolation Valve HV-E41-1F003 within the allowable time limit, the valve could not be reopened from the control room. With HV-E41-1F003 in the closed position, the main steam supply flowpath to the HPCI turbine is isolated preventing HPCI operation.

Shortly thereafter steam pressure was isolated from the upstream side of HV-E41-1F003 to see if lowering the differential pressure across the valve would allow it to open. The valve still failed to open. An operator (utility, non-licensed) was dispatched to the valve's electrical supply breaker. He attempted to reset the breaker even though there was no indication that it had tripped. He checked that the motor overload switches were reset and observed no abnormalities with the breaker.

Another attempt was made to open the valve. The operator was unable to hear any breaker relays operating which should have been audible when the open control circuit was energized. This indicated there was an electrical problem with HV-E41-1F003. At this point (2230 hours on February 7, 1991) HPCI was declared INOPERABLE, Limiting Condition for Operation (LCO) 3.5.1 of the Unit 1 Technical Specifications was entered and electrical maintenance personnel were contacted to further investigate.

Approximately two hours later, with electrical maintenance personnel now at the valve's supply breaker to monitor its performance, another attempt was made to open the valve. This time the valve opened properly, even though no repairs had been made to correct the original problem. The valve was reclosed and steam pressure was reapplied against the valve. HV-E41-1F003 was again successfully stroked open. LCO 3.5.1 was cleared at 0140 hours on February 8, 1991.

Several actions were taken within the next few weeks to ensure the proper functioning of HV-E41-1F003. The valve was stroked closed and open three times the week following the event with no problems. Visual checks were performed and proper operation of relays in the valve's control circuit was observed. The relays were inspected for pitting, burning, freedom of movement and contact makeup with no discrepancies found. Additionally, the valve control circuit wiring was inspected including terminations, breaker wiring, Motor Operated Valve (MOV) wiring, torque switch and MOV limit switch compartment. One wire was found slightly loose in the closed control circuit and was tightened. It was not loose enough to interrupt continuity to the closed circuit and we do not believe this loose wire would have caused the open control circuit to have malfunctioned. There were no additional discrepancies identified.

LICENSEE EVENT REPORT (LER)  
TEXT CONTINUATION

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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 (6)			PAGE (3)		
		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER			
		9   1	-   0   0   2	-   0   0	0   3	OF	0   4

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

CAUSE OF EVENT

There was an apparent intermittent malfunction in the HV-E41-1F003 open control circuit which has not repeated since. When an operator (utility, non-licensed) was situated at the valve electrical supply breaker and the valve handswitch was placed in the open position, he was unable to hear the operation of any breaker relays which should have been audible upon circuit energization. Extensive inspections of the control circuit and components were completed as detailed above. No discrepancies were found that could point to the cause of the event which remains indeterminate.

REPORTABILITY/ANALYSIS

The HPCI HV-E41-1F003 valve is the outboard containment isolation valve for the HPCI steam supply line. During normal operation the valve is open. It must remain open to support HPCI operation and it must be able to isolate the HPCI steam line and primary containment when called upon.

The event has been determined to be reportable per 10CFR50.73(a)(2)(v) because with the HV-E41-1F003 valve closed and unable to be opened, the HPCI system could not perform its safety function. With the HV-E41-1F003 valve closed, the steam line and containment isolation functions of the valve were being met. Technical Specification LCO 3.5.1 requires that, provided Core Spray (CS, EIIS Code: BM), Low Pressure Coolant Injection (LPCI, EIIS Code: BO), Automatic Depressurization (ADS, EIIS Code: Not Listed), and Reactor Core Isolation Cooling (RCIC, EIIS Code: BN) Systems are OPERABLE, with HPCI System INOPERABLE, HPCI shall be restored to OPERABLE status within 14 days or the Unit shall be in at least HOT SHUTDOWN within the next 12 hours and reactor steam dome pressure shall be reduced to less than or equal to 150 psig within the following 24 hours. This action statement had been entered at 2230 hours on February 7, 1991 when the HPCI Outboard Steam Supply Line Isolation Valve, HV-E41-1F003, could not be opened from the control room. Since the remaining Emergency Core Cooling (ECCS) systems required by T/S LCO 3.5.1 were OPERABLE, the Unit was assured of adequate core cooling in the event of a loss of coolant accident. LCO 3.5.1 was cleared at 0140 hours on February 8, 1991. There were no safety consequences or compromise to the public health or safety during the time that HPCI was inoperable.

LICENSEE EVENT REPORT (LER)  
TEXT CONTINUATION

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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 (6)			PAGE (3)	
		YEAR 9 1	SEQUENTIAL NUMBER - 0 0 2	REVISION NUMBER - 0 0	0 4	OF 0 4

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

In accordance with the guidance provided in NUREG 1022 Supplement 1 Items 14.1 and 14.10, the required submission date for this report was determined to be March 11, 1991.

CORRECTIVE ACTIONS

As detailed in the event description, extensive investigation and troubleshooting of the problem were performed immediately following the event. No definite cause could be determined. To provide added assurance of continued valve operability, the frequency for the valve exercising test for HV-E41-1F003 will be increased to monthly for the next quarter.

ADDITIONAL INFORMATION

Failed Component Identification: Not applicable.

Previous Similar Events:

There were two previous similar events involving the improper opening or closure of HPCI isolation valves which resulted in the INOPERABILITY of HPCI, the loss of a single train safety system. These events were documented in LER's 87-019 (Docket 50-387) and 87-007 (Docket 50-388). The first event was due to an incorrect torque switch setting and the second event was due to malfunctioning control circuit relays.