

# ACCELERATED DISTRIBUTION DEMONSTRATION SYSTEM

## REGULATORY INFORMATION DISTRIBUTION SYSTEM (RIDS)

ACCESSION NBR: 9312160289      DOC.DATE: 93/12/10      NOTARIZED: NO      DOCKET #  
 FACIL: 50-388 Susquehanna Steam Electric Station, Unit 2, Pennsylv      05000388  
 AUTH.NAME      AUTHOR AFFILIATION  
 WEHRY, R.R.      Pennsylvania Power & Light Co.  
 STANLEY, H.G.      Pennsylvania Power & Light Co.  
 RECIP.NAME      RECIPIENT AFFILIATION

SUBJECT: LER 93-007-00: on 931210, unplanned ESF actuation occurred when  
 HPCI suction valve auto transfer logic actuated. Caused by  
 procedure inadequacy. C/A: revising procedure for properly  
 draining instrument.

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**Pennsylvania Power & Light Company**

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December 10, 1993

U.S. Nuclear Regulatory Commission  
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SUSQUEHANNA STEAM ELECTRIC STATION  
LICENSEE EVENT REPORT 93-007-00  
FILE R41-2  
PLAS - 583

Docket No. 50-388  
License No. NPF-22

Attached is Licensee Event Report 93-007-00. This report is being made pursuant to 10CFR50.73(a)(2)(iv), in that an unplanned Engineered Safety Feature (ESF) actuation occurred when the High Pressure Coolant Injection (HPCI) system suction valve auto transfer logic actuated.

  
H.G. Stanley  
VP - Nuclear Operations

RRW/mjm

cc: Mr. T. T. Martin  
Regional Administrator, Region I  
U.S. Nuclear Regulatory Commission  
475 Allendale Road  
King of Prussia, PA 19406

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

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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 2	DOCKET NUMBER (2) 0 5 0 0 0 3 8 8	PAGE (3) 1 OF 0 3
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TITLE (4)  
Unplanned ESF Actuation Due to Spurious Auto-Transfer of HPCI Suction Valves

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

OPERATING MODE (9) 1	THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (Check one or more of the following) (11)									
POWER LEVEL (10) 1 0 0	20.402(b)	20.405(c)	<input checked="" type="checkbox"/>	50.73(a)(2)(iv)	73.71(b)					
	20.405(a)(1)(i)	50.36(c)(1)	<input type="checkbox"/>	50.73(a)(2)(v)	73.71(c)					
	20.405(a)(1)(ii)	50.36(c)(2)	<input type="checkbox"/>	50.73(a)(2)(vii)	OTHER (Specify in Abstract below and in Text, NRC Form 366A)					
	20.405(a)(1)(iii)	50.73(a)(2)(i)	<input type="checkbox"/>	50.73(a)(2)(viii)(A)						
	20.405(a)(1)(iv)	50.73(a)(2)(ii)	<input type="checkbox"/>	50.73(a)(2)(viii)(B)						
20.405(a)(1)(v)	50.73(a)(2)(iii)	<input type="checkbox"/>	50.73(a)(2)(ix)							

LICENSEE CONTACT FOR THIS LER (12)							TELEPHONE NUMBER			
NAME R. R. Wehry - Power Production Engineer - Compliance							AREA CODE 7 1 7 5 4 2 - 3 6 6 4			

COMPLETE ONE LINE FOR EACH COMPONENT FAILURE DESCRIBED IN THIS REPORT (13)											
CAUSE	SYSTEM	COMPONENT	MANUFAC-TURER	REPORTABLE TO NPRDS		CAUSE	SYSTEM	COMPONENT	MANUFAC-TURER	REPORTABLE TO NPRDS	

SUPPLEMENTAL REPORT EXPECTED (14)				EXPECTED SUBMISSION DATE (15)	MONTH	DAY	YEAR
<input type="checkbox"/> YES (If yes, complete EXPECTED SUBMISSION DATE) <input checked="" type="checkbox"/> NO							

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

At 2127 hours on November 10, 1993, with Unit 2 in Condition 1 at 100% power, the High Pressure Coolant Injection (HPCI) system pump suction automatically swapped from the Condensate Storage Tank (CST) (normal suction) to the Suppression Pool during performance of Instrument and Controls (I&C) Section surveillance testing. All equipment functioned per design. No HPCI system initiation or injection occurred and no other system components were affected. The cause of this event was a procedure inadequacy. The surveillance test procedure did not provide adequate detail for lowering the water level in a float chamber-type level switch. This resulted in an I&C work crew (who had not previously performed this specific evolution) opening an instrument isolation valve to the Suppression Chamber to attempt to drain the float chamber, vice draining to a rad container via a test connection drain. When the isolation valve was opened, the combination of a high water level in the instrument being tested and a pressure differential between the Suppression Chamber and the instrument float chamber resulted in sufficient level increase in an adjacent instrument chamber (which is in parallel with the chamber of the instrument being tested) to cause the actuation. The HPCI system was restored to normal standby alignment. Corrective actions include revising the procedure to include necessary details for properly draining the instrument, reviewing the event with I&C personnel and reviewing similar, related procedures and adding additional details where appropriate.

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.

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		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER			
		9   3	-   0   0   7	-   0   0	0   2	OF	0   3

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

DESCRIPTION OF EVENT

At 2127 hours on November 10, 1993, with Unit 2 in Condition 1 at 100% power, the High Pressure Coolant Injection (HPCI; EIIS Code: BJ) system pump suction supply automatically swapped from the Condensate Storage Tank (CST; EIIS Code: KA), which is the normal suction source, to the Suppression Pool. At the time of the automatic valve swap, Instrument and Controls (I&C) surveillance testing was in progress. All equipment functioned per design. No HPCI system initiation or injection occurred and no other system components were affected.

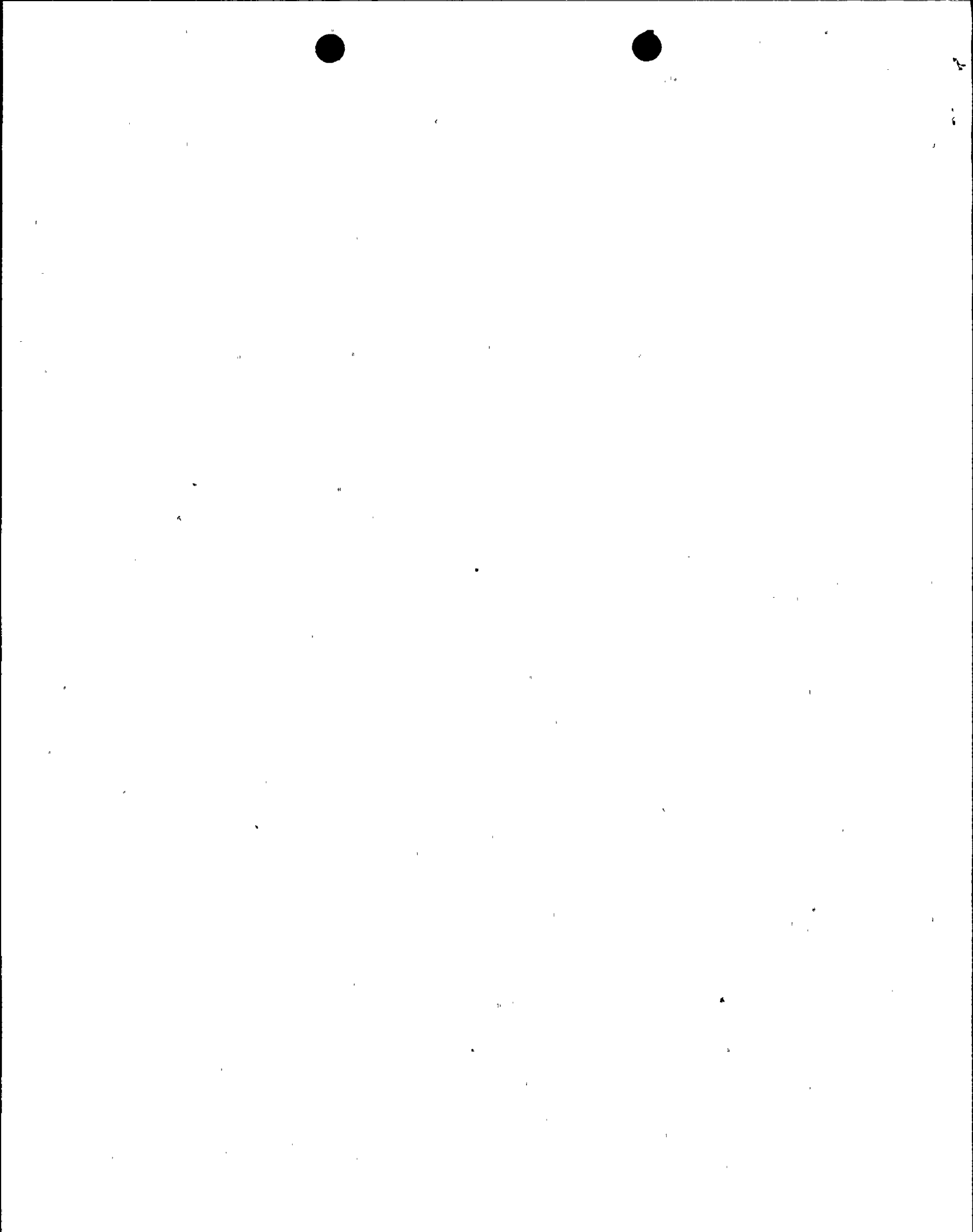
CAUSE OF EVENT

The cause of this event was a surveillance procedure inadequacy. The surveillance procedure being implemented was SI-252-210, which is an I&C Section Monthly Functional Test of Suppression Pool High Water Level Channel Instruments 'A' and 'B', which are Magnetrol float chamber-type level instruments. Confirmation of instrument reset, after verifying the high level switch actuation, requires lowering the water level in the instrument float chamber. The surveillance procedure did not provide adequate detail for lowering the water level in the chamber (i.e., draining to a rad container via the test connection drain valve). The I&C work crew (utility; non-licensed) performing the surveillance test on 11/10/93 were qualified to perform bistable type procedures, but had not specifically performed SI-252-210 previously. As such, they did not have the benefit of knowing specific implications based on previous performances or intimate knowledge of system/installation configuration limitations.

The I&C personnel proceeded to open the lower instrument isolation valve (vice the test connection drain valve) to drain the 'A' instrument chamber to the Suppression Pool. The Suppression Pool water level was at 23 feet (the trip setpoint for the 'A' and 'B' instrument is 23 feet, 9 inches). The Suppression Chamber air space pressure was 0.36 psig. The 'A' instrument float chamber had been previously vented to atmosphere when verifying the high level switch actuation and the level in the 'A' instrument chamber was above the high level trip setpoint. The amount of water in the 'A' instrument chamber, together with the fact that the Suppression Chamber air space was pressurized and the inherent hydraulic resistance due to the physical piping run from the instruments back to the Suppression Pool, resulted in sufficient water level increase in the 'B' instrument float chamber (which is in parallel with the 'A' instrument and whose trip function was still intact) to actuate its switch. This resulted in the HPCI suction valve automatic swapping.

REPORTABILITY/ANALYSIS

The accident transient analysis for Susquehanna assumes the availability of the Suppression Pool water inventory for HPCI. Normally, the HPCI system is aligned to the CST as a suction source due to the better quality of the water. A design feature provided for the HPCI System suction is the automatic opening



LICENSEE EVENT REPORT (LER)  
TEXT CONTINUATION

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

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

of the Suppression Pool suction valve and automatic closing of the CST suction valve if a high water level is detected in the Suppression Pool. The auto transfer of the HPCI suction valves is considered to be an Engineered Safety Feature (ESF) of the HPCI system. As such, the spurious actuation of the logic which resulted in the repositioning of the suction valves constitutes an unplanned ESF actuation, which is reportable per 10CFR50.73(a)(2)(iv).

There were no safety consequences or compromise to public health or safety as a result of this event. The HPCI system remained OPERABLE with an available suction source during the event and could have fulfilled its design safety function if called upon. All equipment functioned per design. The HPCI system was restored to its normal standby alignment following the incident.

In accordance with the guidelines provided in NUREG 1022, Supplement 1, Item 14.1, the required submission date for this report was determined to be December 10, 1993.

CORRECTIVE ACTION

Immediately following the ESF actuation, the I&C surveillance testing was suspended. Upon verification that all equipment functioned properly per design, the HPCI system was restored to its normal standby alignment.

The surveillance test procedure (SI-252-201) was revised to provide details for draining the instrument float chambers to a rad container via the test connection drain.

I&C Production Engineering is reviewing the related HPCI surveillance procedures for both Unit 2 and Unit 1 and revising, as applicable, to include similar, necessary details.

Training will be conducted with I&C personnel to emphasize the need for procedures to contain sufficient detail for actions which have case specific performance implications and to emphasize the importance and significance of work activity tailboard reviews in identifying and resolving concerns.

ADDITIONAL INFORMATION

Failed Component Identification: Not applicable.

Previous Similar Events:

LER 50-387/89-022-00 reported an unplanned ESF actuation involving auto-swap of the HPCI suction. The cause of that event, however, was attributed to human error in that the I&C Technician performing the test omitted a step in the procedural sequence.

