

# ACCELERATED DISTRIBUTION DEMONSTRATION SYSTEM

## REGULATORY INFORMATION DISTRIBUTION SYSTEM (RIDS)

ACCESSION NBR: 9003080034      DOC. DATE: 90/03/02      NOTARIZED: NO      DOCKET #  
 FACIL: 50-387 Susquehanna Steam Electric Station, Unit 1, Pennsylv      05000387  
 AUTH. NAME      AUTHOR AFFILIATION  
 CRIST, M.L.      Pennsylvania Power & Light Co.  
 STANLEY, H.G.      Pennsylvania Power & Light Co.  
 RECIP. NAME      RECIPIENT AFFILIATION

SUBJECT: LER 90-006-00: on 900203, RWCU isolated ESF when power lost to high differential flow instrument.

DISTRIBUTION CODE: IE22T      COPIES RECEIVED: LTR        ENCL        SIZE: 4  
 TITLE: 50.73/50.9 Licensee Event Report (LER), Incident Rpt, etc.

NOTES: LPDR 1 cy Transcripts. 05000387

	RECIPIENT ID CODE/NAME	COPIES	LTR	ENCL	RECIPIENT ID CODE/NAME	COPIES	LTR	ENCL
	PD1-2 LA	1		1	PD1-2 PD	1		1
	THADANI, M	1		1				
INTERNAL:	ACNW	2		2	ACRS	2		2
	AEOD/DOA	1		1	AEOD/DSP/TPAB	1		1
	AEOD/ROAB/DSP	2		2	DEDRO	1		1
	NRR/DET/ECMB 9H	1		1	NRR/DET/EMEB9H3	1		1
	NRR/DET/ESGB 8D	1		1	NRR/DLPQ/LHFB11	1		1
	NRR/DLPQ/LPEB10	1		1	NRR/DOEA/OEAB11	1		1
	NRR/DREP/PRPB11	2		2	NRR/DST/SELB 8D	1		1
	NRR/DST/SICB 7E	1		1	NRR/DST/SPLB8D1	1		1
	NRR/DST/SRXB 8E	1		1	<u>REG FILE 02</u>	1		1
	RES/DSIR/EIB	1		1	<del>RGNT</del> FILE 01	1		1
EXTERNAL:	EG&G WILLIAMS, S	4		4	L ST LOBBY WARD	1		1
	LPDR	1		1	NRC PDR	1		1
	NSIC MAYS, G	1		1	NSIC MURPHY, G.A	1		1
	NUDOCS FULL TXT	1		1				
NOTES:		2		2				

NOTE TO ALL "RIDS" RECIPIENTS:

PLEASE HELP US TO REDUCE WASTE! CONTACT THE DOCUMENT CONTROL DESK,  
 ROOM P1-37 (EXT. 20079) TO ELIMINATE YOUR NAME FROM DISTRIBUTION  
 LISTS FOR DOCUMENTS YOU DON'T NEED!

FULL TEXT CONVERSION REQUIRED  
 TOTAL NUMBER OF COPIES REQUIRED: LTR 39 ENCL 39

TEXT ASCII SCAN

A014



Pennsylvania Power & Light Company

Two North Ninth Street • Allentown, PA 18101 • 215 / 770-5151

March 2, 1990

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

SUSQUEHANNA STEAM ELECTRIC STATION  
LICENSEE EVENT REPORT 90-006-00  
FILE R41-2  
PLAS -413

---

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

Attached is Licensee Event Report 90-006-00. This event was determined to be reportable per 10CFR50.73(a)(2)(iv) in that an unplanned Engineered Safety Feature (ESF) actuation occurred when the Reactor Water Cleanup System isolated.

H.G. Stanley  
Superintendent of Plant - Susquehanna

MLC/mjm

cc: Mr. W. T. Russell  
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

*TE22*  
*11*

9003080034 900302  
PDR ADUCK 05000387  
S Pnc

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   3
--	--	----------------------

TITLE (4) Reactor Water Cleanup System Isolated (ESF) When Power Was Lost To Its High Differential Flow Instrument

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	03	9	0	0	0	3	02			0   5   0   0   0

OPERATING MODE (9) 4	THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (Check one or more of the following) (11)									
POWER LEVEL (10) 0   0   0	20.402(b)	20.405(c)	<input checked="" type="checkbox"/>	50.73(a)(2)(iv)	73.71(b)					
	20.406(a)(1)(i)	50.38(c)(1)	<input type="checkbox"/>	50.73(a)(2)(v)	73.71(c)					
	20.405(a)(1)(ii)	50.38(c)(2)	<input type="checkbox"/>	50.73(a)(2)(vii)	OTHER (Specify in Abstract below and in Text, NRC Form 366A)					
	20.406(a)(1)(iii)	50.73(a)(2)(i)	<input type="checkbox"/>	50.73(a)(2)(viii)(A)						
	20.406(a)(1)(iv)	50.73(a)(2)(ii)	<input type="checkbox"/>	50.73(a)(2)(viii)(B)						
	20.406(a)(1)(v)	50.73(a)(2)(iii)	<input type="checkbox"/>	50.73(a)(2)(ix)						

LICENSEE CONTACT FOR THIS LER (12)

NAME Michael L. Crist - Compliance Evaluator	TELEPHONE NUMBER 7   1   7   5   4   2   -   1   3   2   1   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										
X	E	E	B	T	R	Y	P	4	7	9	Y								

SUPPLEMENTAL REPORT EXPECTED (14)

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)

At 1332 hours on February 3, 1990 with Unit 1 in Condition 4, Cold Shutdown, an unplanned ESF actuation occurred when the Reactor Water Cleanup (RWCU) System's containment isolation valves automatically closed. As the 'B' Reactor Recirc Pump Motor-Generator Set was being placed in service a voltage perturbation occurred. The voltage drop was sensed on the preferred and alternate 480 VAC power supplies to non-class 1E Instrument AC Uninterruptable Power Supply (UPS) 1D240 causing the UPS to transfer to its battery power supply, 1D243. The UPS shutdown when the battery was unable to maintain the loads and the AC sources were still in a undervoltage condition, de-energizing non-class 1E Instrument AC Bus 1Y218. The RWCU high differential flow instrumentation is among the loads affected by the loss of power. Loss of power to this instrumentation initiated a RWCU System isolation signal. System response to the isolation signal was per design. The remaining loads, associated with 1Y218, responded as expected to the event.

The root cause of the event was a failure of one of the forty cells in battery 1D243. The battery was unable to maintain load due to the cell being in an open state. There were no safety consequences or compromise to public health or safety as a result of this incident. The failed cell was replaced and the UPS was returned to operable status. Actions to prevent recurrence include development of a battery test which will be incorporated into the existing semi-annual preventative maintenance activity for this UPS and similar UPS.

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

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

DESCRIPTION OF EVENT

At 1332 hours on February 3, 1990, with Unit 1 in Condition 4, Cold Shutdown, an unplanned Engineered Safety Feature (ESF) actuation occurred when the Reactor Water Cleanup (RWCU, EIIS Code: CE) System's inboard and outboard primary containment isolation valves, HV-144-F001 and HV-144-F004 respectively, automatically closed. As the 'B' Reactor Recirculating Pump Motor-Generator Set (EIIS Code: AD) was being placed in service a voltage perturbation was experienced on Startup Bus 10 and Auxiliary Bus 11B. The voltage drop was sensed on the preferred and alternate 480 VAC power supplies to non-class 1E Instrument AC Uninterruptable Power Supply (UPS) 1D240 (EIIS Code: EE). Per design, the UPS transferred to its battery power supply, 1D243. The UPS shutdown when the battery was unable to maintain the loads and the AC sources were still in a undervoltage condition. As a result, non-class 1E Instrument AC Bus 1Y218 was de-energized. Among the loads that were affected was the RWCU high differential flow instrumentation. Loss of power this instrumentation initiates a RWCU System isolation signal. Per design, the RWCU inboard and outboard primary containment isolation valves closed. System response to the isolation was as designed. The remaining loads, associated with 1Y218, responded as expected to the event. Once the 480 VAC power supplies stabilized, Operations personnel (utility, non-licensed) reset 1D240's output breaker, restoring power to 1Y218. The RWCU System was returned to service at 1405 hours. At 1726 hours, ENS notification was made in accordance with 10CFR50.72(b) (2) (ii).

CAUSE OF EVENT

The root cause of the event was a failure of one of the forty cells in battery 1D243. The failure of the cell appears to be random, no specific cause could be identified. The battery was unable to maintain load due to the cell being in an open state. Consequently, non-class 1E UPS 1D240 shutdown and nonclass 1E Instrument AC Bus 1Y218 was de-energized. Bus 1Y218 supplies power to the RWCU System's high differential flow instrumentation. Loss of power to this instrumentation initiated a RWCU isolation signal.

REPORTABILITY/ANALYSIS

This event was determined to be reportable per 10CFR50.73(a) (2) (iv), in that an unplanned Engineered Safety Feature (ESF) actuation occurred when the RWCU System's primary containment isolation valves closed due to loss of power to the system's high differential flow instrumentation. There were no safety consequences or compromise to public health or safety as a result of this

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 9   0	SEQUENTIAL NUMBER -   0   0   6	REVISION NUMBER -   0   0	0   3	OF	0   3

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

event. This assessment is based on two facts. First, the UPS and its loads are non-quality and are not required for safe shutdown of the plant. Secondly, HV-144-F001 and HV-144-F004 performed their function of containment isolation, as designed. This function would have occurred regardless of power level.

In accordance with the guidance provided in NUREG 1022 Supplement 1 Item 14, the required submission date for this report was determined to be 03/05/90.

CORRECTIVE ACTIONS

Operations personnel reset 1D240's output breaker when the 480 VAC power supplies stabilized, restoring power to 1Y218, and began restoring loads lost during the event. Investigations by Maintenance personnel (utility, non-licensed) found one of the forty cells in battery 1D243 in an open state, i.e., failed. An evaluation was performed, by Technical Section personnel (utility, non-licensed), allowing the failed cell to be temporarily removed from service and the battery's charging voltage be reduced from 272 VDC to approximately 265 VDC in order to return the UPS to operable status. On February 13, 1990 the cell was replaced and the system was returned to its normal configuration. Actions to prevent recurrence include development of a battery test which will be incorporated into the existing semi-annual preventative maintenance activity for this UPS and similar UPS.

ADDITIONAL INFORMATION

Failed Component: Battery: 6 VDC cell  
Model: PRC-6165  
Manufacturer: Power Battery Company, Inc.

Previous Similar Events: None

There have been past ESF acutations involving RWCU isolations initiated from high differential flow signals. It was determined from a review of these events, however, that the causal factors for the previous events were not similar.



1