

# ACCELERATED DISTRIBUTION DEMONSTRATION SYSTEM

## REGULATORY INFORMATION DISTRIBUTION SYSTEM (RIDS)

ACCESSION NBR: 8903160019      DOC. DATE: 89/03/09      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.  
 BYRAM, R.G.      Pennsylvania Power & Light Co.  
 RECIPIENT NAME      RECIPIENT AFFILIATION

SUBJECT: LER 89-005-00: on 890207, condensate pump motor power feed connection failure causes ET resulting in manual scram.      W/8      ltr.

DISTRIBUTION CODE: IE22D      COPIES RECEIVED: LTR 1 ENCL 1      SIZE: 4  
 TITLE: 50.73 Licensee Event Report (LER), Incident Rpt, etc.

NOTES: LPDR 1 cy Transcripts.      05000387 /

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	PD1-2 LA THADANI, M	1 1	PD1-2 PD	1 1
INTERNAL:	ACRS MICHELSON	1 1	ACRS MOELLER	2 2
	ACRS WYLIE	1 1	AEOD/DOA	1 1
	AEOD/DSP/TPAB	1 1	AEOD/ROAB/DSP	2 2
	ARM/DCTS/DAB	1 1	DEDRO	1 1
	NRR/DEST/ADE 8H	1 1	NRR/DEST/ADS 7E	1 0
	NRR/DEST/CEB 8H	1 1	NRR/DEST/ESB 8D	1 1
	NRR/DEST/ICSB 7	1 1	NRR/DEST/MEB 9H	1 1
	NRR/DEST/MTB 9H	1 1	NRR/DEST/PSB 8D	1 1
	NRR/DEST/RSB 8E	1 1	NRR/DEST/SGB 8D	1 1
	NRR/DLPQ/HFB 10	1 1	NRR/DLPQ/QAB 10	1 1
	NRR/DOEA/EAB 11	1 1	NRR/DREP/RAB 10	1 1
	NRR/DREP/RPB 10	2 2	NRR/DRIS/SIB 9A	1 1
	NUDOCS-ABSTRACT	1 1	<u>REG FILE</u> 02	1 1
	RES/DSIR/EIB	1 1	RES/DSR/PRAB	1 1
	RGN1 FILE 01	1 1		
EXTERNAL:	EG&G WILLIAMS, S	4 4	FORD BLDG HOY, A	1 1
	H ST LOBBY WARD	1 1	LPDR	1 1
	NRC PDR	1 1	NSIC MAYS, G	1 1
	NSIC MURPHY, G.A	1 1		

NOTES:      2      2

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LICENSEE EVENT REPORT (LER)

FACILITY NAME (1) Susquehanna Steam Electric Station - Unit 1	DOCKET NUMBER (2) 0 5 0 0 0 3 1 8 7	PAGE (3) 1 OF 0 3
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TITLE (4) Condensate Pump Motor Power Feed Connection Failure Causes Electrical Transient Resulting In Manual Scram

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		
0 2	0 7	8 9	8 9	0 0 5	0 0	0 3	0 9	8 9	DOCKET NUMBER(S) 0 5 0 0 0		

OPERATING MODE (9) 2	THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (Check one or more of the following) (11)																				
POWER LEVEL (10) 0 1 0 1 0	20.402(b)	20.406(a)(1)(i)	20.406(a)(1)(ii)	20.406(a)(1)(iii)	20.406(a)(1)(iv)	20.406(a)(1)(v)	20.406(c)	50.38(c)(1)	50.38(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)(A)	50.73(a)(2)(vii)(B)	50.73(a)(2)(x)	73.71(b)	73.71(c)	OTHER (Specify in Abstract below and in Text, NRC Form 366A)
	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
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LICENSEE CONTACT FOR THIS LER (12)									
NAME T.S. Ryder - Power Production Engineer							TELEPHONE NUMBER 7 1 1 7 5 4 2 1 - 1 3 2 1 2 5		

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	
B	S   C	C   B   L	5 S   1   8   8	Y							

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

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

On February 7, 1989 with Unit 1 in Condition 2 and with a normal startup evolution in progress, the 'A' Condensate Pump was started and an extensive electrical transient occurred. Both Reactor Recirculation Pumps tripped and the Unit was manually scrambled per procedure due to loss of recirculation. Recirculation was restored and plant recovery was complete within about two hours. The event has been determined reportable per 10CFR50.73(a)(2)(iv) in that the reactor was manually scrambled and various Containment Isolation Valves closed. The plant responded to the electrical transient per design and there was no compromise to public health or safety. Equipment failure caused the electrical transient when an electrical fault occurred at the terminals for the 'A' Condensate Pump Motor. Unit 1 was placed in Cold Shutdown, the failed electrical components were replaced, and the 'A' Condensate Pump was returned to service. The connections on the remaining three Condensate Pump Motors on Unit 1 were inspected and found to be satisfactory.

IE22 11

LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

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

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

DESCRIPTION OF EVENT

On February 7, 1989 with Unit 1 in Condition 2 and with a normal startup evolution in progress, the Feedwater (EIIS Code: SJ) and Condensate (EIIS Code: SD) System components were being placed in service. When Operations started the 'A' Condensate Pump, an extensive electrical transient was observed, impacting 25 Unit 1/Common and 4 Unit 2 components. The extent of this transient was due to the normal startup configuration of all station power being supplied from off-site. Had Unit 1 auxiliary power been supplied by the Unit 1 generator at the time, as is the normal plant lineup for higher power operation, the transient would not have extended to the 4KV busses. Both Unit 1 Reactor Recirculation Pumps (EIIS Code: AD) tripped and Unit 1 was manually scrambled in accordance with the off-normal procedure for Loss of Reactor Recirculation. The Reactor Recirculation Pumps were restarted within 31 minutes and plant recovery was complete within approximately two hours. A routine cooldown was then commenced and Condition 4, Cold Shutdown, was entered on Unit 1 at 1410 hours on February 8, 1989.

REPORTABILITY/ANALYSIS

The event has been determined to be reportable per 10CFR50.73(a)(2)(iv), in that an unplanned ESF actuation occurred when the Division I Inboard and Outboard Containment Atmosphere Control (CAC, EIIS Code: BB) Valves on Unit 1 and Unit 2 isolated. An ESF actuation also occurred when the mode switch was taken to "Shutdown" to manually scram the reactor as an immediate operator action upon loss of the Recirculation Pumps.

Plant response to the electrical transient was in accordance with plant design and no equipment malfunctions or mis-operations were revealed as a result of the event investigation. Operator actions were appropriate and in full accordance with existing procedures. There was no compromise to public health or safety during this event.

CAUSE OF EVENT

The cause of occurrence was due to an electrical fault at the terminals of the "A" Condensate Pump Motor in Unit 1. The C-phase motor power feed connection failed which caused a capacitor-to-ground flashover, initiating the electrical transient. The electrical system responded in accordance with plant design and no equipment malfunctions or mis-operations were revealed as a result of the event investigation. The cause of the dual Reactor Recirculation Pump trips is considered to be the operation of vibration sensitive Mercoid Type Motor Generator (MG) Set Exhaust Temperature Switches. The large vibration experienced by the MG Sets resulted from the electrical transient.

LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

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

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

CORRECTIVE ACTIONS

Unit 1 was placed in Cold Shutdown and all components were removed from the 'A' Condensate Pump termination box, the box was cleaned, and new components were installed. The motor was run uncoupled and returned to service. The connections on the remaining three Condensate Pump Motors on Unit 1 were inspected and found to be satisfactory. Extensive data collection and analysis was performed for each plant effect. The plant responded per design and the design was verified as adequate and in conformance to requirements.

ADDITIONAL INFORMATION

Failed Component Identification: CBL5 - Medium Voltage Power Cable at the C-phase Connection for the 'A' Condensate Pump Motor (Manufacturer: Siemens-Allis).

Previous Similar Events: There have been several electrical transients documented at SSFS; however, none have been initiated by electrical faults originating with the Condensate Pumps.



# Pennsylvania Power & Light Company

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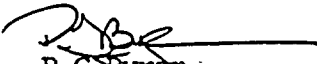
March 9, 1989

U.S. Nuclear Regulatory Commission  
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Washington, DC 20555

SUSQUEHANNA STEAM ELECTRIC STATION  
LICENSEE EVENT REPORT 89-005-00  
FILE R41-2  
PLAS - 355

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

Attached is Licensee Event Report 89-005-00. This event was determined reportable per 10CFR50.73(a)(2)(iv) in that the reactor was manually scrammed and various Containment Isolation Valves closed because of an electrical transient.

  
R.G. Byram  
Superintendent of Plant - Susquehanna

TSR/mjm

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