

# ACCELERATED DISTRIBUTION DEMONSTRATION SYSTEM

## REGULATORY INFORMATION DISTRIBUTION SYSTEM (RIDS)

ACCESSION NBR: 8809130039      DOC. DATE: 88/09/06      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 88-017-00: on 880807, RWCU penetration room high differential temp RWCU Div I isolation.

W/8      ltr.

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 TITLE: 50.73 Licensee Event Report (LER), Incident Rpt, etc.

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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   8   7	PAGE (3) 1   OF   0   3
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TITLE (4)  
RWCU Penetration Room High Differential Temperature RWCU Division I Isolation

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	8	0	7	8	8	8	8	8	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)			50.38(c)(1)			50.73(a)(2)(v)			73.71(c)	
	20.405(a)(1)(ii)			50.38(c)(2)			50.73(a)(2)(vii)			OTHER (Specify in Abstract below and in Text, NRC Form 366A)	
	20.405(a)(1)(iii)			<input checked="" type="checkbox"/> 50.73(a)(2)(i)			50.73(a)(2)(viii)(A)				
	20.405(a)(1)(iv)			50.73(a)(2)(iii)			50.73(a)(2)(viii)(B)				
20.405(a)(1)(v)			50.73(a)(2)(iii)			50.73(a)(2)(x)					

LICENSEE CONTACT FOR THIS LER (12)									
NAME T.S. Ryder, Power Production Engineer							TELEPHONE NUMBER		
							AREA CODE 7   1   7		
							5   4   2 - 3   2   3   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

SUPPLEMENTAL REPORT EXPECTED (14)							EXPECTED SUBMISSION DATE (15)		MONTH	DAY	YEAR
<input checked="" type="checkbox"/> YES (If yes, complete EXPECTED SUBMISSION DATE)							<input type="checkbox"/> NO		1	1	3
									0	8	8

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

At 0640 hours on August 7, 1988 with Unit 1 operating in Condition 1 at 100% power, a RWCU System Division I isolation occurred when a penetration room high DT trip signal was actuated. The RWCU system responded as designed with the exception that the "A" RWCU F/D Hold Pump failed to auto-start. This event has been determined to be reportable per 10CFR50.73 (a)(2)(iv), in that an ESF actuation occurred when RWCU Inboard Isolation Valve HV-144-1F001 auto-closed. There was no compromise to the health and safety of the public and no safety consequences occurred. The event has also been determined to be reportable per 10CFR50.73 (a)(2)(i), in that in violation of plant technical specifications, the trip logic channels for the penetration room RWCU leak detection DT trip logic have been inoperable prior to August 5, 1988. The supply temperature elements have been reading essentially penetration room ambient temperatures since the initial air balance in May of 1982. Thus, since that date, the trip channels may not have been able to perform their design function. With exception of the penetration room DT detection, the remaining safety systems were in tact to detect a breach in the reactor coolant pressure boundary for the RWCU system. A task team had previously been formulated to review the subject of steam leak detection. An in-depth review of all leak detection systems will be performed including the RWCU, RHR, RCIC, HPCI, and MSL Leak Detection Systems. Calculations and design bases will be reviewed for adequacy and determination of the root cause and appropriate long-term corrective actions will be performed. The findings of this task team will be reported in a followup to this LER.

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LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

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

DESCRIPTION OF EVENT

On August 5, 1988 while task team investigations of the Reactor Water Cleanup (RWCU, EIIS Code: CE) steam leak detection system were underway in response to recent problems identified on the Main Steam Line (MSL, EIIS Code: SB) differential temperature trip logic which were reported in LER 88-016, it was observed that the RWCU penetration room differential temperature (DT) readings on Riley instruments TDSH-G33-1N602E & F indicated little or no DT. Adjustments were made to the face diverter blades on the Zone I ventilation supply register to the penetration room in order to direct more inlet air flow onto TE-G33-1N022E & F in order to achieve a representative DT reading for the area. DT readings rose to approximately 25° F after adjusting the register diverter blades. At 0640 hours on August 7, 1988 with Unit 1 operating in Condition 1 at 100% power, a RWCU System Division I isolation occurred when a penetration room high DT trip signal was actuated from RWCU Containment Penetration Room Differential Temperature Element TDSH-G33-1N602E. The RWCU Inboard Isolation Valve (HV-144-1F001) auto-closed and the RWCU system responded as designed with the exception that the "A" RWCU Filter/Demineralizer (F/D) Hold Pump failed to auto-start.

CAUSE OF EVENT

The cause of the above RWCU isolation has been attributed to adjustments made on August 5, 1988 to the face diverter blades on the Zone I Ventilation supply register for the penetration room. It was observed at that time that little or no DT was being indicated on the steam leak detection modules in the control room for the penetration room DT instrumentation. Further inspection revealed that the supply air temperature elements, TE-G33-1N022E & F, were not in the air stream coming from the supply register. The adjustments were made in an attempt to direct the inlet air onto TE-G33-1N022E & F. After the diverter blades had been readjusted, a DT of about 25° F. was indicated. Colder outside air on August 7, 1988 led to a larger DT which reached the as-found trip setpoint of 31° F.

REPORTABILITY/ANALYSIS

The event described in this report was determined to be reportable per 10CFR50.73 (a)(2)(iv), in that an ESF actuation occurred when RWCU Inboard Isolation Valve HV-144-1F001 auto-closed. This valve serves a containment isolation function. The isolation occurred when RWCU penetration room DT exceeded the trip setpoint intended to detect a steam leak in the penetration room. There was no compromise to the health and safety of the public and no safety consequences occurred. The event has also been determined to be reportable per 10CFR50.73 (a)(2)(i), in that in violation of plant technical specifications; the trip logic channels for the penetration room RWCU leak detection DT trip logic have been inoperable prior to August 5, 1988. The supply temperature elements, TE-G33-1N022E & F, have been reading essentially penetration room ambient temperatures since the initial air balance in May of 1982. Thus, since that date, little or no differential temperatures have been indicated and the trip channels may not

LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

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

have been able to perform their design function. Section 7.3.1a.2.4.1.9, & -.10 of the FSAR provide discussion on the various methods of leak detection available to detect a steam leak associated with the RWCU system. "Diversity of trip initiation signals for RWCU system line break is provided by high differential flow, high flow, ambient and differential temperature, and Reactor Vessel low, low water level, Level 2. An increase in differential flow, space temperature, differential temperature, or low Reactor Vessel water level will initiate RWCU isolation." With exception of the penetration room DT detection, the remaining safety systems were in tact to detect a breach in the reactor coolant pressure boundary for the RWCU system. Because of the availability of these remaining leak detection trip initiation logics, ample redundancy existed to initiate a RWCU system isolation in the case of a significant RWCU leak outside containment.

CORRECTIVE ACTIONS

Immediate corrective actions were to verify that no steam leak existed. The Zone I supply register diverter blades were readjusted to lower the penetration room nominal DT readings to about 10 - 13° F. The failure of the "A" RWCU F/D Hold Pump to auto-start was attributed to an instrument drift problem associated with both the pneumatic flow transmitter and the low flow switch which are integral to the hold pump auto-start logic. These instruments were calibrated to within final tolerance on August 12, 1988. A task team had previously been formulated to review the subject of steam leak detection. An in-depth review of all leak detection systems will be performed including the RWCU, Residual Heat Removal (RHR, EIIS Code: B0), Reactor Core Isolation Cooling (RCIC, EIIS Code: BN), High Pressure Coolant Injection (HPCI, EIIS Code: BJ), and MSL Leak Detection Systems. Calculations and design bases will be reviewed for adequacy and determination of the root cause and appropriate long-term corrective actions will be performed. The findings of this task team will be reported in a followup to this LER.

ADDITIONAL INFORMATION

Failed Component Identification: Not applicable.

Previous Similar Events:

LER 87-016-00 (Docket 50-387), LER 87-009-00 (Docket 50-388),  
LER 87-005-00 (Docket 50-388).



**Pennsylvania Power & Light Company**

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

September 6, 1988

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

SUSQUEHANNA STEAM ELECTRIC STATION  
LICENSEE EVENT REPORT 88-017-00  
FILE R41-2  
PLAS - 335

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

Attached is Licensee Event Report 88-017-00. This event was determined to be reportable per 10CFR50.73(a)(2)(iv) in that an unplanned engineered safety feature actuation occurred when the Unit 1 Reactor Water Cleanup System isolated on a high room differential temperature trip signal. This event has also been determined to be reportable per 10CFR50.73(a)(2)(i) in that the trip logic channels for the penetration room RWCU leak detection differential temperature trip logic have been inoperable prior to August 5, 1988.

  
R.G. Byram  
Superintendent of Plant - Susquehanna

TSR/mjm

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