

ACCELERATED DISTRIBUTION DEMONSTRATION SYSTEM

REGULATORY INFORMATION DISTRIBUTION SYSTEM (RIDS)

ACCESSION NBR: 9206110041 DOC.DATE: 92/06/08 NOTARIZED: NO DOCKET #
 FACIL: 50-387 Susquehanna Steam Electric Station, Unit 1, Pennsylv 05000387
 AUTH.NAME AUTHOR AFFILIATION
 METER, J.J. Pennsylvania Power & Light Co.
 STANLEY, H.G. Pennsylvania Power & Light Co.
 RECIP.NAME RECIPIENT AFFILIATION

SUBJECT: LER 92-009-00: on 920508, ESF actuation occurred when RWCSs outboard containment isolation valve automatically closed. Caused by high flow signal. Demineralizer operating procedures evaluated. W/920608 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

	RECIPIENT		COPIES			RECIPIENT		COPIES		
	ID CODE/NAME		LTR	ENCL		ID CODE/NAME		LTR	ENCL	
	PD1-2 LA		1	1		PD1-2 PD		1	1	
	RALEIGH, J.		1	1						
INTERNAL:	ACNW		2	2		ACRS		2	2	
	AEOD/DOA		1	1		AEOD/DSP/TPAB		1	1	
	AEOD/ROAB/DSP		2	2		NRR/DET/EMEB 7E		1	1	
	NRR/DLPQ/LHFB10		1	1		NRR/DLPQ/LPEB10		1	1	
	NRR/DOEA/OEAB		1	1		NRR/DREP/PRPB11		2	2	
	NRR/DST/SELB 8D		1	1		NRR/DST/SICB8H3		1	1	
	NRR/DST/SPLB8D1		1	1		NRR/DST/SRXB 8E		1	1	
	<u>REG FILE</u> 02		1	1		RES/DSIR/EIB		1	1	
	RGNI FILE 01		1	1						
EXTERNAL:	EG&G BRYCE, J.H		3	3		L ST LOBBY WARD		1	1	
	NRC PDR		1	1		NSIC MURPHY, G.A		1	1	
	NSIC POORE, W.		1	1		NUDOCS FULL TXT		1	1	
NOTES:			1	1						

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 33 ENCL 33

AO 4

R
I
D
S
/
A
D
D
S



Pennsylvania Power & Light Company

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

June 8, 1992

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

SUSQUEHANNA STEAM ELECTRIC STATION
LICENSEE EVENT REPORT 92-009-00
FILE R41-2
PLAS - 528

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

Attached is Licensee Event Report 92-009-00. This event was determined reportable per 10CFR50.73(a)(2)(iv) in that unplanned actuations of Engineered Safety Features occurred when the Reactor Water Cleanup System outboard primary containment isolation valve isolated twice due to a RWCU high flow signal.

H.G. Stanley
Superintendent of Plant - Susquehanna

JJM/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

9206110041 920608
PDR ADDCK 05000387
S PDR

JE 27

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) **0 4**

TITLE (4) **RWCU Containment Isolation Valve Actuations Due to High Flow Signals**

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)
05	08	92	92	009	00	06	08	92			05000

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) 0.00	20.402(b)	20.406(c)	<input checked="" type="checkbox"/>	50.73(a)(2)(iv)	73.71(b)
	20.406(a)(1)(i)	50.38(c)(1)		50.73(a)(2)(v)	73.71(c)
	20.406(a)(1)(ii)	50.38(c)(2)		50.73(a)(2)(vi)	OTHER (Specify in Abstract below and in Text, NRC Form 366A)
	20.406(a)(1)(iii)	50.73(a)(2)(i)		50.73(a)(2)(viii)(A)	
	20.406(a)(1)(iv)	50.73(a)(2)(ii)		50.73(a)(2)(viii)(B)	
	20.406(a)(1)(v)	50.73(a)(2)(iii)		50.73(a)(2)(ix)	

LICENSEE CONTACT FOR THIS LER (12)

NAME	TELEPHONE NUMBER
J. J. Meter - Power Production Engineer	7 1 7 5 4 2 - 1 8 7 3

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)

YES (If yes, complete EXPECTED SUBMISSION DATE) NO

EXPECTED SUBMISSION DATE (15)

MONTH	DAY	YEAR

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

On May 8, 1992 at 0638 hours with Unit 1 in Condition 4 at 0% power, an Engineered Safety Feature (ESF) actuation occurred when the Reactor Water Cleanup (RWCU) System's outboard containment isolation valve automatically closed. On May 10, 1992 with Unit 1 still in Condition 4, a second ESF actuation occurred at 0430 hours when the same valve automatically closed again. In both cases a RWCU system high flow signal initiated the isolation, the RWCU pump tripped and the inboard RWCU containment isolation valve did not close. The inboard and outboard valves high flow instrumentation are calibrated slightly different with the Unit in cold conditions so that they both actuate at the the same time while the Unit is operating (hot). This caused the outboard valve to isolate and the inboard valve not to isolate due to the calibration differences. In both cases the high flow signal was attributed to a surge in RWCU system flow created by a void in the 'A' demineralizer while placing the demineralizer in service. The event is reportable per 10CFR50.73(a)(2)(iv) in that the RWCU system outboard primary containment isolation valve automatically closed twice following a high flow signal. There was no loss of coolant inventory nor was there any damage or degradation of the RWCU system during the events. There were no safety consequences or compromise to public health or safety. The RWCU containment isolation valves performed as expected during the event. Corrective actions include training Operations personnel on the event, and evaluating demineralizer operating procedures for the need to exercise demineralizer precoat timers when the system has been out of service for extended periods of time such as a refueling outage.



**LICENSEE EVENT REPORT (LER)
TEXT CONTINUATION**

ESTIMATED BURDEN PER RESPONSE TO COMPLY WITH THIS INFORMATION COLLECTION REQUEST: 500 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 2	SEQUENTIAL NUMBER - 0 0 9	REVISION NUMBER - 0 0	0 2	OF 0 4

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

DESCRIPTION OF EVENT

On May 8, 1992 at 0638 hours with Unit 1 in Condition 4 at 0% power, an Engineered Safety Feature (ESF) actuation occurred when the Reactor Water Cleanup (RWCU, EIIS Code: CE) System's outboard containment isolation valve, (EIIS Code: JM) HV-144F004, automatically closed. After investigating the first isolation and filling and venting of the RWCU system, a second ESF actuation occurred on May 10, 1992 at 0430 hours when the same valve again automatically closed (Unit 1 still in Condition 4). In both cases, the Reactor Water Cleanup System was in service at the time of isolation, the RWCU pump tripped, and the RWCU inboard containment isolation valve, HV-144F001, did not isolate. On May 8 the HV-144-F001 valve was manually closed by a Control Room Operator (licensed, utility). The second isolation was evaluated by control room personnel and the inboard containment valve was not closed because conditions positively indicated the RWCU system was intact and adequately isolated by the outboard isolation valve.

CAUSE OF EVENT

The first RWCU unplanned ESF actuation was initiated by an RWCU system high flow signal which actuated the isolation logic to automatically close the outboard RWCU containment isolation valve. The inboard RWCU containment isolation valve did not automatically close because of a minor difference between calibrating the high flow sensors of the inboard versus the outboard isolation valve when the Unit is in cold shutdown. This difference is necessary so that both valves actuate at the same time while the Unit is operating (hot). Each isolation valve receives an isolation signal from different flow sensing instrumentation. The instrumentation uses the differential pressure created at a piping elbow and converts that measurement to flow. Due to differences in instrumentation sensing line configurations, the use of separate piping elbows for each isolation instrument, and the change in water density at various temperatures, compensations are made in calibrating each instrument in the cold condition such that both will have the same high flow setpoint (426 gpm) while the Unit is operating. Therefore, when the outboard isolation valve received its high flow signal and its 5 second time delay was complete, the inboard isolation valve had not isolated due to the difference in calibration described above. When the outboard valve closed, the operating RWCU pump tripped. System flow ceased and the inboard valve signal cleared.

The cause of the high flow signal was attributed to a surge in RWCU system flow created by a void in the 'A' RWCU demineralizer while placing the demineralizer in service. This void was created during the process of backwashing and precoating the 'A' demineralizer. While investigating the first event, a drain valve (145010) on the air sparger line to the demineralizer was found closed by a System Engineer (non-licensed, utility) when it should have been open. Per procedure, 145010 should be opened after backwashing the demineralizer. The step was inadvertently missed by the Nuclear Plant Operator (non-licensed,

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 20655, 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 2	- 0 0 9	- 0 0	0 3	OF 0 4

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

utility) performing the evolution. It appears that minor expected leakage past an air isolation valve had lost its vent path via the 145010 valve and air accumulated in the demineralizer causing the void. During the process of putting the 'A' demineralizer in service, the inlet valve to the demineralizer is opened first while the outlet valve remains closed. When the inlet valve was opened, RWCU flow surged to fill the void and the high flow signal was generated.

The second RWCU unplanned ESF actuation was also initiated by a RWCU system high flow signal. The inboard RWCU containment valve again did not close for the same reason as described previously. The physical cause of the high flow signal was again attributed to a surge in system flow created by a void in the 'A' demineralizer while placing it in service. The voiding in the demineralizer occurred during the backwash and precoat process. During the process of precoat the demineralizer, a misoperation of the precoat timer was observed by a Nuclear Plant Operator (non-licensed, utility) in that a demineralizer precoat pump discharge valve (HV-14511A) went closed instead of remaining open as specified in the operating procedure. On shift Operations personnel decided that this timer malfunction did not prevent proper precoat of the demineralizer and the demineralizer was placed in service. Subsequent investigation after the isolation revealed that the condition caused by the closed demineralizer precoat pump discharge valve was that the precoat pump was deadheaded against the HV-14511A valve which allowed the demineralizer to drain to its precoat tank resulting in voiding.

Misoperation of the precoat timer is believed to be due to the system being dormant and dust, oxidation, etc. accumulating on some of the system's many electrical contacts and mechanical parts. The misoperation could not be reproduced in subsequent investigative operations of the cycle, indicating that exercising of the components in all likelihood freed or cleaned the misoperating contacts or component(s).

Although it was first believed that the initial instance (5/8/92) of voiding in the demineralizer was due to the closed air vent valve, it is possible that there was also a misoperation of the precoat timer which was not observed at the time of occurrence.

REPORTABILITY/ANALYSIS

The event has been determined to be reportable per 10CFR50.73(a)(2)(iv), in that two unplanned ESF actuations occurred when the RWCU System outboard primary containment isolation valve automatically closed following receipt of a high flow signals to the containment isolation logic for this valve. There was no loss of coolant inventory nor was there any damage or degradation of RWCU piping integrity due to this event. There were no safety consequences or compromise to public health or safety. The RWCU containment isolation valve performed its function of containment isolation per design.

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-830), 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 8	LER NUMBER (8)			PAGE (3)	
		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER		
		9 2	- 0 0 9	- 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 Item 14, the required submission date for this report was determined to be June 8, 1992.

CORRECTIVE ACTIONS

Corrective actions for both events included assuring integrity of the RWCU system and notifying the Chemistry and Instrumentation and Control (I&C) Groups to investigate. The 145010 valve was opened after the first isolation and the isolation logic checked via I&C surveillances. After the second occurrence, the System Engineer observed operation of both the 'A' and 'B' demineralizer system precoat controllers in an attempt to duplicate the misoperation of the HV-14511A valve. Both systems operated as designed. All Operations shift personnel were notified of the importance to observe and confirm proper positions of components particularly as timers/programmers advance through their cycles. They were also instructed to stop the evolution if a misoperation occurs and have the condition corrected.

Actions to prevent recurrence include reviewing the event with Operations personnel during requalification cycle training emphasizing possible problems with timer/controllers when the equipment has been dormant. Operating procedures for operating the RWCU demineralizer system will be evaluated for the necessity to perform a prerun of the system to exercise components prior to actually performing a precoat when the system has been out of service for an extended period such as a refueling outage.

ADDITIONAL INFORMATION

Failed Components: None

Previous Similar Events: Events where RWCU isolated on high flow or high differential flow.

Unit 1 (NPF-14, Docket 387)

- 84-047-00
- 85-007-00
- 85-017-00
- 85-032-00
- 87-001-00
- 89-011-00
- 89-016-00
- 91-008-00
- 92-003-00

Unit 2 (NPF-22, Docket 388)

- 84-015-01
- 85-024-00
- 86-006-00
- 86-017-00
- 89-004-00