

# ACCELERATED DISTRIBUTION DEMONSTRATION SYSTEM

## REGULATORY INFORMATION DISTRIBUTION SYSTEM (RIDS)

ACCESSION NBR: 8912180057      DOC. DATE: 89/12/12      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.  
 BYRAM, R.G.      Pennsylvania Power & Light Co.  
 RECIP. NAME      RECIPIENT AFFILIATION

SUBJECT: LER 89-025-00: on 891113, RWCU sys isolation due to steam leak detection high temp signal (ESF actuation).

W/8      ltr.

DISTRIBUTION CODE: IE22T      COPIES RECEIVED: LTR 1 ENCL 1 SIZE: 4  
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December 12, 1989

U.S. Nuclear Regulatory Commission  
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SUSQUEHANNA STEAM ELECTRIC STATION  
LICENSEE EVENT REPORT 89-025-00  
FILE R41-2  
PLAS -400

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

Attached is Licensee Event Report 89-025-00. 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.

R.G. Byram  
Superintendent of Plant - Susquehanna

MLC/mjm

cc: Mr. W.T. Russell  
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PDR ADOCK 05000387  
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11

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	PAGE (3) 1 OF 0 3
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TITLE (4) Reactor Water Cleanup System Isolation Due to Steam Leak Detection High Temperature Signal (FSF Actuation)

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	3	8	9	8	9	0	2	5	0	0	0	0	0	0	0	0	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)	<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)(vi)	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)(vii)(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 Michael L. Crist - Compliance Evaluator		AREA CODE 7 1 7	NUMBER 5 4 2 - 3 2 8 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										
B	C	E	S	E	A	L	U	0	5	5	N								

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 1411 hours on November 13, 1989 with Unit 1 operating in Condition 1 at 100% power, an unplanned Engineered Safety Feature (ESF) actuation occurred when the Reactor Water Cleanup (RWCU) Division II isolation logic actuated due to a steam leak detection high temperature signal. As a result, the RWCU outboard containment isolation valve, HV-G33-F004, auto-closed. The plant responded properly to the isolation. At 1726 hours ENS notification was made in accordance with 10CFR50.73(b) (2) (ii). At 2200 hours the RWCU system was returned to service utilizing the "A" pump and the "B" filter/demineralizer.

The event was caused by a mechanical seal failure on the "B" RWCU Recirculation pump. Leakage from the seal caused the pump to trip and temperature in the RWCU pump area to rise above the steam leak detection high temperature trip setpoint. There was no safety consequences or compromise to public health and safety as a result of this incident, the system operated as designed. The "B" RWCU Recirculation pump was overhauled and successfully tested. Efforts to modify the present RWCU pumps to have better seal reliability are being pursued.

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	SEQUENTIAL NUMBER	REVISION NUMBER			
		8   9	-   0   2   5	-   0   0	0   2	OF	0   3

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

EVENT DESCRIPTION

At 1411 hours on November 13, 1989 with Unit 1 operating in Condition 1 at 100% power, an unplanned Engineered Safety Feature (ESF) actuated occurred when the Reactor Water Cleanup (RWCU, EIIS Code: CE) System isolated due to actuation of the Division II steam leak detection high temperature logic. At 1408 hours, an alarm was received in the Control Room indicating a high RWCU Recirculation (Recirc) pump cavity seal temperature. A nuclear plant operator (utility, non-licensed) was dispatched to the RWCU instrument rack and observed that the "B" RWCU Recirc pump cavity seal temperature was indicating greater than 260 degrees F. At 1410 hours the "B" RWCU Recirc pump tripped. At approximately 1411 hours the RWCU Division II steam leak detection system high temperature logic actuated, resulting in an automatic closure of the RWCU outboard containment isolation valve, HV-G33-F004. Division I steam leak detection high temperature logic did not actuate since the effects of the high temperature condition were primarily confined to the Division II pump area. Actuation of the RWCU Division II steam leak detection differential temperature logic also occurred during the event. At 1500 hours the pump was isolated and investigations were initiated. At 1726 ENS notification was made in accordance with 10CFR50.72(b) (2) (ii). At 2200 hours the RWCU system was returned to service utilizing the "A" Recirc pump and the "B" filter/demineralizer.

CAUSE OF EVENT

The event was caused by a mechanical seal failure on the "B" RWCU pump. Leakage from the system, due to the failed seal, caused the pump to trip and temperature in the RWCU Recirc pump area to rise above the high temperature trip setpoint, actuating the RWCU Division II steam leak detection isolation logic. This resulted in closure of the RWCU outboard containment isolation valve, as designed.

REPORTABILITY/ANALYSIS

This event has been determined reportable per 10CFR50.73(a) (2) (iv), in that an unplanned Engineered Safety Feature (ESF) actuation occurred when the RWCU system isolated due to a RWCU Division II steam leak detection high temperature signal. The high temperature signal caused the RWCU outboard containment isolation valve to auto-close.

There were no safety consequences or compromise to public health or safety as a result of this event. This assessment is based on the fact that the RWCU system performed its designed function of containment isolation upon receipt of the high temperature signal. This function would have been performed regardless of power level.

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   8   9   -   0   2   5   -   0   0	LER NUMBER (6)			PAGE (3)		
		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER			
		8	9	0	0	3	OF

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

CORRECTIVE ACTIONS

The "B" RWCU Recirc pump was isolated from the system and investigations into event were initiated. Investigations by Maintenance personnel (utility, non-licensed) found that the pump's mechanical seal had failed. The pump was overhauled and a post-maintenance functional test was satisfactorily performed, i.e., no leakage was identified. Efforts to modify the present RWCU Recirc pumps to have better seal reliability are being pursued under the RWCU Pump Project. As part of the short term actions for the project, the pumps will be modified to allow use of a mechanical seal of a different design. Long term actions include evaluating the use of seal-less pumps.

ADDITIONAL INFORMATION

Failed Components: SEAL - Mechanical Seal on "B" RWCU Pump  
(Manufacturer: Pump - Union Pump Co., Seal - Durametalllic)

Previous Similar Events: None

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