

# ACCELERATED DISTRIBUTION DEMONSTRATION SYSTEM

## REGULATORY INFORMATION DISTRIBUTION SYSTEM (RIDS)

ACCESSION NBR: 9012140062    DOC. DATE: 90/12/10    NOTARIZED: NO    DOCKET #  
 FACIL: 50-387 Susquehanna Steam Electric Station, Unit 1, Pennsylv.    05000387  
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 RYDER, T.S.    Pennsylvania Power & Light Co.  
 STANLEY, H.G.    Pennsylvania Power & Light Co.  
 RECIP. NAME    RECIPIENT AFFILIATION

SUBJECT: LER 90-025-00: on 901108, spurious actuation of reactor protection sys occurred. W/901210 ltr.

DISTRIBUTION CODE: IE22T    COPIES RECEIVED: LTR ( ENCL 1 )    SIZE: 4  
 TITLE: 50.73/50.9 Licensee Event Report (LER), Incident Rpt, etc.

NOTES: LPDR 1 cy Transcripts.

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	AEOD/DOA	1 1	AEOD/DSP/TPAB	1 1
	AEOD/ROAB/DSP	2 2	NRR/DET/ECMB 9H	1 1
	NRR/DET/EMEB 7E	1 1	NRR/DLPQ/LHFB11	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/SICB 7E	1 1	NRR/DST/SPLB8D1	1 1
	NRR/DST/SRXB 8E	1 1	REG FILE 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 MAYS, G	1 1
	NSIC MURPHY, G.A	1 1	NUDOCS FULL TXT	1 1
NOTES:		2 2		

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Pennsylvania Power & Light Company

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December 10, 1990

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

SUSQUEHANNA STEAM ELECTRIC STATION  
LICENSEE EVENT REPORT 90-025-00  
FILE R41-2  
PLAS - 458

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

Attached is Licensee Event Report 90-025-00. This report is being made pursuant to 10CFR50.73(a)(2)(iv) in that an unplanned Engineered Safety Feature (ESF) actuation occurred when the Reactor Protection System spuriously actuated during Unit 1's fifth refueling outage.

*TC Dalpiaz for*

H.G. Stanley  
Superintendent of Plant - Susquehanna

TSR/mjm

cc: Mr. T.T. Martin  
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LICENSEE EVENT REPORT (LER)

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) <b>Susquehanna Steam Electric Station - Unit 1</b>	DOCKET NUMBER (2) <b>0 5 0 0 0 3 8 7</b>	PAGE (3) <b>1 OF 0 3</b>
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TITLE (4)  
**Spurious Actuation of the Reactor Protection System**

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	0 8 9 0	9 0	0 2 5	0 0	1 2 1	0 9 0			0 5 0 0 0
										0 5 0 0 0

OPERATING MODE (8) <b>4</b>	THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (Check one or more of the following) (11)									
POWER LEVEL (10) <b>0 0 0</b>	<input type="checkbox"/> 20.402(b)	<input type="checkbox"/> 20.406(c)	<input checked="" type="checkbox"/> 50.73(a)(2)(iv)	<input type="checkbox"/> 73.71(b)						
	<input type="checkbox"/> 20.406(a)(1)(i)	<input type="checkbox"/> 50.38(c)(1)	<input type="checkbox"/> 50.73(a)(2)(v)	<input type="checkbox"/> 73.71(c)						
	<input type="checkbox"/> 20.406(a)(1)(ii)	<input type="checkbox"/> 50.38(c)(2)	<input type="checkbox"/> 50.73(a)(2)(vii)	OTHER (Specify in Abstract below and in Text, NRC Form 366A)						
	<input type="checkbox"/> 20.406(a)(1)(iii)	<input type="checkbox"/> 50.73(a)(2)(i)	<input type="checkbox"/> 50.73(a)(2)(viii)(A)							
	<input type="checkbox"/> 20.406(a)(1)(iv)	<input type="checkbox"/> 50.73(a)(2)(ii)	<input type="checkbox"/> 50.73(a)(2)(vii)(B)							
	<input type="checkbox"/> 20.406(a)(1)(v)	<input type="checkbox"/> 50.73(a)(2)(iii)	<input type="checkbox"/> 50.73(a)(2)(x)							

LICENSEE CONTACT FOR THIS LER (12)

NAME <b>T. S. Ryder - Power Production Engineer</b>	TELEPHONE NUMBER <b>7 1 7 5 4 2 - 3 2 3 5</b>
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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)

<input type="checkbox"/> YES (If yes, complete EXPECTED SUBMISSION DATE)	<input checked="" type="checkbox"/> NO	EXPECTED SUBMISSION DATE (15)	MONTH	DAY	YEAR
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ABSTRACT (Limit to 1400 spaces, i.e., approximately fifteen single space typewritten lines) (16)

At 1532 hours on November 8, 1990 with Unit 1 in CONDITION 4, an Engineered Safety Feature (ESF) actuation occurred when the Reactor Protection System (RPS) spuriously actuated. No control rod motion resulted since all control rods were fully inserted. This event was determined to be reportable per 10CFR50.73(a)(2)(iv), in that the spurious RPS actuation comprised an unplanned ESF actuation. There were no safety consequences or compromise to the public health or safety during this event. An immediate investigation was conducted by shift operating personnel in the plant prior to resetting the RPS actuation logic. An event review team was formed to perform a comprehensive investigation of the event. Possibilities for both one cross-divisional event as well as two discrete yet simultaneous events on opposite RPS divisions were considered. Extensive documentation was reviewed and interviews were conducted. Computer data or control room annunciators provided no indication of a likely cause and the event review team was unable to conclusively determine the root cause for this event.

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-630), 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   2   5	—   0   0	0   2	OF	0   3

TEXT (If more space is required, use additional NRC Form 368A's) (17)

DESCRIPTION OF EVENT

At 1532 hours on November 8, 1990 with Unit 1 in CONDITION 4, Cold Shutdown, during its fifth refueling outage, an Engineered Safety Feature (ESF) actuation occurred when the Reactor Protection System (RPS, EIIS Code: JC) spuriously actuated. No control rod motion resulted since all control rods were already fully inserted.

CAUSE OF EVENT

The event occurred during outage activities that were taking place on Unit 1. A comprehensive investigation of the event was initiated by a team of personnel representing Operations, Technical Support and Instrumentation and Controls (I&C). This event review team (ERT) identified the following potential causes for the event:

- (1) Two coincident  $\frac{1}{2}$  scram signals occurred which resulted in a full RPS actuation. At approximately the same time as when the RPS actuation occurred, maintenance personnel (utility, non-licensed) inadvertently contacted an isolated neutral bus bar while removing a wire from a terminal within an Engineered Safeguard auxiliary panel. This was originally identified as the probable cause by the Emergency Notification System (ENS) phone call for the event on November 8, 1990. The ERT, however, was unable to confirm this as the probable cause. The auxiliary panel is not cross-divisionalized and therefore a coincident  $\frac{1}{2}$  scram signal from the other RPS division would have been required to result in a full RPS actuation. There was no indication from the process computer Sequence of Events Log or from the control room annunciators of any events that had occurred to produce a  $\frac{1}{2}$  SCRAM on either RPS division at the time of the event. The ERT concluded after a review of pertinent operations logs, outage testing logs, and work activities on-going in Unit 1, that it was very improbable for two coincident  $\frac{1}{2}$  scram signals, one being due to the inadvertent electrical grounding, to occur with neither  $\frac{1}{2}$  scram producing a corresponding computerized sequence of events or annunciator alarm information.
- (2) One cross-divisional event occurred which resulted in a full RPS actuation. The likely place for this to occur would be at the cross-divisional instrument racks 1C004 and 1C005 on Reactor Building 749 foot elevation. Immediately after the event, a Nuclear Plant Operator (NPO), utility and non-licensed, who was dispatched to the area of the 1C004 and 1C005 instrument racks, found no work in progress. The NPO consulted with a Health Physics technician on station who confirmed that no one had passed near or bumped the 1C004 and 1C005 racks. Another cross-divisional event possibility which was



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   7	LER NUMBER (6)			PAGE (3)		
		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER			
		9   0	—   0   2   5	—   0   0	0   3	OF	0   3

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

evaluated was the movement of under reactor vessel instrumentation cables causing signal spiking and a scram. Review of Health Physics Containment Radiation Work Permits (RWP's) identified all work in the containment had been completed prior to the RPS actuation.

The process computer Sequence of Events Log recorded the time difference between the RPS A1/A2 division and B1/B2 division automatic scram signals as being 28 milliseconds. This very small time differential suggests the occurrence of one cross-divisional event to be more probable than the occurrence of two discrete events on separate RPS divisions at almost the same time. However, based on the extensive documentation collected and examined and interviews conducted, the ERT could not conclusively determine the root cause.

REPORTABILITY/ANALYSIS

This event was determined to be reportable per 10CFR50.73(a)(2)(iv), in that the spurious actuation of the RPS comprised an unplanned ESF actuation. No control rods or fuel bundles were being moved when the RPS actuation occurred (fuel reload had been completed on October 23, 1990). There were no safety consequences or compromise to the public health or safety during this event.

In accordance with the guidance provided in NUREG 1022 Supplement 1, Items 14.1 and 14.10, the required submission date for this report was determined to be December 10, 1990.

CORRECTIVE ACTIONS

Immediate corrective actions included investigation of applicable instrument control panels and instrument racks by shift operating personnel prior to resetting the RPS actuation logic. An event review team was formed to perform a root cause investigation of the event. The cause could not be determined and there are no further actions to be taken to prevent recurrence.

ADDITIONAL INFORMATION

Failed Component Identification: Not applicable

Previous Similar Events: There have been no previous similar events identified in which an RPS actuation occurred without a known cause.