

# PRIORITY 1

(ACCELERATED RIDS PROCESSING)

## REGULATORY INFORMATION DISTRIBUTION SYSTEM (RIDS)

ACCESSION NBR: 9505310074      DOC. DATE: 95/05/24      NOTARIZED: NO      DOCKET #  
 FACIL: 50-387 Susquehanna Steam Electric Station, Unit 1, Pennsylvania      05000387  
 AUTH. NAME      AUTHOR AFFILIATION  
 KICHLINE, R.D.      Pennsylvania Power & Light Co.  
 STANLEY, H.G.      Pennsylvania Power & Light Co.  
 RECIP. NAME      RECIPIENT AFFILIATION

SUBJECT: LER 95-007-00: on 950424, an unplanned ESF actuation of RPS logic occurred. Caused by spurious neutron monitoring instrumentation upscale signals. Personnel reset RPS trip logic following RPS full actuation. W/950524 ltr.

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

NOTES:

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EXTERNAL:	L ST LOBBY WARD	1 1	LITCO BRYCE, J H	2 2	
	NOAC MURPHY, G.A	1 1	NOAC POORE, W.	1 1	
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May 24, 1995

U.S. Nuclear Regulatory Commission  
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Washington, DC 20555

**SUSQUEHANNA STEAM ELECTRIC STATION**  
**LICENSEE EVENT REPORT 95-007-00**  
**PLAS- 633** FILE R41-2

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

Attached is Licensee Event Report 95-007-00. This event was determined to be reportable per 10CFR50.73(a)(2)(iv) in that an Engineered Safety Feature (ESF) Reactor Protection System logic actuation occurred due to spurious nuclear instrumentation upscale signals during the Unit 1 eighth refueling and inspection outage.

  
H. G. Stanley  
VP - Nuclear Operations

Mr. T.T. Martin  
Regional Administrator  
U. S. Nuclear Regulatory Commission  
475 Allendale Road  
King of Prussia, PA 19406

Ms. Maitri Banerjee  
Sr. Resident Inspector  
U. S. Nuclear Regulatory Commission  
P.O. Box 35  
Berwick, PA 18603-0035

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PDR ADCK 05000387  
S PDR..

*IFPP*  
*11*

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.

LICENSEE EVENT REPORT (LER)

FACILITY NAME (1) Susquehanna Steam Electric Station - Unit 1										DOCKET NUMBER(2) 0 5 0 0 0 3 8 7 1			PAGE (3) OF 0 3	
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TITLE (4)  
Unplanned ESF Actuation of RPS Due to Spurious Instrumentation Upscale 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)							
0	4	2	4	9	5	9	5	0	0	7	0	0	0	0	0	0	0	0

OPERATING MODE (9) 5		THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR 5: (Check one or more of the following) (11)														
POWER LEVEL (10) 0 0 0	20.402(b)			20.405(c)			<input checked="" type="checkbox"/> 50.73(a)(2)(v)			73.71(b)						
	20.405(a)(1)(i)			50.36(c)(1)			50.73(a)(2)(v)			73.71(c)						
	20.405(a)(1)(ii)			50.36(c)(2)			50.73(a)(2)(vi)			OTHER (Specify in Abstract below and in Text, NCR Form 366A)						
	20.405(a)(1)(iii)			50.73(a)(2)(xi)			50.73(a)(2)(vii)(A)									
	20.405(a)(1)(iv)			50.73(a)(2)(x)			50.73(1)(2)(viii)(B)									
20.405(a)(1)(v)			50.73(a)(2)(xii)			50.73(a)(2)(x)										

(LICENSEE CONTACT FOR THIS LER (12))

NAME Robert D. Kichline - Project Licensing Specialist							TELEPHONE NUMBER				
							AREA CODE				
							7 1 7		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

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

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

On April 24, 1995, with Unit 1 in Condition 5 (Refueling) at 0 % power, an unplanned Engineered Safety Feature (ESF) actuation of the Reactor Protection System (RPS) logic occurred due to spurious neutron monitoring instrumentation upscale signals. Because the RPS was in the non-coincident trip mode, per procedure, to permit control rod drive stroke time and friction testing, the spurious upscale signals resulted in a full RPS logic actuation. Just prior to the spurious upscale signals, one control rod had been fully withdrawn in support of the control rod drive testing. When the RPS actuation occurred, the control rod properly scram inserted. The RPS and plant equipment functioned per design. The most probable cause of the neutron monitoring instrumentation spurious upscale signals relates to the requirement to operate the instrumentation in its low range scale, which requires high amplification, when reactor neutron flux levels are low. No work activities were being performed in the vicinity of the instrumentation. No failed components nor abnormal operations were found during the investigation; however, one of the two detectors associated with this event had a lower than desirable detector resistance to ground. Actions to prevent recurrence include: reworking/replacing the degraded detector to reduce the susceptibility to noise, and evaluate the necessity of removing shorting links to support control rod drive testing. There was no safety consequence or compromise to the public health or safety as a result of the unplanned ESF logic actuation.

**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	LER NUMBER (6)			PAGE (3)		
		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER			
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TEXT (If more space is required, use additional NRC Form 366A's) (17)

**DESCRIPTION OF EVENT**

On April 24, 1995, with Unit 1 in Condition 5 (Refueling) at 0% power, an unplanned Engineered Safety Feature (ESF) actuation of the Reactor Protection System (RPS; EIS Code: JC) logic occurred due to spurious Intermediate Range Monitor (IRM; EIS Code: IG) upscale signals. Because the RPS was in the non-coincident trip mode (i.e., shorting links removed, per procedure) to permit control rod (EIS Code AA) drive stroke time and friction testing, the spurious IRM upscale signals resulted in a full RPS logic actuation. Just prior to the spurious IRM upscale signals one control rod had been fully withdrawn to position 48 in support of control rod drive testing. When the IRMs spiked upscale, the control rod properly scram inserted.

**CAUSE OF EVENT**

Spurious upscale signal spiking of the IRMs has been observed on numerous occasions during refueling outages when neutron flux levels are low. During the periods when the reactor neutron flux level is low and the IRMs are operated in their lower neutron flux ranges, the instrumentation is more susceptible to induced electrical noise due to high system gain. On a number of past occurrences, the source of the noise was attributed to either welding in the vicinity of the nuclear instrumentation components and cables or work activities which physically perturbed the instrumentation cables. However, the sources of the IRM induced noise spikes on 4/24/95 could not be identified since no work activity in the vicinity of the nuclear instrumentation components and cables was being performed. No failed components nor abnormal operation of the IRMs were found during investigation performed following the event; however, one of the two IRMs associated with the event had a lower than desirable detector resistance to ground.

During normal plant operation, the trip of one IRM channel only results in a half scram signal which does not initiate a full RPS actuation. However, under certain circumstances, such as to perform control rod drive stroke time and friction testing, the RPS is configured (shorting links removed) such that one neutron monitoring instrumentation system channel trip will initiate a full RPS logic actuation. The RPS was in this configuration when this event occurred.

**REPORTABILITY/ANALYSIS**

This event was determined to be reportable per 10CFR50.73(a)(2)(iv) in that an unplanned ESF logic actuation occurred when the spurious IRM upscale signals resulted in a full RPS logic actuation. Since the RPS was in the non-coincident trip mode (i.e., shorting links removed, per procedure) to permit control rod drive stroke time and friction testing, the spurious IRM upscale signals resulted in a

**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 (8)			PAGE (3)	
		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER		
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full RPS scram logic actuation. Just prior to the spurious IRM upscale signal one control rod (34-19) had been fully withdrawn to position 48 in support of control rod drive testing. When the IRM spiked upscale and the RPS actuated, the control rod properly scram inserted. The RPS and plant equipment functioned properly per their design. There was no safety consequence or compromise to the public health or safety as a result of the unplanned ESF logic actuation.

In accordance with the guidance provided in NUREG 1022 Supplement 1 item 14.1, the required submission date for this report was determined to be May 24, 1995.

**CORRECTIVE ACTIONS**

Operations personnel reset the RPS trip logic following the RPS full actuation. An investigation was conducted to attempt to identify the source of the induced noise associated with the RPS actuation; however, a source could not be identified. No work activities in the vicinity of the instrumentation components or cables were being performed. No failed components nor abnormal operation of the IRMs were found during the subsequent investigation; however, one of the two IRMs associated with the event had a lower than desirable detector resistance to ground.

Specific actions to prevent recurrence include:

- reworking/replacing the degraded detector to reduce the susceptibility to noise, and
- evaluate the necessity of removing the shorting links to support control rod drive testing.

**ADDITIONAL INFORMATION**

Failed Component Identification: None

Previous Similar Events:

Docket No. 50-387: LER 85-009-00  
 LER 85-018-00  
 LER 86-009-00  
 LER 86-011-00  
 LER 89-014-00  
 LER 92-008-00

Docket No. 50-388 LER 84-003-00  
 LER 86-013-00