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REGULATORY INFORMATION DISTRIBUTION SYSTEM (RIDS)

ACCESSION NBR: 9205270028 DOC. DATE: 92/05/22 NOTARIZED: NO DOCKET #
 FACIL: 50-387 Susquehanna Steam Electric Station, Unit 1, Pennsylv 05000387
 AUTH. NAME AUTHOR AFFILIATION
 WEHRY, R.R. Pennsylvania Power & Light Co.
 STANLEY, H.G. Pennsylvania Power & Light Co.
 RECIP. NAME RECIPIENT AFFILIATION

SUBJECT: LER 92-008-00: on 920422 & 26, unplanned ESF actuations of RPS
 logic occurred due to spurious neutron monitoring
 instrumentation-induced noise upscale signals. Caused by
 welding in vicinity. RPS trip logic reset. W/920522 ltr.

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 TITLE: 50.73/50.9 Licensee Event Report (LER), Incident Rpt, etc.

NOTES: LPDR 1 cy Transcripts: 05000387

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	NRR/DLPQ/LHFB10	1 1	NRR/DLPQ/LPEB10	1 1
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EXTERNAL:	EG&G BRYCE, J.H	3 3	L ST LOBBY WARD	1 1
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May 22, 1992

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

SUSQUEHANNA STEAM ELECTRIC STATION
LICENSEE EVENT REPORT 92-008-00
PLAS-527 FILE R41-2

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

Attached is Licensee Event Report 92-008-00. These events were determined reportable per 10CFR50.73(a)(2)(iv) in that two unplanned Engineered Safety Feature (ESF) Reactor Protection System logic actuations occurred due to spurious nuclear instrumentation upscale signals during the Unit's refueling/inspection outage.

H.G. Stanley
Superintendent of Plant - Susquehanna

RRW/mjm

cc: Mr. T. T. Martin
Regional Administrator, Region I
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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 4
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TITLE (4)
Unplanned ESF Actuations 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 2	9 2	9 2	0 0 8	0 0	0 5	2 2	9 2		0 5 0 0 0

OPERATING MODE (9) 5	THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (Check one or more of the following) (11)									
POWER LEVEL (10) 0 0 0	<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)(vi)	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)(vii)(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)(ix)							

LICENSEE CONTACT FOR THIS LER (12)		TELEPHONE NUMBER	
NAME Richard R. Wehry - Power Production Engineer		AREA CODE 7 1 7	5 4 2 - 3 6 6 4

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)	
<input type="checkbox"/> YES (If yes, complete EXPECTED SUBMISSION DATE)	<input checked="" type="checkbox"/> NO	MONTH	DAY
			YEAR

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

On April 22, 1992 and April 26, 1992, with Unit 1 in Condition 5 at 0% power, unplanned Engineered Safety Feature (ESF) actuations of the Reactor Protection System (RPS) logic occurred due to spurious neutron monitoring instrumentation induced noise upscale signals. Because the RPS was in the non-coincident trip mode, per procedure, to permit control rod testing, the spurious upscale signals resulted in full RPS logic actuations. Just prior to the spurious upscale signal on 4/22/92, one control rod had been fully withdrawn in preparation for stroke time testing. When the RPS actuation occurred, the control rod properly scram inserted. There was no rod movement during the 4/26/92 RPS actuation since all rods were already fully inserted. The RPS and all plant systems functioned per design. The cause of the 4/22/92 neutron monitoring instrument spurious upscale signal could not be identified. No work activities were being performed in the vicinity of the instrumentation. The cause of the 4/26/92 spurious upscale signal was attributed to induced noise from welding being performed inside the primary containment at the time. No failed component or abnormal operation was found during investigations. Although no specific action to prevent recurrence was identified, a review is being performed to investigate similar problems in the industry and if they can be minimized and to ensure that the time when the RPS is vulnerable to noise induced instrumentation upscale signals be minimized to the extent practicable.



LICENSEE EVENT REPORT (LER)
TEXT CONTINUATION

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) 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 8	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 April 22, 1992 and April 26, 1992, with Unit 1 in Condition 5 at 0% power, unplanned Engineered Safety Feature (ESF) actuations of the Reactor Protection System (RPS; EIIS Code: JC) logic occurred due to spurious Intermediate Range Monitor (IRM; EIIS 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 (EIIS Code: AA) testing, the spurious IRM upscale signals resulted in full RPS logic actuations. Just prior to the spurious IRM upscale signal on 4/22/92, one control rod had been fully withdrawn to position 48 in preparation for stroke time testing. When the IRM spiked upscale, the control rod properly scram inserted. There was no rod movement during the 4/26/92 full RPS logic actuation since all rods were already fully 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 neutron signal levels are low, the instrumentation is more susceptible to induced electrical noise. On a number of past occurrences, the source of the induced 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. The source of the IRM induced noise spike on 4/22/92 could not be identified since no work activities in the vicinity of the nuclear instrumentation components and cables were being performed. The 4/26/92 IRM induced noise spike was attributed to welding and grinding being performed inside the primary containment at the time. No failed components or abnormal operation of the IRMs was found during investigations performed subsequent to each event.

During normal plant operation, the trip of an IRM Channel only results in a half scram signal which does not initiate a full RPS actuation. However, under certain circumstances while in Condition 5 (Refueling), such as to perform control rod testing, the RPS is configured (shorting links removed) such that any, one neutron monitoring instrumentation system channel trip will initiate a full RPS logic actuation. The RPS was in this configuration when these two events occurred.

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

REPORTABILITY/ANALYSIS

These events were determined reportable per 10CFR50.73(a)(2)(iv) in that unplanned ESF logic actuations occurred when the spurious IRM upscale signals resulted in full RPS logic actuations. Since the RPS was in the non-coincident trip mode (i.e., shorting links removed, per procedure) to permit control rod testing, the spurious IRM upscale signals resulted in full RPS scram logic actuations. Just prior to the spurious IRM upscale signal on 4/22/92, one control rod (14-55) had been fully withdrawn to position 48 in preparation for stroke time testing. When the IRM spiked upscale and the RPS actuated, the control rod properly scram inserted. There was no rod movement during the 4/26/92 full RPS logic actuation since all rods were already fully inserted. The RPS and all plant systems functioned properly per their design during both spurious IRM upscale signal events and there were no safety consequences or compromise to public health or safety as a result of the unplanned ESF logic actuations.

CORRECTIVE ACTIONS

Operations personnel, after confirming that all systems had responded properly and that no abnormal conditions existed, reset the RPS trip logic following each RPS full actuation. Investigations were conducted to attempt to identify the source of the induced noise which had resulted in each RPS actuation. The source of the IRM induced noise spike on 4/22/92 could not be identified. No work activities in the vicinity of the instrumentation components or cables were being performed. The source of the IRM noise spike on 4/26/92 was attributed to welding and grinding being performed inside the primary containment at the time of the event. No failed component or abnormal operation of the IRMs was found during the investigation performed subsequent to each event.

Although no specific actions to prevent recurrence have been identified, a review is being conducted to:

- 1) Ensure that the time the RPS is in the non-coincident trip mode (i.e., shorting links removed) is minimized to the extent practicable; and
- 2) Investigate, utilizing industry and vendor sources, similar problems with induced noise in neutron monitoring instrumentation systems, and how the problems can be minimized.

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 8	LER NUMBER (6)			PAGE (3)	
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		9 2	- 0 0 8	- 0 0	0 4	OF 0 4

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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

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