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FACIL:50-387 Susquehanna Steam Electric Station, Unit 1, Pennsylva 05000387
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RECIP.NAME RECIPIENT AFFILIATION

SUBJECT: LER 89-014-00:on 890514,spurious neutron monitor signal causes RPS actuation.

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June 14, 1989

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

SUSQUEHANNA STEAM ELECTRIC STATION
LICENSEE EVENT REPORT 89-014-00
FILE R41-2
PLAS -370

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

Attached is Licensee Event Report 89-014-00. This event was determined reportable under 10CFR50.73(a)(2)(iv) in that it resulted in the unplanned actuation of the Reactor Protection System.

R.G.Byram
Superintendent of Plant - Susquehanna

PPR/mjm

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NRC Form 366
(9-83)

U.S. NUCLEAR REGULATORY COMMISSION
APPROVED OMB NO. 3150-0104
EXPIRES: 8/31/88

LICENSEE EVENT REPORT (LER)

FACILITY NAME (1)	DOCKET NUMBER (2)	PAGE (3)
Susquehanna Steam Electric Station - Unit 1	0 5 0 0 0 3 8 7	1 OF 0 3

TITLE (4)

Spurious Neutron Monitor Signal Causes RPS 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)
0 5	1 4	8 9	8 9	0 1 4	0 0	0 6	1 4	8 9		0 5 0 0 0
										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	20.402(b)	20.405(c)	X 50.73(a)(2)(iv)	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)(vii)	OTHER (Specify in Abstract below and in Text, NRC Form 366A)
		20.405(a)(1)(iii)	50.73(a)(2)(i)	50.73(a)(2)(viii)(A)	
		20.405(a)(1)(iv)	50.73(a)(2)(ii)	50.73(a)(2)(viii)(B)	
		20.405(a)(1)(v)	50.73(a)(2)(iii)	50.73(a)(2)(x)	

LICENSEE CONTACT FOR THIS LER (12)

NAME	TELEPHONE NUMBER
	AREA CODE
P.P. Rusanowsky - Power Production Engineer	7 1 7 5 4 2 - 3 7 5 9

COMPLETE ONE LINE FOR EACH COMPONENT FAILURE DESCRIBED IN THIS REPORT (13)

CAUSE	SYSTEM	COMPONENT	MANUFAC-TURER	REPORTABLE TO NPRDS		CAUSE	SYSTEM	COMPONENT	MANUFAC-TURER	REPORTABLE TO NPRDS	

SUPPLEMENTAL REPORT EXPECTED (14)		EXPECTED SUBMISSION DATE (15)	MONTH	DAY	YEAR
YES (If yes, complete EXPECTED SUBMISSION DATE)	X NO				

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

On May 14, 1989, with Unit 1 in its fourth refueling outage and Unit 2 at 100% power, a Unit 1 Reactor Protection System (RPS) actuation occurred at 1023. Since all reactor control rods were fully inserted at the time, no control rod motion occurred. The RPS actuation was initiated by the "D" channel of the Intermediate Range (Neutron) Monitoring (IRM) System which spiked upscale momentarily as a result of induced electrical noise. No control rods or fuel bundles were being moved when the scram occurred. The IRM upscale trip was reset at approximately 1027 and the RPS actuation signal was reset at 1029. The source of the induced noise could not be determined. The IRM "D" channel was confirmed to be operating properly prior to and after the event. Since the Reactor Protection System functioned properly and per design by initiating an RPS actuation when it received the IRM upscale trip signal, there was no compromise to the health or safety of the public.

FACILITY NAME (1)	DOCKET NUMBER (2)	LER NUMBER (6)			PAGE (3)
		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	
Unit 1 Susquehanna Steam Electric Station	0 5 0 0 0 3 8 7	8 9	— 0 1 4	— 0 0	0 2 OF 0 3

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

DESCRIPTION OF EVENT

On May 14, 1989, with Unit 1 in its fourth refueling outage and Unit 2 at 100% power, a Unit 1 Reactor Protection System (RPS, EIIS Code: JC) actuation occurred at 1023. The RPS actuation signal was initiated by the "D" Channel of the Intermediate Range (Neutron) Monitoring (IRM) System (EIIS Code: IG) which spiked upscale momentarily. Since all control rods were fully inserted at the time, no control rod motion occurred. No control rods or fuel bundles were being moved when the RPS actuation occurred (fuel reload had been completed on 5/12/89). Other neutron monitoring system channels exhibited similar, erratic, but smaller spikes during the same time frame. The erratic behavior, which started about one hour prior to the RPS actuation, was observed to continue for approximately two hours after the event.

CAUSE OF EVENT

This type of erratic behavior of the neutron monitoring system has been observed on numerous occasions during refueling outages when neutron flux levels are low. During these periods when the neutron signal levels are low, the instrumentation is more susceptible to induced electrical noise. On a significant number of the past occurrences, the source of the induced noise was identified to be either welding in the vicinity of the nuclear instrumentation components and cables or work activities which physically perturbed the instrumentation cables. However, the source of the induced noise for this event could not be determined.

During normal plant operation, the trip of on IRM Channel would only result in a half scram signal which does not initiate an RPS actuation. However, under certain circumstances while in Operational Condition 5 (Refueling), the RPS is configured such that any, one neutron monitoring system channel trip will initiate a (full) RPS actuation. The RPS was in this configuration when the event occurred and hence functioned per design.

REPORTABILITY/ANALYSIS

This event was determined to be reportable under 10CFR50.72(b)(2)(ii) and 10CFR50.73(a)(2)(iv) in that it resulted in the unplanned actuation of the RPS. An Emergency Notification System (ENS) call was made at 1257 on 5-14-89. Since the RPS functioned per design by initiating an RPS actuation on a noncoincident trip signal from the neutron monitoring system when configured to do so, there was no compromise to the health or safety of the public.

CORRECTIVE ACTIONS

Operations personnel, after confirming that all systems had responded properly and that no abnormal conditions appeared to exist, reset the "D" IRM upscale trip at approximately 1027 and the RPS actuation signal at 1029. Operations personnel attempted to identify the source of the induced noise (e.g. welding, testing or other work activities in the vicinity of the IRM components) but were unsuccessful. I&C personnel satisfactorily performed the weekly surveillance functional test after the event and confirmed that the surveillance conducted prior to the event was also satisfactory. Although we currently don't anticipate any further corrective actions, we will continue to monitor the situation and reassess it as necessary.

ADDITIONAL INFORMATION

A review of past LER's for the Station revealed the following similar events.

Unit 1: 85-009
85-018
86-008
86-011

Unit 2 (Docket No. 50-388; License No. NPF-22): 84-003