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 FACIL: 50-387 Susquehanna Steam Electric Station, Unit 1, Pennsylvania 05000387
 AUTH. NAME: AUTHOR AFFILIATION
 METER, J.J. Pennsylvania Power & Light Co.
 STANLEY, H.G. Pennsylvania Power & Light Co.
 RECIPIENT NAME RECIPIENT AFFILIATION

SUBJECT: LER 93-001-00: on 930201, invalid ESF actuations occurred on containment gas analyzer & containment instrument gas sys. Caused by electrical transient when radwaste electrical transformer failed. Transformer to be replaced. W/930303 ltr.

DISTRIBUTION CODE: IE22T COPIES RECEIVED: LTR 1 ENCL 1 SIZE: 4
 TITLE: 50.73/50:9 Licensee Event Report (LER), Incident Rpt, etc.

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March 3, 1993

U.S. Nuclear Regulatory Commission
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SUSQUEHANNA STEAM ELECTRIC STATION
LICENSEE EVENT REPORT 93-001-00
FILE R41-2
PLAS - 562

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

Attached is Licensee Event Report 93-001-00. This event is reportable per 10CFR50.73(a)(2)(iv) in that ESF actuations occurred due to an electrical transient that occurred when a 13,200/480 Volt transformer failed.

H.G. Stanley
Superintendent of Plant - Susquehanna

JJM/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 1	PAGE (3) OF 0 3
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TITLE (4)
ESF Actuation Due to Electrical Transient When Radwaste Electrical Transformer Failed

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 2	0 1	9 3	9 3	0 0 1	0 0	0 3	0 3	9 3	SSSES - Unit 2	0 5 0 0 0 3 8 8

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)					
	20.406(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)(vii)	OTHER (Specify in Abstract below and in Text, NRC Form 366A)					
	20.406(a)(1)(iii)	50.73(a)(2)(i)	<input type="checkbox"/>	50.73(a)(2)(viii)(A)						
	20.406(a)(1)(iv)	50.73(a)(2)(ii)	<input type="checkbox"/>	50.73(a)(2)(viii)(B)						
	20.406(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 Joseph J. Meter - Power Production Engineer - Compliance	AREA CODE 7 1 7	5 4 2 - 1 8 7 3

COMPLETE ONE LINE FOR EACH COMPONENT FAILURE DESCRIBED IN THIS REPORT (13)										
CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NPROS		CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NPROS
B	E A	X F M R	B 4 5 5	Y						

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)

On February 1, 1993 at 1125 hours, with Unit 1 operating at 100% power in Condition 1 and Unit 2 in Condition 4, invalid ESF actuations occurred on both Units on the Containment Gas Analyzer and Containment Instrument Gas Systems. A Load Center Transformer OX340 underwent an electrical failure. As part of the electrical transient that followed, ESF actuations as well as other plant equipment was affected in both Units. Plant safety was not impaired by the ESF actuations or other effected equipment. The cause of the occurrence was attributed to water intrusion into the transformer enclosure. Condensation from an overhead HVAC duct migrated into the transformer enclosure and fell directly onto the transformer core and coils. The cause of the ESF actuations and other plant perturbations was the direct result of the electrical transient the OX340 failure induced on the 13.8 KV and 480 V electrical systems. The event was determined reportable per 10CFR50.73(a)(2)(iv) due to the unplanned ESF actuations. Electrical load centers and power supplies were cross-tied as necessary and the affected systems were restored. The transformer will be replaced and a moisture deflector or moisture barrier will be installed above the transformer to prevent future condensation intrusions. The HVAC process air data will be collected and evaluated to determine the cause of high humidity and subsequent condensation. There were no safety consequences or compromises to the health or safety of the public.

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			
		9 3	- 0 0 1	- 0 0	0 2	OF	0 3

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

DESCRIPTION OF EVENT

On February 1, 1993 at 1125 hours, with Unit 1 operating at 100% power in Condition 1 and Unit 2 in Condition 4, Cold Shutdown, invalid Engineering Safety Features (ESF) actuations occurred in both Unit 1 and Unit 2. The inboard and outboard containment isolation valves for Loop "B" of the Containment Gas Analyzer (EIIS Code: IK) system isolated in both Units. Containment Instrument Gas (CIG, EIIS Code: LK) back-up storage bottle header isolation valves opened. These valves opening was a result of the isolation valves for the CIG supply to the Main Steam Relief Valves with automatic depressurization functions (MSRV, EIIS Code: None) closing in both Units. A Load Center Transformer, OX340 (EIIS Code: EA) located in the Radwaste Building underwent an electrical failure. OX340 is a 13,200/480 Volt transformer and the electrical transient tripped the 13.8 KV supply breaker which feeds Radwaste Load Center OB340 and Turbine Building Heating Load Centers 2B170 and 2B190. As part of an electrical transient that followed the ESF actuations occurred. Additional plant equipment was also affected in both Units. Plant safety was not impaired by the ESF actuations or the other effected equipment. The Load Centers were restored on their alternate power supply and the isolations were restored by 1225 hours.

CAUSE OF EVENT

The failure of transformer OX340 was the result of water dripping onto the transformer core and coils. The source of the water was identified as condensation forming on the internal surface of HVAC ductwork and then leaking out of the duct at a low point. The ductwork is routed directly above transformer OX340. The condensation fell onto the transformer cubical top and then migrated between two overlapping metal plates and down onto the energized transformer. The cause of the plant perturbations described above was the direct result of the electrical transient that the OX340 failure induced on the 13.8 KV and 480 V electrical systems.

An investigation was commenced to determine the source of water in the HVAC ductwork. The duct is a discharge vent from a liquid radwaste tank. Air within the duct was found to be warm and moist while the ambient room temperature was below the dew point of the HVAC process air. Therefore condensation formed within the ductwork. Liquid radwaste tank vent system data will be collected and evaluated to determine the cause of high humidity in the process air.

LICENSEE EVENT REPORT (LER)
TEXT CONTINUATION

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		9 3	- 0 0 1	- 0 0	0 3	OF	0 3

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

REPORTABILITY ANALYSIS

This event was determined to be reportable per 10CFR50.73(a)(2)(iv), in that the closure of Containment Gas Analyzer Containment Isolation Valves and actuation of Containment Instrument Gas Valves constituted unplanned ESF actuations. This actuation was classified as invalid per 10CFR50.73. 10CFR50.73 states that invalid ESF actuations include those due to equipment failures.

Since all ESF systems and components functioned properly and per design, there were no safety consequences or compromises to the health or safety of the public.

The station electrical systems functioned as expected in response to the transformer failure. Operations personnel quickly determined the cause of the transient and restored station equipment to normal status within one hour.

In accordance with guidance provided in NUREG 1022 Supplement 1 Item 14.1 and 10CFR50.4(d), the required submission date for the original report was determined to be March 3, 1993.

CORRECTIVE ACTIONS

Electrical load centers and power supplies were cross-tied as necessary and the affected Unit 1 and Unit 2 systems were restored to a normal configuration. Transformer OX340 was removed and will be replaced. A moisture deflector or moisture barrier will be installed above the transformer to prevent any future condensation intrusions since HVAC ductwork is not entirely leak proof. Liquid radwaste tank vent system data will be collected and evaluated to determine the cause of high humidity in the process air. Although the station electrical systems responded satisfactorily, a review of the electrical system will be performed to assess the capability to minimize the effects of faults in non IE equipment on Safety Related components.

FAILED COMPONENT INFORMATION:

Component: 13200/480 volt transformer
 Model: Ventilated-dry VU-9
 Manufacturer: ITE Imperial

A review of past Licensee Event Reports (LER's) for the station identified LER 89-026-00, NPF-14, as one other event involving a 13,200/480 Volt transformer failure.