

LICENSEE EVENT REPORT (LER)

FACILITY NAME (1)
Susquehanna Steam Electric Station - Unit 1DOCKET NUMBER (2)
0 5 0 0 0 3 8 7PAGE (3)
1 OF 0 3TITLE (4)
Transformer (T20) Trip; CREOASS and SBTG Initiation

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)
03	05	84	84	014	00	04	05	84	Susquehanna, Unit 2		0 5 0 0 0 3 8 8
0 5 0 0 0 3 8 8											

OPERATING MODE (9)		THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR 8: (Check one or more of the following) (11)									
POWER LEVEL (10)	0 0 0	20.402(b)	20.406(c)	X	50.73(a)(2)(iv)	73.71(b)					
		20.406(a)(1)(i)	50.36(e)(i)		50.73(a)(2)(v)	73.71(c)					
		20.406(a)(1)(ii)	50.36(c)(2)		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)(ii)		50.73(a)(2)(viii)(A)						
		20.406(a)(1)(iv)	50.73(a)(2)(iii)		50.73(a)(2)(viii)(B)						
		20.406(a)(1)(v)	50.73(a)(2)(iii)		50.73(a)(2)(ix)						

LICENSEE CONTACT FOR THIS LER (12)
NAME
Benjamin L. Wilks
TELEPHONE NUMBER
7 1 7 5 4 2 - 1 2 1 8 1

COMPLETE ONE LINE FOR EACH COMPONENT FAILURE DESCRIBED IN THIS REPORT (13)											
CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NPDs	CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NPDs	CAUSE	SYSTEM
X	E/A	S I S A	1 8 0	N							

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

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

At 1315 hours on 3/5/84, with Unit 1 shutdown and Unit 2 in pre-operational testing, Transformer T20, one of two off-site sources of power, tripped resulting in isolation of Reactor Building Ventilation Zones II and III (Unit 2 Reactor Building and the Common Unit Refueling Areas) and the initiation of CREOASS and SBTG. Also during this event, the Motor Operated Air Breaker (MOAB) for T20 failed to open and a portion of the Commonwealth phone system on the south periphery of Unit 2 was lost. Investigations revealed that the likely cause for T20 to trip was due to the momentary closure of relay contacts in the transformer High Speed Ground Switch (HSGS) control circuit, thought to be caused by an employee bumping the cabinet containing the relay's contacts, causing the HSGS to close. The cause for the MOAB not operating was attributed to loose set screws in auxiliary contacts in the HSGS. During the event, the HSGS "red light" indication in the Control Room failed to operate due to the same problem. T20 tripping caused a momentary loss of power to radiation monitors in Zones II and III resulting in an isolation of those zones and hence, initiation of CREOASS and SBTG. System alignment was restored upon a load transfer to T10, the alternate off-site source of power. Investigation into the loss of the Commonwealth phone system is continuing. Communications with the NRC were not interrupted during the event.

During this occurrence, primary system integrity was maintained and no release of radiation occurred. The health and safety of the public was not affected.

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LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

APPROVED OMB NO. 3150-0104
EXPIRES 8/31/85

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

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

At 1315 hours on 3/5/84 with Unit 1 shutdown and Unit 2 in pre-operational testing, Transformer T20, one to two off site sources of power tripped, resulting in isolation of Reactor Building Ventilation Zones II and III (Unit 2 Reactor Building and the common unit refueling areas) and the initiation of the Control Room Outside Air Supply System (CREOASS) and the Standby Gas Treatment (SBGT) System. Also during the event, the Motor Operated Air Breaker (MOAB) for T20 failed to open, a High Speed Ground Switch (HSGS) "red light", indicating actuation of the HSGS, was not received in the Control Room, and a portion of the Commonwealth phone system on the south periphery of Unit 2 was lost.

230KV off-site power is supplied to startup Transformer T20 through a Motor Operated Air Breaker. A High Speed Ground Switch is installed between the MOAB and the startup transformer as back up protection on the 230KV side of the startup transformer. Actuation of the HSGS due to transformer current differential, sudden pressure or over current relaying, places a positive fault on the 230KV transmission line. The MOAB is to automatically open after the 230KV line is de-energized to isolate the startup transformer from the transmission system and permit reclosing of the transmission line terminal circuit breakers.

In this event, however, the actuation of the HSGS was sensed by line relays for circuit breakers in the 230 and 500KV switch yard, causing these circuits breakers to open. The circuit breaker between Bus 20 and Transformer T20 then opened on an under voltage condition. The T20 Transformer was tested three times by the 230KV circuit breaker before locking in an open position. Plant operators opened Transformer T20's 230KV MOAB, allowing the 230KV circuit breaker that locked open to be closed, restoring the 230KV line up to the Transformer T20's 230KV MOAB. Transformer T20 was then isolated and in a de-energized condition. Bus 20 was re-energized upon a load transfer to Transformer T10.

Investigations attribute the de-energizing of Transformer T20 to the momentary closure of contacts in the HSGS Auxiliary Relay located in panels in the Upper Relay Room. Closure of these contacts completes the control circuitry to close the HSGS and trip open the MOAB and de-energizing the T20 Transformer. These investigations found the small gap in the contacts susceptible to vibration and short movements. Proceeding the trip of T20 an employee in the area bumped the cabinet in the Upper Relay Room, causing the vibration that actuated the HSGS's remote auxiliary relay contacts. The contacts on the HSGS Auxiliary Relay were adjusted to a wider gap to lower the susceptibility to vibration and hence an accidental trip of the transformer. Electrical Maintenance is currential revising PM inspection criteria to include inspection of the HSGS and its relays.

Failure of the MOAB to open during this event was attributed to a malfunction of HSGS auxiliary contacts. The HSGS had loose set screws on a shaft that controls switch contact makeup. The contacts for the HSGS "red light" indication in the control room are also on the shaft and as a result HSGS "red light" closed indication was not received. The set screws were retightened and the auxiliary contacts were adjusted and aligned to yeild proper operation and indication. Additional investigations of the HSGS "red" indicating light connections, the HSGS and MOAB control circuitry revealed no other abnormalities. The HSGS contact set screws are also being included in Electrical Maintenance's revision of the PM inspection criteria for the HSGS and its relays.

The trip of T20 resulted in a momentary loss of power to radiation monitors in the affected zones during this event. The loss of power to the radiation monitors in Zones II and III during this event is responsible for the isolation of these zones and initiation of CREOASS and SBGT as designed. Operation of the radiation monitors in Zones II and III and the ventilation of Zones II and III was restored following

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

re-energization upon a load transfer to Transformer T10.

The loss of a substantial portion of the Commonwealth Telephone System on the south periphery of Unit 2 during this event is still under investigation. The phone system is owned and maintained by Commonwealth Telephone. Commonwealth Telephone, PP&L Corporate Communications and SSES Plant Staff are currently investigating the probable cause of the loss of the phone system during this event. Following the event, phone service was restored; no interruption of phone service to the NRC occurred during the event.

During this occurrence, primary system integrity was maintained and no release of radiation occurred; the health and safety of the public was not affected.



Pennsylvania Power & Light Company

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April 5, 1984

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

SUSQUEHANNA STEAM ELECTRIC STATION
LICENSEE EVENT REPORT 84-014-00
ER 100450 FILE 841-23
PLA-2165

Attached is Licensee Event Report 84-014-00. This event was determined to be reportable per 10CFR50.73(a)(2)(iv) in that Transformer T20 tripped causing the isolation of Zones II and III and initiation of Control Room Emergency Outside Air Supply System (CREOASS) and the Standby Gas Treatment System.

H.W. Keiser

BLW/pjg

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