

# ACCELERATED DISTRIBUTION DEMONSTRATION SYSTEM

## REGULATORY INFORMATION DISTRIBUTION SYSTEM (RIDS)

ACCESSION NBR: 9009110334      DOC. DATE: 90/09/05      NOTARIZED: NO      DOCKET #  
 FACIL: 50-387 Susquehanna Steam Electric Station, Unit 1, Pennsylv      05000387  
 AUTH. NAME      AUTHOR AFFILIATION  
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 RECIP. NAME      RECIPIENT AFFILIATION

SUBJECT: LER 90-017-00: on 900806, secondary containment isolation Div  
 I automatic & manual initiation functions lost.

W/9      ltr.

DISTRIBUTION CODE: IE22T      COPIES RECEIVED: LTR 1 ENCL 1      SIZE: 5  
 TITLE: 50.73/50.9 Licensee Event Report (LER), Incident Rpt, etc.

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	AEOD/ROAB/DSP	2 2	NRR/DET/ECMB 9H	1 1	
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	NRR/DST/SICB 7E	1 1	NRR/DST/SPLB8D1	1 1	
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EXTERNAL:	EG&G BRYCE, J.H	3 3	L ST LOBBY WARD	1 1	
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NOTES:      2      2

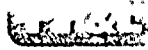
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# Pennsylvania Power & Light Company

Two North Ninth Street • Allentown, PA 18101 • 215 / 770-5151

September 5, 1990

U.S. Nuclear Regulatory Commission  
Document Control Desk  
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SUSQUEHANNA STEAM ELECTRIC STATION  
LICENSEE EVENT REPORT 90-017-00  
FILE R41-2  
PLAS - 442

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

Attached is Licensee Event Report 90-017-00. This report is being made pursuant to 10CFR50.73(a)(2)(iv), in that an unplanned Engineered Safety Feature (ESF) actuation occurred when a portion of Division I Secondary Containment Isolation logic was actuated due to a spurious isolation signal.

  
H.G. Stanley  
Superintendent of Plant - Susquehanna

MLC/mjm

cc: Mr. T.T. Martin  
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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) Secondary Containment Isolation Division I Automatic & Manual Initiation Functions Lost Due to Failed Relay

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 8	0 6	9 0	9 0	0 1	7 0	0 9	0 5	9 0	SSES - Unit 2	0 5 0 0 0 3 8 8
										0 5 0 0 0

OPERATING MODE (9) 1

POWER LEVEL (10) 0 6 0

THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (Check one or more of the following) (11)

20.402(b)	20.405(c)	<input checked="" type="checkbox"/>	50.73(a)(2)(iv)	73.71(b)
20.405(a)(1)(i)	50.36(c)(1)	<input type="checkbox"/>	50.73(a)(2)(v)	73.71(c)
20.405(a)(1)(ii)	50.36(c)(2)	<input type="checkbox"/>	50.73(a)(2)(vi)	OTHER (Specify in Abstract below and in Text, NRC Form 366A)
20.405(a)(1)(iii)	50.73(a)(2)(i)	<input type="checkbox"/>	50.73(a)(2)(viii)(A)	
20.405(a)(1)(iv)	50.73(a)(2)(ii)	<input type="checkbox"/>	50.73(a)(2)(viii)(B)	
20.405(a)(1)(v)	50.73(a)(2)(iii)	<input type="checkbox"/>	50.73(a)(2)(ix)	

LICENSEE CONTACT FOR THIS LER (12)

NAME Michael L. Crist - Compliance Evaluator	TELEPHONE NUMBER AREA CODE 7 1 7 5, 4 2 - 3 2 8 9
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COMPLETE ONE LINE FOR EACH COMPONENT FAILURE DESCRIBED IN THIS REPORT (13)

CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NRC	CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NRC
B	V	A R L Y	G O 8 0	N					

SUPPLEMENTAL REPORT EXPECTED (14)

YES (If yes, complete EXPECTED SUBMISSION DATE)  NO

EXPECTED SUBMISSION DATE (15)

MONTH	DAY	YEAR
0 1	3 1	9 1

ABSTRACT (Limit to 1400 spaces or approximately fifteen single-space typewritten lines) (16)

On August 6, 1990 at approximately 0815, with Unit 1 and Unit 2 operating in Condition 1 at 60% and 100% power respectively, one division of Secondary Containment Isolation was rendered inoperable when its logic power supply fuse blew due to a failed relay in the circuit. The failed relay was determined from the circuit and a new fuse was installed. Upon re-energizing the logic, relay interaction caused, as expected, the isolation logic to trip. At 2255 hours the logic was reset and reactor building ventilation was restored to normal. On 8/08/90 the relay was replaced.

The cause of the failure was a short in the relay coil. This failure resulted in high current which in turn caused the logic power supply fuse to blow. This event was determined to be reportable per 10CFR50.73(a)(2)(iv), in that an unplanned ESF actuation occurred. There were no safety consequences or compromise to public health or safety as a result of this event based on Division II Secondary Containment Isolation functions and both divisions of Primary Containment Isolation functions remaining operable throughout the event. An Event Review Team has been established to review and analyze the event. A supplement will be provided reflecting the results of the investigation.

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 9 0 - 0 1 7 - 0 0 0 2 OF 0 4	LER NUMBER (6)			PAGE (3)	
		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER		

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

EVENT DESCRIPTION

On August 6, 1990 at 0815 hours, with Unit 1 and Unit 2 operating in Condition 1 at 60% and 100% power respectively, Unit 1 Secondary Containment (EIIIS Code: VA) Zone III airlock isolation damper HD-17534H automatically closed due to failure of relay XYX6-07553A. The failure was discovered by an Electrical Maintenance Mechanic (utility, non-licensed) when he smelled smoke coming from panel 0C876A. He immediately contacted the Control Room. Operations Personnel (utility, licensed and non-licensed) were dispatched to investigate. At this time it was determined that relay XYX6-07553A was the cause of the smoke. Initial investigation determined that the relay had burned open causing the Unit 1 Zone III airlock isolation damper HD-17534H to close. Other dampers which would have automatically closed due to this failure were already in the closed position. A work authorization was initiated to investigate and repair the failed relay XYX6-07553A.

At approximately 1800 hours, a nuclear plant operator (NPO, utility, non-licensed), while on rounds, discovered that two Secondary Containment airlock isolation dampers, HD-27534A and HD-27534C, indicated closed with their handswitch in the open position. Shift Supervision was notified. Due to the event earlier that day, an additional investigation was commenced. Review of electrical drawings revealed that these dampers are actuated by a different relay (XYX5-07553A) than the previously failed relay (XYX6-07553A). However, the two relays are in the same isolation logic channel. The NPO verified that the dampers were closed and Electrical Maintenance personnel (utility, non-licensed) determined that the power supply fuse (FU-5) to the Division I Secondary Containment Isolation Logic was blown. It was then determined that the Unit 1 and Unit 2 automatic and manual initiation functions of Division I Secondary Containment Isolation logic would not operate with this failed fuse. As such, at 2200 hours, Limiting Condition for Operation (LCO) 3.3.2 Action b was entered on both units.

The failed relay was determined from the circuit and a new fuse was installed. Upon re-energizing the logic, relay interaction caused, as expected, the isolation logic to trip. At 2255 hours the LCOs were cleared and the Zone III ventilation was restored to normal. During the time relay XYX6-07553A was inoperable the associated dampers were in the proper isolation position. Thus, Secondary Containment operability was not affected by the failed relay. On 8/08/90 relay XYX6-07753A was replaced and its functions were returned to normal.

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-830), U.S. NUCLEAR REGULATORY COMMISSION, WASHINGTON, DC 20655, 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 9 0 - 0 1 7 - 0 0 0 3 OF 0 4	LER NUMBER (6)			PAGE (3)	
		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER		

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

CAUSE OF EVENT

The cause of the event was determined to be a failed relay in the Secondary Containment Division I Isolation logic. Initially, the relay coil was believed to have burned open, however, once the relay was removed from the circuit for testing it was determined that the failure mechanism was a shorted coil. This failure resulted in high current which persisted until the circuit's power supply fuse (FU-5) blew, resulting in loss of the ability to automatically and manually initiate Division I Secondary Containment Isolation. Specifically, for Zones I, II, and/or III, the ability to isolate a zone and subsequently initiate the Standby Gas Treatment System (SGTS, EIIS Code: VH) via Division I was lost. Ability to automatically and manually initiate Secondary Containment Isolation through Division II logic was not affected.

REPORTABILITY/ANALYSIS

This event was determined to be reportable per 10CFR50.73(a)(2)(iv), in that an unplanned Engineered Safety Feature (ESF) actuation occurred when a portion of Division I Secondary Containment Isolation logic was actuated due to a spurious isolation signal.

There were no safety consequences or compromise to public health or safety as a result of this event. The design of Secondary Containment includes the ability to automatically or manually isolate Zones within Secondary Containment and initiate SGTS through either Division I or Division II logic. The Division II Secondary Containment Isolation functions were operable and associated ventilation equipment in service throughout this period of time. Both divisions of Primary Containment Isolation functions were unaffected by the relay failure. Lastly, the affected isolation dampers associated with the normally energized logic went to their proper isolation position.

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 September 5, 1990.

CORRECTIVE ACTIONS

The immediate corrective actions consisted of determining the failed relay from the circuit and replacing the fuse (FU-5). On 8/08/90 the relay was replaced and all its functions returned to normal. An Event Review Team (ERT) has been established to review, investigate, and analyze this event. The ERT is comprised of members from the Maintenance, Technical, and Operations Sections of plant staff. As part of the actions to prevent recurrence the team

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   9   0   -   0   1   7   -   0   0	LER NUMBER (8)			PAGE (3)	
		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER		
						0   4 OF 0   4

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

is addressing the failure of the initial investigation to identify that the fuse had blown. Also, an assessment of the logic design and operating practices is being performed to identify possible improvements. The results of this investigation will be provided in a supplement to this report.

ADDITIONAL INFORMATION

Failed Component: Relay: XYX6-07553A  
 Model: 12HFA51A49H  
 Type: HFA  
 Manufacturer: General Electric

Previous Similar Events: None