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ACCESSION NBR: 9011130054 DOC.DATE: 90/11/02 NOTARIZED: NO DOCKET #
 FACIL: 50-387 Susquehanna Steam Electric Station, Unit 1, Pennsylv 05000387
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 RECIP.NAME RECIPIENT AFFILIATION

SUBJECT: LER 90-022-00: on 901004, emergency diesel generator C
 unplanned automatic start. W/901102 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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	<u>REG FILE</u> 02	1 1	RES/DSIR/EIB	1 1	
	RGNI FILE 01	1 1			
EXTERNAL:	EG&G BRYCE, J.H	3 3	L ST LOBBY WARD	1 1	
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November 2, 1990

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

SUSQUEHANNA STEAM ELECTRIC STATION
LICENSEE EVENT REPORT 90-022-00
FILE R41-2
PLAS - 450

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

Attached is Licensee Event Report 90-022-00. This event was determined reportable per 10CFR50.73(a)(2)(iv) in that an unplanned Engineered Safety Feature actuation occurred when the 'C' Emergency Diesel Generator automatically started during surveillance testing of its associated Engineered Safety System 4.16 kV electrical distribution bus.

H.G. Stanley
Superintendent of Plant - Susquehanna

RRW/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)
Emergency Diesel Generator 'C' Unplanned Automatic Start

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)
1	0	90	90	022	00	1	1	029	SSES - Unit 2		0 5 0 0 0 3 8 8
											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"/> 20.405(c)	<input checked="" type="checkbox"/> 50.73(a)(2)(iv)	<input type="checkbox"/> 73.71(b)						
	<input type="checkbox"/> 20.405(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"/> 20.405(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"/> 20.405(a)(1)(iii)	<input type="checkbox"/> 50.73(a)(2)(i)	<input type="checkbox"/> 50.73(a)(2)(vii)(A)							
	<input type="checkbox"/> 20.405(a)(1)(iv)	<input type="checkbox"/> 50.73(a)(2)(ii)	<input type="checkbox"/> 50.73(a)(2)(vii)(B)							
	<input type="checkbox"/> 20.405(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)

NAME Richard R. Wehry - Compliance Engineer	TELEPHONE NUMBER
	AREA CODE: 7 1 7 NUMBER: 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)

YES (If yes, complete EXPECTED SUBMISSION DATE)	<input checked="" type="checkbox"/> NO	EXPECTED SUBMISSION DATE (15)	MONTH	DAY	YEAR

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

On October 4, 1990 at 0840 hours, with Unit 1 in the refueling mode at 0% power and Unit 2 operating at 100% power, an unplanned start of the 'C' Emergency Diesel Generator (EDG) occurred during performance of its associated Unit 1 ESS 4.16 kV distribution bus 18-month undervoltage channel calibration surveillance test. The unplanned EDG start occurred as a result of incorrect fuses that were removed to prevent actuation of the EDG start logic while the ESS 4.16 kV bus was de-energized for performance of the surveillance test. Disagreement between fuse nomenclature used on the equipment release form blocking request, the personnel protective permit blocking details, the electrical drawings and actual field labeling and a personnel error by a support work group foreman in incorrectly identifying the fuses to be removed resulted in removal of incorrect fuses and the EDG automatic start. The EDG performed per design. It was restored to standby status and the switching error was corrected. Actions to prevent recurrence include a review of the event by the groups involved; a requirement that verbatim compliance exist for fuse nomenclature between all future equipment release forms, protective permits and field labels; and the formation of a switchgear inspection plan to resolve fuse nomenclature conflicts between field labels and electrical drawings. There were no safety consequences or compromise to public health or safety as a result of this event.



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 (3160-0104), OFFICE OF MANAGEMENT AND BUDGET, WASHINGTON, DC 20503.

FACILITY NAME (1) Unit 1 Susquehanna Steam Electric Station	DOCKET NUMBER (2) 0 5 10 0 0 3 8 7	LER NUMBER (8)			PAGE (3)		
		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER			
		9 0	0 2 2	0 0	0 2	OF	0 4

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

DESCRIPTION OF EVENT

On October 4, 1990 at 0840 hours, with Unit 1 in the refueling mode at 0% power and Unit 2 operating at 100% power, an unplanned start of the 'C' Emergency Diesel Generator (EDG; EIIS Code: EK) occurred during performance of its associated Unit 1 Engineered Safety System (ESS) 4.16 kV distribution bus (EIIS Code: EK) 18-month undervoltage channel calibration surveillance test. To perform this test, the ESS 4.16 kV bus was to be taken out of service and fuses removed to prevent the 'C' EDG from starting once the bus relay control power (125 VDC; EIIS Code: EJ) was restored to the de-energized bus. In accordance with the operating procedure, the DC knife switch supplying bus relay control power was opened to enable taking the bus out of service. The equipment release form that controls fuse removal requested the removal of fuses FU-5 and FU-6 as protective blocking. The personnel protective permit details of blocking listed fuses to be removed as FU-5, FU-6, "Diesel Auto Start Logic Power". The electrical print identifies these fuses as "Sequence Start Permissive" fuses. There were, however, two sets of fuses in the breaker cubicle. One set was labelled "Diesel Generator Start" and the other was labelled "Sequence Start". There were no fuse numbers in the panel. Because of the confusing fuse nomenclature, the operator (utility, non-licensed) processing the personnel protective permit requested assistance from a support work group. A support group foreman (utility, non-licensed) directed removal of the fuses labelled "Diesel Generator Start". These fuses were spare fuses and were not connected to any circuit. The removal of the incorrect fuses left the 'C' EDG start logic intact. To perform the bus undervoltage channel calibration surveillance test, bus relay control power had to be restored to the bus by re-closing the DC knife switch which had been opened previously. Due to the 4.16 kV bus now being in a de-energized state and the 'C' EDG start logic still intact, the 'C' EDG automatically started as designed upon closure of the bus relay control power knife switch. The 'C' EDG did not load onto the bus since breaker control power to the EDG output breaker had also been removed as part of the personnel protective permit. The 'C' Emergency Service Water (ESW; EIIS Code: BI) did not auto start to provide cooling to the EDG auxiliaries since the 4.16 kV bus was de-energized, however ESW was manually started by operations. The 'C' EDG was manually shutdown at 0902 hours.

CAUSE OF EVENT

This event was caused by lack of fuse nomenclature agreement between the electrical prints, the equipment release form blocking request, the personnel protective permit details of blocking and the actual fuse labeling in the field and by personnel error in incorrectly identifying fuses to be removed. The equipment release form, prepared by the work group, requested protective blocking as the removal of fuses FU-5 and FU-6. The personnel protective permit details of blocking listed fuses to be removed as FU-5 and FU-6, "Diesel Auto Start Logic Power". The electrical print refers to fuses FU-5 and FU-6 as



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.

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TEXT (If more space is required, use additional NRC Form 364A's) (17)

"Sequence Start Permissive". There were actually two sets of fuses in the breaker cubicle, however none of the fuses were numbered. One set was labelled "Diesel Generator Start" and the other set was labelled "Sequence Start". Because of the lack of fuse nomenclature agreement between the personnel protective permit blocking details and actual field labeling, the operator applying the protective permit requested assistance from an electrical support work group (not the same work group which prepared the original equipment release form blocking request). An electrical support work group foreman erred in directing the removal of the "Diesel Generator Start" fuses (which were actually spare fuses not connected to any circuit), thus leaving the sequence start permissive circuit intact resulting in the 'C' EDG auto-start upon re-energization of the bus DC relay control power circuit. The lack of verbatim fuse nomenclature agreement between the electrical drawings and actual field labeling was also considered a contributing cause to this event.

REPORTABILITY/ANALYSIS

This event was determined reportable per 10CFR50.73(a)(2)(iv) in that an unplanned Engineered Safety Feature (ESF) actuation occurred when the 'C' EDG automatically started. The 'C' EDG started per design (undervoltage condition on the Unit 1 ESS 4.16 kV bus) and performed properly. Three ESS 4.16 kV buses and three associated EDG's remained OPERABLE thus meeting the Technical Specification requirements for Unit 1 which was in Condition 5 at the time. The 'C' EDG remained available throughout the event to energize the associated Unit 2 ESS 4.16 kV bus and perform its design function on Unit 2, which was in Condition 1, if required to do so. As such, no safety consequences or compromise to public health or safety occurred.

CORRECTIVE ACTIONS

The 'C' EDG was restored to standby status by Operations. The personnel protective permit details of blocking were changed to agree with actual field fuse labeling and the correct fuses were removed to enable completion of the work evolution.

Short-term actions to prevent recurrence include:

- o Reviewing this event with all Operations and Electrical Maintenance personnel. The review and training package includes instruction that there shall be verbatim compliance of fuse nomenclature between all equipment release form blocking requests, personnel protective permit blocking details and actual field labeling prior to any permit issuance. This review and training package estimated completion date is 12-17-90.

LICENSEE EVENT REPORT (LER)
TEXT CONTINUATION

ESTIMATED BURDEN PER RESPONSE TO COMPLY WITH THIS INFORMATION COLLECTION REQUEST: 50.9 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 (8)				PAGE (3)			
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		9 0	- 0 2 2	- 0 0	0 4	OF	0 4		

TEXT (If more space is required, use additional NRC Form 306A's) (17)

- o This event will be reviewed by the support work group involved to re-emphasize the importance of self-checking verification prior to directing actions/taking actions which could result in unplanned equipment operation, personnel safety concerns and/or preventing equipment from operating. (Estimated Completion Date: 12-17-90)
- o A long term action to prevent recurrence will be to perform a composite team walkdown of all applicable switchgear buses. Compliance between fuse labeling and electrical drawing nomenclature will be accomplished via label changes and/or drawing revisions.

ADDITIONAL INFORMATION

Failed Components Identification: Not applicable.

The following Licensee Event Reports were issued previously, involving similar unplanned ESF actuations due to removal of incorrect fuses:

- Docket 50-387: 87-016-00
 89-008-00
- Docket 50-388: 88-007-00
 89-007-00