

# ACCELERATED DISTRIBUTION DEMONSTRATION SYSTEM

## REGULATORY INFORMATION DISTRIBUTION SYSTEM (RIDS)

ACCESSION NBR: 9008300060    DOC. DATE: 90/08/24    NOTARIZED: NO    DOCKET #  
 FACIL: 50-387 Susquehanna Steam Electric Station, Unit 1, Pennsylv    05000387  
 AUTH. NAME    AUTHORITY AFFILIATION  
 WEHRY, R.R.    Pennsylvania Power & Light Co.  
 STANLEY, H.C.    Pennsylvania Power & Light Co.  
 RECIPIENT NAME    RECIPIENT AFFILIATION

SUBJECT: LER 90-015-00: on 900726, two out of four emergency diesels  
 declared inoperable.

W/9    ltr.

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**Pennsylvania Power & Light Company**

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August 24, 1990

U.S. Nuclear Regulatory Commission  
Document Control Desk  
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SUSQUEHANNA STEAM ELECTRIC STATION  
LICENSEE EVENT REPORT 90-015-00  
FILE R41-2  
PIAS - 441

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

Attached is Licensee Event Report 90-015-00. This event was determined reportable per 10CFR50.73(a)(2)(v) and (vi) in that two out of four emergency diesel generators were declared inoperable. This report also fulfills the requirements of Technical Specification 4.8.1.1.4, which requires the submittal of a Special Report for all diesel failures, as required by Regulatory Guide 1.108, Section C.3.b. The failure of the 'A' emergency diesel generator is considered a valid test, valid failure.

H.G. Stanley  
Superintendent of Plant - Susquehanna

RRW/mjm

cc: Mr. T. T. Martin  
Regional Administrator, Region I  
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00123

*Handwritten initials: TBC*

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) <b>Susquehanna Steam Electric Station - Unit 1</b>	DOCKET NUMBER (2) <b>0 5 0 0 0 3 8 7</b>	PAGE (3) <b>1 OF 0 4</b>
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TITLE (4)  
**Two Out of Four Emergency Diesels Declared Inoperable**

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)
10	7	2 6 9 0	9 0	0 1 5	0 0	0 8	2 4	9 0	<b>SSES - Unit 2</b>		<b>0 5 0 0 0 3 8 8</b>

OPERATING MODE (9) <b>1</b>	THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (Check one or more of the following) (11)									
POWER LEVEL (10) <b>1 0 0</b>	20.402(b)	20.406(c)	<input checked="" type="checkbox"/>	50.73(a)(2)(iv)	73.71(b)					
	20.406(a)(1)(i)	50.36(c)(1)	<input type="checkbox"/>	50.73(a)(2)(v)	73.71(c)					
	20.406(a)(1)(ii)	50.36(c)(2)	<input type="checkbox"/>	50.73(a)(2)(vii)	OTHER (Specify in Abstract below and in Text, NRC Form 368A)					
	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)(vii)(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)									
NAME <b>Richard R. Wehry - Compliance Engineer</b>							TELEPHONE NUMBER		
							AREA CODE <b>7 1 7 5 4 2 - 3 6 6 4</b>		

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
<b>B</b>	<b>E K</b>	<b>P S F</b>	<b>C 6 3 4</b>	<b>YES</b>						

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 July 26, 1990 at 0035 hours, with both Unit 1 and Unit 2 operating at 100% power, the 'A' Emergency Diesel Generator (EDG) was declared inoperable when it failed to reach required frequency within 10 seconds of a manual initiation, which was being performed per Technical Specification ACTION 3.8.1.1.b due to the 'E' EDG being inoperable. The 'E' EDG, which was substituting for the 'B' EDG, had been declared inoperable at 1300 hours on 7/25/90 due to the failure of a fuel sample from its fuel oil storage tank to meet the insolubles limit of Technical Specification 4.8.1.1.2.c. Two out of four EDG's inoperable constitutes a reporting requirement pursuant to 10CFR50.73(a)(2)(v) and (vi). The cause of the 'A' start time failure was the shearing of a one-inch double-threaded reducer on the right bank starting air header filter. The failure to meet the fuel oil insolubles limit was attributed to loss of stability of the fuel oil in the 'E' storage tank. The reducer was replaced and the 'A' EDG was successfully retested and declared operable. The shearing of this reducer is considered to be an isolated event requiring no additional corrective actions. The 'E' EDG day and storage tanks were emptied and cleaned and an inspection of the storage tank interior and its seals was performed. No anomalies were found and the system was refilled with new, sampled fuel oil and returned to service. The Chemistry Section is pursuing more rigorous sampling of fuel storage tanks and incoming fuel truck tankers to provide an advanced indication of fuel oil quality degradation and to prevent recurrence.

**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   9   0   -   0   1   5   -   0   0   0   2   OF   0   4	LER NUMBER (8)			PAGE (3)	
		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER		

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

DESCRIPTION OF EVENT

On July 26, 1990 at 0035 hours, with both Unit 1 and Unit 2 operating at 100% power, the 'A' Emergency Diesel Generator (EDG; EIIS Code: EK) was declared inoperable when it failed to attain required frequency within ten seconds of a manual initiation, which was being performed per Technical Specification ACTION 3.8.1.1.b due to the 'E' EDG being inoperable. The 'E' EDG, which was substituting for the 'B' EDG, had been declared inoperable at 1300 hours on 7/25/90 due to the failure of a fuel oil (EIIS Code: DC) sample from its storage tank to meet the insolubles limit of Technical Specification requirement 4.8.1.1.2.c. The required limit is less than 2 mg/100 ml; actual determined was 3.7 mg/100ml. Two out of four EDG's inoperable constitutes a reporting requirement pursuant to 10CFR50.73(a) (2) (v) and (vi).

A verbal notification per 10CFR50.72(b) (2) (iii) (D) was made to the Commission at 0211 hours on 7/26/90.

CAUSE OF EVENT

The failure of the 'A' EDG to attain required frequency within 10 seconds of a start initiation was attributed to the shearing of a one-inch double-threaded reducer on the right bank starting air header filter. The cause for the shearing of the reducer is believed to be due to a faulty casting but is considered to be an isolated incident. The failure of the 'E' EDG fuel storage tank oil sample to meet the Technical Specifications limit for insolubles was attributed to loss of stability of the diesel fuel oil. This can normally be caused by fuel oil aging and/or the presence of a catalyst such as copper. This loss of stability may have been further influenced by the fact that the 'E' storage tank is used as the receiving tank for all new fuel oil (fuel oil is then transferred to any of the 'A'-'D' storage tanks by means of a transfer pump). As such, deposits of water and sediment are more prone to collect in the 'E' storage tank.

REPORTABILITY/ANALYSIS

This event was determined reportable per 10CFR50.73(a) (2) (v) and (vi) in that two out of four EDG's were declared inoperable. These sections of 10CFR50.73 address any events or conditions which alone could have prevented the fulfillment of the safety function of structures or systems needed to shut down the reactor and maintain it in safe shutdown, remove residual heat, control rad release, or mitigate consequences of an accident. The Susquehanna safety analysis requires three OPERABLE EDG's to safely shut down the plant in the event of a design basis accident.



LICENSEE EVENT REPORT (LER)  
TEXT CONTINUATION

ESTIMATED BURDEN PER RESPONSE TO COMPLY WITH THIS INFORMATION COLLECTION REQUEST: 600 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   5   -   0   0   0   3	LER NUMBER (8)			PAGE (3)	
		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER		

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

Susquehanna has a total of five EDG's. All five EDG's are common to Units 1 and 2. Four EDG's ('A'-'D') are normally aligned and are capable of supplying power to either Unit 1 or Unit 2. The fifth EDG ('E') is a spare EDG and can be substituted in place of 'A', 'B', 'C' or 'D' EDG's. On July 25, 1990 the 'E' EDG was substituting for the 'B' EDG which had been removed from service for engine rebuilding and modification implementation. At 1300 hours on 7/25/90, a sample from the 'E' EDG fuel oil storage tank failed Technical Specification 4.8.1.1.2.c limit for insolubles. The required limit is less than 2 mg/100ml; actual determined was 3.7 mg/100ml. As such, a 72 hour LCO was entered per Technical Specification 3.8.1.1.b.

At 0035 hours on 7/26/90, the 'A' EDG failed to attain required frequency within 10 seconds of a start initiation while performing Technical Specification ACTION 3.8.1.1.b as a result of the 'E' EDG being inoperable. Actual 'A' EDG start time was 10.87 seconds. The 'A' EDG was declared inoperable and a 2 hour LCO per Technical Specification 3.8.1.1.b was entered. As a result of two out of four EDG's being inoperable, a verbal notification pursuant to 10CFR50.72(b) (2) (iii) (D) was made to the Commission.

Following replacement of the sheared reducer, the 'A' EDG was retested successfully (start time of 8.07 seconds) and declared operable at 0605 hours on 7/26/90. The 'E' storage tank was resampled and analysis completed at 1500 hours on 7/26/90. This second sample also failed the insolubles limit. Commensurate with the evolution to empty, clean, inspect and refill the 'E' EDG fuel oil storage tank, a waiver of compliance was requested and received on July 27, 1990 in anticipation that the evolution would extend past the 72 hour 3.8.1.1.b LCO ACTION time requirement. The evolution was completed and the 'E' EDG was declared operable at 2330 hours on 7/28/90.

This report also fulfills the requirement of Technical Specification 4.8.1.1.4, which requires the submittal of a Special Report for all EDG failures, valid or invalid, as required by Regulatory Guide 1.108, Section C.3.b. The failure of the 'A' EDG to attain required frequency within 10 seconds due to the sheared reducer was classified as a valid test and valid failure. The 'A' EDG was inoperable from 0035 hours to 0605 hours on 7/26/90. The Diesel Generator Start Log indicates that there is 1 'A' EDG failure in the last 20 valid tests. The 'A' EDG test interval is one start in every thirty-one (31) days, per Table 4.8.1.1.2-1 of Technical Specification 3.8.1.1.

There were no safety consequences or compromise to public health or safety as a result of this event. The EDG's were not called upon to perform their safety design function during the time that two EDG's were inoperable (0035 hours to 0605 hours on 7/26/90). Had the EDG's been called upon to operate, it is believed that the 'E' EDG would have started and operated per design in that the effect of higher than normal insolubles in the fuel oil could affect diesel long-term operation but most likely not affect diesel starting and short-term operation. This stance is further substantiated by samples obtained from the

LICENSEE EVENT REPORT (LER)  
TEXT CONTINUATION

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

TEXT (If more space is required, use additional NRC Form 368A's) (17)

'E' storage tank bottom and 6 inches from the bottom and analyzed by Betz Laboratories per the ASTM D381 Gum test. The results indicated that the present condition of the fuel would be acceptable for diesel service.

In accordance with the guidance provided in NUREG 1022 Supplement 1, Items 14.1 and 14.10, the required submission date for this report was determined to be August 27, 1990.

CORRECTIVE ACTIONS

During investigation of the 'A' EDG failure to attain required frequency within 10 seconds, a one-inch double-threaded reducer on the right bank starting air header filter was found to be sheared. The reducer was replaced and the 'A' EDG was retested successfully (start time of 8.07seconds) and declared operable. The cause of the sheared reducer is believed to be an improper casting but is considered to be an isolated incident requiring no additional corrective actions. The 'E' EDG day tank and storage tank were emptied and cleaned and an inspection of the storage tank and its seals was performed. No anomalies were found. The failure of the 'E' EDG fuel storage tank oil sample to meet the Technical Specifications limit for insolubles was attributed to loss of stability of the diesel fuel oil. Corrective actions to prevent recurrence include enhanced on-site sampling methods of diesel fuel oil storage tanks and incoming truck tankers. The sampling requirements for the laboratory presently contracted to perform testing of incoming fuel oil, per ASTM D-975 and D-2274, will also be revised to require the obtaining of both a running sample and a bottom sample from truck tankers prior to shipment to the Susquehanna site. These revised sampling methods will provide an increased and more effective ability to trend fuel oil properties and detect unsatisfactory fuel oil parameters.

ADDITIONAL INFORMATION

Failed Components Identification: Pipe fitting reducer (PSF) on the 'A' EDG, System EK; Manufacturer: C634.

Previously Reported Similar Events: Licensee Event Reports 85-002-00 and 85-021-00 described events involving more than one EDG being inoperable.

