

D.M.B. 06

JULY 9 1981



Docket Nos. 50-277
and 50-278

Mr. Edward G. Bauer, Jr.
Vice President - General Counsel
Philadelphia Electric Company
2301 Market Street
Philadelphia, Pennsylvania 19101

Dear Mr. Bauer:

Subject: Information Request Regarding Station Blackout, Unresolved
Safety Issue A-44, Peach Bottom Units 2 and 3

The NPC staff is currently addressing Unresolved Safety Issue (USI) A-44, Station Blackout. The purpose of this work is to establish the safety significance of an event resulting in a loss of all alternating current power and, if significant, to consider the need for any specific changes. Over the past several years information requests have been forwarded which requested information that is being used in the USI analysis. Your interest and cooperation in the past have been appreciated.

At this time the USI A-44 effort is being directed toward determining the reliability of the onsite standby diesel generators. The enclosed questionnaire has been prepared to provide accurate operating experience to serve as a basis for such a determination. More specifically, its purpose is to obtain more detailed data than were available in previous diesel generator studies such as AEC-00E-ES-002, NUREG/CR-0660, and NUREG/CR-1362.

The questionnaire (enclosure 1) requests information in tabular form and solicits data for the years 1976 through 1980, inclusive. There are four tables enclosed: (1) Diesel Generator Operations Data, (2) Diesel Generator Scheduled Down Time Record, (3) Diesel Generator Unscheduled Down Time Record, and (4) Onsite Emergency Diesel Generator and Auxiliary Equipment Modification Record. Also enclosed are examples of completed tables as well as a clarification of what should be entered. Please note that, although it may appear that only Licensee Event Report (LER) information is sought, data on all diesel generator malfunctions, independent of whether an LER was prepared, is requested.

Please find enclosed LER documentation (enclosure 2) presently docketed for your facility. You are requested to review these and to indicate if there are other reports which have not been enclosed. Finally, please find enclosed a copy of the appropriate portions of your response (enclosure

OFFICE							
SURNAME	8107220017	810709					
	PDR	ADOCK	05000277				
DATE	F		PDR				

Mr. Edward G. Bauer, Jr.

- 2 -

3) to our letter of March 6, 1978 which requested related, but different, information. This is being forwarded for your information only and should aid in preparing Tables 1 through 4.

In consideration of the time and effort necessary to obtain this information, the completion of Table 4 should be considered voluntary. However, it should be noted that if operational and hardware modifications are not identified, the positive or negative influence of these features on emergency alternating current power reliability may be lost in the evaluation of the data. The expected effect is that our generic reliability estimates may be lower than that which actually exists.

The above information is requested in accordance with Sections 103.b.(3) and 161.c of the Atomic Energy Act of 1954, as amended. To meet our schedule requirements for the resolution of USI A-44 and to incorporate as much real experience as possible into the reliability model for emergency power systems, it is requested that your response be provided within 90 days of the receipt of this letter. However, if this schedule is inconsistent with priority requirements for other licensing work, please provide us with your proposed date of response within 30 days. We plan to complete our analysis of this data by February 1982. Your data should be provided by that time so that an accurate assessment of onsite alternating current power sources can be made.

Mr. P. Baranowsky has been designated Task Manager for USI A-44. Should you have any questions, please feel free to contact him at (301) 443-5921. Your time and efforts are appreciated.

DISTRIBUTION
See attached list

Sincerely,
*ORIGINAL SIGNED BY
JOHN F. STOLZ*

John Stolz, Chief
Operating Reactors Branch #4
Division of Licensing

Enclosures:
As Stated

cc: w/enclosures
See next page

This request for information was approved by the Office of Management and Budget under clearance number 3150-0067 which expires May 31, 1983. Comments on burden and duplication may be directed to the Office of Management and Budget, Washington, D.C. 20503.

OFFICE	DST:GIB	DL:ORB4	DL:ORB4	DL:ORB4		
SURNAME	Penorian:jb	MFairt	JStolz	P. Stolz		
DATE	07/6/81	07/7/81	07/6/81	7/8/81		

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Docket File(s) 50- 277
(and) 50- 278

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P. Baranowsky

A-44 File

~~E. Blackburn~~

~~H. Weinstein~~

Diesel Generator Scheduled Downtime Record
 Calendar Year 19 ____

TABLE 2

Reason for Downtime	Hours of Downtime														Comments
	Reactor shutdown				Reactor not shutdown										
	DC	DC	DC	DC	DC	DC	DC	DC	DC	DC	DC	DC	DC	DC	
Scheduled Maintenance															
Time DG is unavailable for emergency service because of required tests															

TABLE 3

Diesel Generator Unscheduled Downtime Record
Calendar Year 19__

Enclosure 1 - Page 3

Plant Name _____

Unit No. _____

LER Abstract No. (Refer to attached LER Abstracts)	Downtime Hours				Comments - If any of the reported failures would not have been a failure under emergency conditions, please explain here. Refer to attached LERs or the failures listed in Table 1.
	Total Hours	Trouble-shooting	Parts, Delivery, etc	Repair/replace	

Plant Name _____

Unit No. _____

Onsite Emergency Diesel Generator and
Auxiliary Equipment Modification Record

TABLE 4

Equipment or procedure modified	Date of Mod.	Reason for Modification and Desired Improvement	Description of Modification

TABLE ENTRIES
EXPLANATION/CLARIFICATION

Table 1

Reason for DG Operation and Scheduled Duration of Run: This column contains the different categories of diesel generator operation. The categories are structured such that the start and run conditions are similar for all of the tests in a category. In this column, enter the scheduled run duration for each of the test categories. Also enter the number of diesel generator starts that are done for each type of test. For example, if on the monthly test there is one start from the local controls and one start from the remote controls, the number of starts per test is two. If two or more diesels are started simultaneously for any reason, please record it as a multiple start.

DG No.: Enter each diesel generator's identification number in this column as shown in the example.

Number of Starts: Enter the sum of the successful and unsuccessful start attempts for each category. If there are several starts for each test, include all of them, but be certain to record the number of starts per test in column one.

Number of Failures: Enter the sum of the failures for each category. A failure is counted if the objectives of the test are not achieved. A subsystem failure that does not cause failure of the diesel generator system is not counted as a failure. If the diesel generator did not start, run, and load as required by the test, a failure should be recorded. However, if the diesel generator would have supplied power in some capacity for an emergency, please explain in Table 3. For example, if the diesel started on the second attempt or the diesel was tripped to repair a minor oil leak that would not have been a problem in an emergency, this should be noted in Table 3.

Percent Loading of DG (KW): Enter the percentage that the diesel is loaded for each category. The continuous kilowatt rating is considered to be 100%.

Duration of Run Before Stop for each DG Failure: Record the run-time for each failure. If the diesel failed to start, the run-time would be 0 min.

Identification of Failures: Attached to this questionnaire are abstracts of the LERs related to the diesel generators. The abstracts are numbered starting with one. Refer to this number to identify the failures, but if there was a failure for which there is no abstract, assign the failure a number and include it in Table 3.

Table 2

Reason for Downtime: Enter in this column the categories of schedule maintenance that make the diesel generator unavailable for emergency service. If the diesel generator is unavailable for emergency service during surveillance testing, report that also.

Table 2 (cont'd)

Hours of Downtime: Enter the number of hours that the diesel generator is unavailable for emergency service. Report the hours under the column reactor shutdown or reactor not shutdown as appropriate.

Comments: Comment on time to return to service after maintenance has begun, or other pertinent information.

Table 3

LER Abstract No. (Refer to attached LER Abstracts): The attached LERs are numbered starting from one. Refer to this LER number in column one. Each LER abstract should have an entry in this table. If there was a failure not included in the attached abstracts, please assign it a number and enter it in this table.

Downtime Hours: Enter the number of hours that the diesel generator is unavailable for emergency service. Subdivide these total hours into troubleshooting, parts delivery, and repair or replacement.

Comments: Use this column to comment on the downtime and the failure. If the reported failure was only a technical specification violation, but would not be a complete failure of the diesel generator to supply power or would only be a delay, please elaborate in this column.

Table 4

Equipment or procedure modified: List in this column the equipment or procedures related to the emergency onsite power system that have been modified since the reactor became critical.

Date of Mod.: Enter the date that the modification was completed.

Reason for Modification and Desired Improvement: Report the reason for the modification and the desired or observed improvement in the system.

Description of Modification: Briefly describe what modification was made.

Diesel Generator Operations Data
 Calendar Year 1976

Reason for DC Operation, & scheduled Duration of Run	DC No.	Number of Starts	Number of Failures	Percent Loading of DG (KW)	Duration of Run Before Stop For Each DG Failure	Identification of Failures (Refer to attached IERs or Table 3)
Tech. Spec Req'd Test Monthly Surveillance (1 hour) (1 start/test)	1	12	2	100	30 min; 0 min	IER # 1 & 4
	2	12	0	100	--	
	3	12	1	100	0 min	IER # 2
Refueling Outage (12 hours) (1 start/test)	1	1	0	100	--	
	2	1	0	100	--	
	3	1	1	100	1 hour	IER # 3
Misc. Tech Spec Req'd Tests (Start Only) (1 start/test)	1	2	0	100	--	Table 3 No. 9
	2	4	0	100	--	
	3	2	0	100	--	
DC Actual Demand Starts not for Testing SIAS Signal (1 hour)	1	1	0	0	--	IER # 8 Multiple start of 3 DGs
	2	1	0	0	--	"
	3	1	0	0	--	"
Miscellaneous Tests (Specify Type) Verify Repairs (not full test) (Start Only)	1	6	0	1	0 min	Table 3 # 10
	2	4	0	0		
	3	4	0	0		

TABLE 2
(Sample)
Diesel Generator Scheduled Downtime Record
Calendar Year 19 _____

Reason for Downtime	Hours of Downtime												Comments				
	Reactor shutdown			Reactor not shutdown			Reactor not shutdown										
	DC# 1	DC# 2	DC# 3	DC# 1	DC# 2	DC# 3	DC# 1	DC# 2	DC# 3	DC# 1	DC# 2	DC# 3					
Scheduled Maintenance																	
Preventive Maintenance Semi-annual & Annual	24	16	--											16			
Equipment Modification							8	8	8					8			Modified lube oil on each diesel. Diesels down at different times.
Time DG is unavailable for emergency service because of required tests																	
Down 4 hrs per test		8					48	40	48								Diesel cannot be automatically started during test or for three hours afterwards

TABLE 3
(Sample)

Diesel Generator Unscheduled Downtime Record
Calendar Year 19__

Enclosure 1 - Page 9
Plant Name XXX
Unit No. 162

LER Abstract No. (Refer to attached LER Abstracts)	Downtime Hours				Comments - If any of the reported failures would not have been a failure under emergency conditions, please explain here. Refer to attached LERs or the failures listed in Table 1.
	Total Hours	Trouble-shooting	Parts, Delivered, etc	Repair/replace	
1	4	1	1	2	
2	3	0.5	1	1.5	
3	12	1	10	1	
4	0	0	0	0	Diesel started in 15 sec instead of required 10 sec
5	0	0	0	0	Secondary air pressure low. Primary air satisfactory.
6	0	0	0	0	Secondary air pressure low. Primary air satisfactory.
7	0	0	0	0	Diesel started in 20 sec instead of required 10 sec.
8	0	0	0	0	False DG start signal. DG satisfactory
No LER					
9	0	0	0	0	Required DG starts after the failure of one diesel.
10	0	0	0	0	Starts to verify repairs.

TABLE 4
(Sample)

Onsite Emergency Diesel Generator and
Auxiliary Equipment Modification Record

Enclosure 1 - Page 10

Plant Name _____

Unit No. _____

Equipment or procedure modified	Date of Mod.	Reason for Modification and Desired Improvement	Description of Modification
Lube oil system	2/76	Improve turbo charger lubrication for emergency starts.	Soak-back pump was removed and replaced with a continuous lube oil pump. New pump also continuously lubricates the crankshaft.
Relay cabinets	1/78	Prevent dirt from fouling relay contacts.	Cabinet doors with gaskets were installed.
Instrument Relocation	6/79	Eliminate vibration damage to instruments	Control and monitoring instrument panel was relocated from the engine skids to a free standing panel mounted on the engine room floor.

61/5/0000001-00000177/

1

PAGE 761

ACCESSION NO. 0020163410
 TITLE DG OUTPUT BREAKER FAILS TO CLOSE AT PEACH BOTTOM 2
 CORPAUTH PHILADELPHIA ELECTRIC CO.
 DATE 1981
 TYPE 0
 MEMO LTR W/LETR 81-004 TO U.S. NRC, REGION 1, JAN 27, 1981, DOCKET
 50-277, TYPE--BWR, MFG--GE, AE--BECH, DCS NO.--8102030400
 AVAIL AVAILABILITY - NRC PUBLIC DOCUMENT ROOM, 1717 H STREET,
 WASHINGTON, D. C. 20555 (68 CENTS/PAGE -- MINIMUM CHARGE
 \$2.00)
 ABSTRACT DATE OF EVENT - 011481. POWER LEVEL - 100%. CAUSE -
 MISALIGNED INTERLOCK SWITCH. DURING TESTING, THE E-32 BREAKER
 WOULD NOT CLOSE. THIS BREAKER TIES THE E-3 DIESEL GENERATOR
 OUTPUT TO THE E-32 4 KV EMERGENCY BUS. SINCE THE B LOOP OF
 HIGH PRESSURE SERVICE WATER WAS ALREADY OUT OF SERVICE FOR
 PLANNED MAINTENANCE, A CONTROLLED SHUTDOWN OF THE UNIT WAS
 BEGUN. SIMILAR OCCURRENCE 3-81-17P. THE CAUSE OF THE BREAKER
 FAILING TO CLOSE WAS A MISALIGNED INTERLOCK SWITCH DESIGNED TO
 PREVENT THE BREAKER FROM CLOSING IF IT IS NOT FULLY IN PLACE.
 A SPARE BREAKER WAS INSTALLED, TESTED SATISFACTORILY AND THE
 SHUTDOWN TERMINATED. ALL OTHER 4KV EMERGENCY BREAKERS TESTED
 SATISFACTORILY. THE INTERLOCK SWITCH ON THE ORIGINAL BREAKER
 HAS BEEN REALIGNED.
 COMPONENT CODE CTKRK-CIRCUIT CLOSERS/INTERRUPTERS
 SYSTEM CODE EE-EMERG GENERATOR SYS & CONTROLS

61/5/0000001-00000177/ 2
 ACCESSION NO. 0020159483
 TITLE DIESEL OIL SPILLED INTO CANAL AT PEACH BOTTOM 2
 CORPAUTH PHILADELPHIA ELECTRIC CO.
 DATE 1980
 TYPE 0
 MEMO LTR W/LETR 80-014 TO U.S. NRC, REGION 1, AUG 18, 1980, DOCKET
 50-277, TYPE--BWR, MFG--GE, AE--BECH
 AVAIL AVAILABILITY - NRC PUBLIC DOCUMENT ROOM, 1717 H STREET,
 WASHINGTON, D. C. 20555 (68 CENTS/PAGE -- MINIMUM CHARGE
 \$2.00)
 ABSTRACT DATE OF EVENT - 080880. POWER LEVEL - 000%. CAUSE - FAULTY
 STORAGE TANK LEVEL INDICATOR. OIL SHEEN WAS OBSERVED ON
 CONCRETE POND NEAR THE BERM THAT SEPARATES THE POND FROM THE
 COOLING TOWERS. THE LEVEL GAUGE WAS READING INCORRECTLY IN 'A'
 DIESEL STORAGE TANK AT TIME OF DIESEL OIL DELIVERY. OIL
 OVERFLOUED AND EVENTUALLY REACHED A DRAIN SYSTEM WHICH
 DISCHARGES TO THE CANAL. MOST OIL WAS CONTAINED WITHIN AN OIL
 BUSH IN THE DISCHARGE CANAL AND WAS RECOVERED. LEVEL GAUGE WAS
 RECALIBRATED TO PROPERLY READ A FULL TANK.
 COMPONENT CODE INSTRC-INSTRUMENTATION AND CONTROLS
 SYSTEM CODE EE-EMERG GENERATOR SYS & CONTROLS

61/5/0000001-00000177/ 3
 ACCESSION NO. 0020159194
 TITLE DIESEL GENERATOR CARDOX SYSTEM VAPOR PILOT VALVE FOUND CLOSED
 AT PEACH BOTTOM 2
 CORPAUTH PHILADELPHIA ELECTRIC CO.
 DATE 1980
 TYPE 0
 MEMO LTR W/LETR 80-011 TO U.S. NRC, REGION 1, JUL 28, 1980, DOCKET
 50-277, TYPE--BWR, MFG--GE, AE--BECH
 AVAIL AVAILABILITY - NRC PUBLIC DOCUMENT ROOM, 1717 H STREET,
 WASHINGTON, D. C. 20555 (68 CENTS/PAGE -- MINIMUM CHARGE
 \$2.00)
 ABSTRACT DATE OF EVENT - 071400. POWER LEVEL - 000%. CAUSE - DEFECTIVE
 PROCEDURES. DURING TRAINING ON THE SYSTEM, IT WAS DISCOVERED
 THE DIESEL GENERATOR CARDOX SYSTEM VAPOR PILOT VALVE WAS
 CLOSED. THE VAPOR PILOT VALVE MUST BE OPEN TO PROVIDE PRESSURE
 TO OPEN THE DIESEL ROOM CARDOX DELUGE VALVES. THE SYSTEM WAS
 THEREFORE INOPERABLE FOR BOTH AUTOMATIC AND MANUAL INJECTION OF
 CARDOX, HOWEVER, THE SYSTEM IS AUTOMATICALLY DISABLED IN THE
 EVENT OF DIESEL STARTS DUE TO LOCA. THE VAPOR PILOT VALVE WAS
 NOT ON SYSTEM CHECK-OFF LISTS OR LOCKED VALVE LIST.
 INVESTIGATION DID NOT DISCLOSE REASON FOR CLOSURE. VALVE WAS
 IMMEDIATELY LOCKED OPEN. TO PRECLUDE FUTURE OCCURRENCE, VALVE
 WAS ALSO ADDED TO SYSTEM CHECK-OFF LISTS AND LOCKED VALVE LIST.
 COMPONENT CODE VALVEX-VALVES

SYSTEM CODE AB-FIRE PROTECTION SYS & CONT

81/5/0000001-00000177/ 4
 ACCESSION NO. 0020152576
 TITLE DIESEL GENERATOR TRIP CAUSES HIGH SCRAM AND HALF ISCLATION AT PEACH BOTTOM 2
 CORPAUTH PHILADELPHIA ELECTRIC CO.
 DATE 1979
 TYPE 4
 MEMO LTR W/LER 79-045 TO U.S. NRC, REGION 1, OCT 24, 1979, DOCKET 50-277, TYPE--BWR, MFG--GE, AE--BECH CONTROL--027218
 AVAIL AVAILABILITY - NRC PUBLIC DOCUMENT ROOM, 1717 H STREET, WASHINGTON D.C. 20555, (08 /PAGE -- MINIMUM CHARGE \$2.00)
 ABSTRACT DATE OF EVENT - 092479. POWER LEVEL - 100%. CAUSE - LICENSED OPERATOR ERROR, WITH ONE OFF-SITE POWER SOURCE OUT OF SERVICE FOR MAINTENANCE AND THE E-2 DIESEL SUPPLYING LOADS ON THE E-22 EMERGENCY BUS, THE E-2 DIESEL TRIPPED CAUSING A HALF SCRAM AND HALF ISOLATION OF UNIT 2. THE E-22 BUS WAS IMMEDIATELY RE-ENERGIZED FROM THE REMAINING OFF-SITE POWER SOURCE. WITHIN 30 MINUTES THE E-2 DIESEL WAS BACK ON SUPPLYING E-22 BUS LOADS. WHILE REMOVING THE E-2 DIESEL FROM SERVICE, AN OPERATOR ERRONEOUSLY SHUTDOWN THE EMERGENCY SERVICE WATER SYSTEM. THE SUBSEQUENT RISE IN LUBE OIL TEMPERATURE ON THE OPERATING E-2 DIESEL CAUSED IT TO TRIP. CONTROL SWITCH TAGGING AND OPERATOR INSTRUCTIONS WERE COMPLETED TO PREVENT RECURRENCE.
 COMPONENT CODE ENGINE-ENGINES,INTERNAL COMBUSTION
 SYSTEM CODE EE-EMERG GENERATOR SYS & CONTROLS

81/5/0000001-00000177/ 5
 ACCESSION NO. 0020152140
 TITLE DIESEL GENERATOR MADE INOPERABLE FOR MAINTENANCE AT PEACH BOTTOM 2
 CORPAUTH PHILADELPHIA ELECTRIC CO., PHILADELPHIA, PA
 DATE 1978
 TYPE 0
 MEMO 2 PGS, LTR W/LER 78-001703L-H TO NRC OFFICE OF I & E, REGION 1, JAN. 10, 1978, DOCKET 50-277, TYPE--BWR, MFG--GE, AE--BECHTEL
 AVAIL AVAILABILITY - NRC PUBLIC DOCUMENT ROOM, 1717 H STREET, WASHINGTON, D. C. 20555 (08 CENTS/PAGE -- MINIMUM CHARGE \$2.00)
 ABSTRACT DATE OF EVENT - 010378. POWER LEVEL - 026%. CAUSE - LUBE OIL HEATER FAILURE. WITH UNITS 2 AND 3 AT POWER, THE "E-4" EMERGENCY DIESEL GENERATOR WAS MADE INOPERABLE TO ALLOW REPLACEMENT OF LUBE OIL HEATER ELEMENTS. REPAIRS BEING INITIATED WHEN THE DIESEL WAS MADE INOPERABLE. THE DIESEL WAS RETURNED TO SERVICE IN ABOUT 3 HOURS. LUBE OIL LOW TEMPERATURE ALARM INDICATED FAILURE OF THE LUBE OIL HEATER. THIS DID NOT MAKE THE DIESEL INOPERABLE; HOWEVER, REPAIR REQUIRED DIESEL TO BE OUT OF SERVICE. DELTA CONNECTOR, 3 PHASE HEATER HAD TWO BLOWN COILS. ALL THREE COILS WERE REPLACED AND THE UNIT WAS RETURNED TO SERVICE.
 COMPONENT CODE HEATER-HEATERS,ELECTRIC
 SYSTEM CODE EE-EMERG GENERATOR SYS & CONTROLS

81/5/0000001-00000177/ 6
 ACCESSION NO. 0020149715
 TITLE DIESEL GENERATOR TRIPS AFFECTING UNIT 3 AT PEACH BOTTOM 2
 CORPAUTH PHILADELPHIA ELECTRIC CO.
 DATE 1979
 TYPE 0
 MEMO LTR W/LER 79-025 TO U.S. NRC, REGION 1, JUN 04, 1979, DOCKET 50-277, TYPE--BWR, MFG--GE, AE--BECH CONTROL--026908
 AVAIL AVAILABILITY - NRC PUBLIC DOCUMENT ROOM, 1717 H STREET, WASHINGTON D.C. 20555, (08 /PAGE -- MINIMUM CHARGE \$2.00)
 ABSTRACT DATE OF EVENT - 051079. POWER LEVEL - 000%. CAUSE - LOSS OF OIL THRU CRACKED FITTING. WITH ONE OFF SITE POWER SOURCE OUT OF SERVICE FOR MAINTENANCE AND THE E-2 DIESEL SUPPLYING LOADS ON THE E-23 EMERGENCY BUS, THE E-2 DIESEL TRIPPED CAUSING A HALF SCRAM AND HALF ISOLATION ON UNIT 3. THE E-23 BUS WAS IMMEDIATELY REENERGIZED FROM THE REMAINING OFF SITE POWER SOURCE AND THE SECOND OFF SITE POWER SOURCE WAS PROMPTLY RETURNED TO SERVICE. LOSS OF CONTROL OIL FROM THE DIESEL GOVERNOR CAUSED THE DIESEL TO TRIP. OIL WAS LOST THROUGH A CRACKED PIPE FITTING ON THE GOVERNOR BOOSTER OUTLET PORT. THE

FITTING WAS REPLACED AND THE DIESEL WAS TESTED FOR OPERABILITY.
 COMPONENT CODE PIPEXX-PIPES, FITTINGS
 SYSTEM CODE EE-EMERG GENERATOR SYS & CONTROLS

81/5/0000001-0000017// 7
 ACCESSION NO. 0020146504
 TITLE REPORTABLE OCCURRENCE AT PEACH BOTTOM 2
 CORPAUTH PHILADELPHIA ELECTRIC CO.
 DATE 1979
 TYPE Q
 MEMO LTR W/LER 79-050 TO U.S. NRC, REGION 1, JAN 19, 1979, DOCKET

50-277, TYPE--BWR, MFG--GE, AE--BECH CONTROL--023349
 AVAIL AVAILABILITY - NRC PUBLIC DOCUMENT ROOM, 1717 H STREET,
 WASHINGTON D.C. 20555, (50 CENTS/PAGE -- MINIMUM CHARGE \$2.00)
 ABSTRACT DATE OF EVENT - 122178, POWER LEVEL - 099%, CAUSE - OTHER,
 DURING ROUTINE SURVEILLANCE TESTING, TIME TO REACH RATED
 VOLTAGE AND FREQUENCY FOR THE E2 DIESEL WAS ABOUT 11 SECONDS
 AND ABOUT 13 SECONDS FOR THE E3 DIESEL. START TIMES FOR
 REMAINING DIESELS WERE ACCEPTABLE (UNDER 10 SEC). RETEST ONE
 HOUR LATER SHOWED ACCEPTABLE START TIMES. INVESTIGATION
 INITIATED. SAFETY CONSEQUENCES ARE MINIMAL, SINCE REDUNDANT
 SOURCES WERE AVAILABLE. PREVIOUS OCCURRENCE 2-78-3573L-0. THE
 MOST PROBABLE CAUSE WAS PROBLEMS WITH THE WOODWARD GOVERNOR ON
 BOTH DIESELS. AFTER EXTENSIVE TESTING, THE E3 DIESEL GOVERNOR
 WAS REPLACED ON 12/26/78. E2 AND E3 DIESELS ARE TESTED TO
 ENSURE OPERABILITY WHILE THE INVESTIGATION WITH MANUFACTURERS
 CONTINUES.

COMPONENT CODE ENGINE-ENGINES, INTERNAL COMBUSTION
 SYSTEM CODE EE-EMERG GENERATOR SYS & CONTROLS

81/5/0000001-0000017// 6
 ACCESSION NO. 0020144153
 TITLE DIESEL GENERATOR FAILS TO START AT PEACH BOTTOM 2
 CORPAUTH PHILADELPHIA ELECTRIC CO., PHILADELPHIA, PA
 DATE 1977
 TYPE Q
 MEMO 5 PGS, LTR W/LER 2-77-370/IT TO NRC OFFICE OF I & E, REGION 1,
 SEPT. 9, 1977, DOCKET 50-277, TYPE--BWR, MFG--GE, AE--BECHTEL
 AVAIL AVAILABILITY - NRC PUBLIC DOCUMENT ROOM, 1717 H STREET,
 WASHINGTON, D. C. 20555 (50 CENTS/PAGE -- MINIMUM CHARGE
 \$2.00)

ABSTRACT DATE OF EVENT - 082677, POWER LEVEL - 0%, CAUSE - OPERATOR
 HAD FAILED TO RESET AN EARLIER TRIP. DURING SPECIAL LOSS OF
 POWER TEST, E1 DIESEL FAILED TO START DUE TO A HIGH JACKET
 COOLANT TEMP TRIP SIGNAL. THE TRIP WAS RESET AND THE DIESEL
 STARTED AND LOADED TO PROVE OPERABILITY. THE TEMP SWITCH WAS
 FOUND SET AT 190 F AND RESET TO 205 F. JACKET COOLANT TEMP
 INTERNAL OVERLOAD RATING WAS INCREASED. ALARM MODIFIED TO
 INDICATE RECEIPT OF TRIP. AFTER ROUTINE OPERATION, JACKET
 COOLANT PUMP HAD TRIPPED ON OVERLOAD CAUSING HIGH TEMP.
 OPERATOR HAD RESET THE PUMP, WHICH CLEARED THE CONDITION BUT
 DID NOT CLEAR THE ALARM AND TRIP WHICH WERE ATTRIBUTED TO SWITCH
 MALFUNCTION.

COMPONENT CODE ENGINE-ENGINES, INTERNAL COMBUSTION
 SYSTEM CODE EE-EMERG GENERATOR SYS & CONTROLS

81/5/0000001-0000017// 6
 ACCESSION NO. 0020144152
 TITLE DIESEL GENERATOR TRIPS ON OVERSPEED AT PEACH BOTTOM 2
 CORPAUTH PHILADELPHIA ELECTRIC CO., PHILADELPHIA, PA
 DATE 1977
 TYPE Q
 MEMO 2 PGS, LTR W/LER 2-77-374/IT TO NRC OFFICE OF I & E, REGION 1,
 SEPT. 9, 1977, DOCKET 50-277, TYPE--BWR, MFG--GE, AE--BECHTEL

AVAIL AVAILABILITY - NRC PUBLIC DOCUMENT ROOM, 1717 H STREET,
 WASHINGTON, D. C. 20555 (50 CENTS/PAGE -- MINIMUM CHARGE
 \$2.00)
 ABSTRACT DATE OF EVENT - 082677, POWER LEVEL - 0%, CAUSE - MAINTENANCE
 ERROR. DURING A LOSS-OF-POWER TEST, E-4 DIESEL PROPERLY
 STARTED BUT TRIPPED IMMEDIATELY ON OVERSPEED. THE MECHANICAL
 GOVERNOR WAS ADJUSTED. DURING LATER TESTS, THE DIESEL AGAIN
 TRIPPED ON OVERSPEED. TESTING SHOWED THE OVERSPEED TRIP DEVICE
 TO BE SET AT 940 RPM INSTEAD OF THE DESIRED 990 RPM SET POINT.
 THE TRIP POINT WAS ADJUSTED TO 985 RPM. INVESTIGATION

DETERMINED THAT A CAMSHAFT WAS REPLACED IN JUNE 1977. THIS REQUIRED REMOVING THE OVERSPEED MECHANISM. NECESSARY SHIMS WERE NOT INSTALLED DURING REPLACEMENT OF THE OVERSPEED MECHANISM.

COMPONENT CODE ENGINE-ENGINES, INTERNAL COMBUSTION
SYSTEM CODE EE-EMERG GENERATOR SYS & CONTROLS

81/5/0000001-0000017// 10

ACCESSION NO. 0020143266
TITLE DIESEL GENERATOR MADE INOPERABLE AT PEACH BOTTOM 2
CORPAUTH PHILADELPHIA ELECTRIC CO., PHILADELPHIA, PA
DATE 1977
TYPE G
MEMO 2 PGS, LTR W/LER 77-063/03L-0 TO NRC OFFICE OF I & E, REGION I,
NOV. 16, 1977, DOCKET 50-277, TYPE--BWR, MFG--GE, AB--BECHTEL

AVAIL AVAILABILITY - NRC PUBLIC DOCUMENT ROOM, 1717 H STREET, WASHINGTON, D. C. 20555 (66 CENTS/PAGE -- MINIMUM CHARGE \$2.00)

ABSTRACT DATE OF EVENT - 11/01/77. POWER LEVEL - 42%. CAUSE - CLEANUP ACCUMULATED OIL UNDER THE MACHINE. WITH THE UNIT AT POWER, THE E-4 DIESEL GENERATOR WAS MADE INOPERABLE TO CLEANUP OIL THAT HAD BEEN DEEMED TO BE A FIRE HAZARD WHICH HAD ACCUMULATED UNDER THE MACHINE FROM VARIOUS SMALL LEAKS. THE LEAKS WHICH ALLOWED THE OIL TO ACCUMULATE WERE CORRECTED PRIOR TO THE CLEANUP OPERATION.

COMPONENT CODE ENGINE-ENGINES, INTERNAL COMBUSTION
SYSTEM CODE EE-EMERG GENERATOR SYS & CONTROLS

81/5/0000001-0000017// 11

ACCESSION NO. 0020143265
TITLE DIESEL TRIPS FOLLOWING A MANUAL START AT PEACH BOTTOM 2
CORPAUTH PHILADELPHIA ELECTRIC CO., PHILADELPHIA, PA
DATE 1977
TYPE G
MEMO 3 PGS, LTR W/LER 77-056/03L-0 TO NRC OFFICE OF I & E, REGION I,
NOV. 15, 1977, DOCKET 50-277, TYPE--BWR, MFG--GE, AB--BECHTEL

AVAIL AVAILABILITY - NRC PUBLIC DOCUMENT ROOM, 1717 H STREET, WASHINGTON, D. C. 20555 (66 CENTS/PAGE -- MINIMUM CHARGE \$2.00)

ABSTRACT DATE OF EVENT - 10/16/77. POWER LEVEL - 42%. CAUSE - ROOT VALVE TO PRESSURE SWITCHED LEFT CLOSED, WHILE PERFORMING ELECTRICAL SWITCHING THAT REQUIRED DIESEL OPERATION. THE E-3 DIESEL TRIPLED PRIOR TO SYNCHRONIZATION FOLLOWING A MANUAL START. THE TRIP WAS CAUSED BY A ROOT VALVE TO THREE PARALLEL INTERCOOLER LUB PRESSURE SWITCHES BEING LEFT CLOSED FOLLOWING SWITCH CALIBRATION ON 10/17/77. THE ROOT VALVE WAS IMMEDIATELY OPENED AND THE DIESEL SUCCESSFULLY RUN.

COMPONENT CODE VALVEX-VALVES
SYSTEM CODE EE-EMERG GENERATOR SYS & CONTROLS

81/5/0000001-0000017// 12

ACCESSION NO. 0020141727
TITLE 4 KV EMERGENCY BUS SEQUENTIAL LOADING RELAYS OUT OF LIMITS AT PEACH BOTTOM 3
CORPAUTH PHILADELPHIA ELECTRIC CO., PHILADELPHIA, PA
DATE 1978
TYPE G
MEMO 3 PGS, LTR W/LER 78-041/1T-0 TO NRC OFFICE OF I & E, REGION I,
OCT. 24, 1978, DOCKET 50-277, TYPE--BWR, MFG--GE, AB--BECHTEL

AVAIL AVAILABILITY - NRC PUBLIC DOCUMENT ROOM, 1717 H STREET, WASHINGTON, D. C. 20555 (66 CENTS/PAGE -- MINIMUM CHARGE \$2.00)

ABSTRACT DATE OF EVENT - 10/10/78. POWER LEVEL - ON. CAUSE - ERROR IN DETERMINING SET POINT AND SPAN. DURING TESTING, TWO 4KV EMERGENCY BUS SEQUENTIAL LOADING RELAYS (WESTINGHOUSE 1878094) WERE FOUND OUTSIDE OF THE LIMITS OF TECH SPEC. THESE RELAYS ALLOW LOADING OF THE DIESEL GENERATOR DURING A LOSS OF POWER. THE CAUSE IS ATTRIBUTED TO AN ERROR IN DETERMINING THE SET POINT AND CALIBRATION SPAN OF THE RELAYS. THE RELAYS ON BOTH UNIT 2 AND UNIT 3 WERE RECALIBRATED TO THE MIDRANGE OF THE TECH SPEC LIMITS. THE SURVEILLANCE TEST HAS BEEN REVISED TO ELIMINATE THIS DEFICIENCY.

COMPONENT CODE RELAYX-RELAYS
SYSTEM CODE EE-EMERG GENERATOR SYS & CONTROLS

ACCESSION NO. 0020140715
 TITLE DIESEL GENERATOR START TIME EXCEEDS LIMIT AT PEACH BOTTOM 2
 CORPAUTH PHILADELPHIA ELECTRIC CO., PA
 DATE 1978
 TYPE C
 MEMO 2 PGS. LTR W/LER 78-035/03L-0 TO NRC OFFICE OF I & E, REGION I,
 SEPT. 29, 1978, DOCKET 50-277, TYPE--BWR, MFG--GE, AE--BECHTEL
 AVAIL AVAILABILITY - NRC PUBLIC DOCUMENT ROOM, 1717 H STREET,
 WASHINGTON, D. C. 20545 (08 CENTS/PAGE -- MINIMUM CHARGE
 \$2.00)
 ABSTRACT DATE OF EVENT - 083078. POWER LEVEL - 91%. CAUSE - LEAKING
 CHECK VALVE IN AIR BOOSTER RELAY. E-3 DIESEL START TIME TO
 REACH RATED VOLTAGE AND FREQUENCY DID NOT MEET SURVEILLANCE
 TEST REQUIREMENT (15 VS 10 SEC). START TIMES FOR REMAINING
 DIESELS WERE ACCEPTABLE. RETEST (ONE HOUR) SHOWED ACCEPTABLE
 START TIME. THE MOST PROBABLE CAUSE WAS A LEAKING CHECK VALVE
 IN THE HYDRAULIC SYSTEM ASSOCIATED WITH THE AIR BOOSTER RELAY
 (FAIRBANKS MORSE PART NO 16-105-974). A NEW AIR BOOSTER RELAY
 WAS INSTALLED. THE DIESEL TESTED SATISFACTORILY (7.4 SEC).
 THE DEFECTIVE AIR BOOSTER RELAY WILL BE ANALYZED BY MANUFACTURE
 TO DETERMINE CAUSE OF FAILURE.
 COMPONENT CODE ENGINE-ENGINES,INTERNAL COMBUSTION
 SYSTEM CODE EE-EMERG GENERATOR SYS & CONTROLS

81/5/0000001-0000017// 14
 ACCESSION NO. 0020137004
 TITLE DIESEL TRIPS ON HIGH CRANKCASE PRESSURE AT PEACH BOTTOM 2
 CORPAUTH PHILADELPHIA ELECTRIC CO., PHILADELPHIA, PA
 DATE 1978
 TYPE C
 MEMO 3 PGS. LTR W/LER 78-014/3L-0 TO NRC OFFICE OF I & E, REGION I,
 MARCH 28, 1978, DOCKET 50-277, TYPE--BWR, MFG--GE, AE--BECHTEL
 AVAIL AVAILABILITY - NRC PUBLIC DOCUMENT ROOM, 1717 H STREET,
 WASHINGTON, D. C. 20545 (08 CENTS/PAGE -- MINIMUM CHARGE
 \$2.00)
 ABSTRACT DATE OF EVENT - 022878. POWER LEVEL - 1%. CAUSE - WATER IN
 THE OIL. DURING SURVEILLANCE TESTING OF THE E-2 DIESEL, THE
 DIESEL TRIPPED ON HIGH CRANKCASE PRESSURE. HIGH CRANKCASE
 PRESSURE CAUSED BY WATER IN OIL ADDED TO DIESEL. THE WATER
 VAPORIZED WITH INCREASED OIL TEMPERATURE. THE WATER WAS
 REMOVED AND CRANKCASE PRESSURE RETURNED TO NORMAL. THE OIL
 DRUM WAS FOUND TO BE LEAKING. STORAGE OF DRUMS WILL BE
 IMPROVED.
 COMPONENT CODE ENGINE-ENGINES,INTERNAL COMBUSTION
 SYSTEM CODE EE-EMERG GENERATOR SYS & CONTROLS

81/5/0000001-0000017// 15
 ACCESSION NO. 0020134338
 TITLE EMERGENCY DIESEL GENERATOR MADE INOPERABLE AT PEACH BOTTOM 2
 CORPAUTH PHILADELPHIA ELECTRIC CO., PHILADELPHIA, PA
 DATE 1978
 TYPE C
 MEMO 2 PGS. LTR W/LER 78-005/03L-0 TO NRC OFFICE OF I & E, REGION I,
 JAN. 31, 1978, DOCKET 50-277, TYPE--BWR, MFG--G.E., AE--BECHTEL
 AVAIL AVAILABILITY - NRC PUBLIC DOCUMENT ROOM, 1717 H STREET,
 WASHINGTON, D. C. 20545 (08 CENTS/PAGE -- MINIMUM CHARGE
 \$2.00)
 ABSTRACT DATE OF EVENT - 011878. POWER LEVEL - 91%. CAUSE - LOSE OIL
 HEATER FAILURE. WITH BOTH UNITS AT POWER, EMERGENCY DIESEL
 GENERATOR EE WAS MADE INOPERABLE TO ALLOW REPLACEMENT OF THE
 LOSE OIL HEATER ELEMENTS. THE DELTA CONNECTED 3 PHASE HEATER
 HAD 2 BLOWN COILS. ALL 3 COILS WERE REPLACED AND THE UNIT
 RETURNED TO SERVICE IN 6 HOURS.
 COMPONENT CODE HEATER-HEATERS,ELECTRIC
 SYSTEM CODE EE-EMERG GENERATOR SYS & CONTROLS

81/5/0000001-0000017// 16
 ACCESSION NO. 0020131225
 TITLE TWO DIESEL GENERATORS FAIL TO START AT PEACH BOTTOM 2
 CORPAUTH PHILADELPHIA ELECTRIC CO., DELTA, PA
 DATE 1977
 TYPE C
 MEMO 2 PGS. LTR W/RO 2-77-37/1P TO NRC OFFICE OF I & E, REGION I,
 AUG. 26, 1977, DOCKET 50-277, TYPE--BWR, MFG--G.E., AE--BECHTEL

AVAIL AVAILABILITY - NRC PUBLIC DOCUMENT ROOM, 1717 H STREET,
WASHINGTON, D. C. 20545 (08 CENTS/PAGE - MINIMUM CHARGE
\$2.00)

ABSTRACT DATE OF EVENT - 082677. POWER LEVEL - 0%. CAUSE - GOVERNOR
OUT OF ADJUSTMENT. WHILE THE UNIT WAS SHUT DOWN, A SPECIAL
LOSS OF POWER TEST WAS PERFORMED WHICH REQUIRED THAT ALL 4
DIESELS START ON LOSS OF VOLTAGE AND PICK UP LOAD ON THE 4
DIESEL BUSES. DIESELS E2 AND E3 STARTED AND PICKED UP LOAD AS
REQUIRED. E4 STARTED BUT TRIPPED ON OVERSPEED. THE MECHANICAL
GOVERNOR WAS OUT OF ADJUSTMENT. IT WAS ADJUSTED AND E4 WAS
RETESTED SATISFACTORILY. E1 FAILED TO START. THIS WAS
APPARENTLY CAUSED BY A HIGH TEMPERATURE CONDITION IN THE AIR
BOX JACKET COOLING SYSTEM WHICH OCCURRED ON 8/23/77. THE
CONDITION WAS CORRECTED AT THAT TIME BUT THE TRIP CIRCUITRY WAS
NOT PROPERLY RESET. IT WAS RESET.

COMPONENT CODE MECFUN-MECHANICAL FUNCTION UNITS
SYSTEM CODE EC-EMERG GENERATOR SYS & CONTROLS

81/5/0000001-00000177/ 17

ACCESSION NO. 0020110361

TITLE DC FEED BREAKER TO DIESEL GENERATOR FOUND OPEN AT PEACH BOTTOM 3

CORPAUTH PHILADELPHIA ELECTRIC CO. - PHILADELPHIA, PA

DATE 1976

TYPE 0

MEMO 1 PG. RD 50-277/2-7c-2/2T TO U.S. NRC, JAN. 20, 1976. DOCKET
50-277, TYPE - EWR, MFG - G.E., A2 - B0CTHcL

AVAIL AVAILABILITY - NRC PUBLIC DOCUMENT ROOM, 1717 H STREET,
WASHINGTON, D. C. 20545 (08 CENTS/PAGE - MINIMUM CHARGE
\$2.00)

ABSTRACT CAUSE - OPERATOR ERROR. DURING AN INVESTIGATION OF A DIESEL
TROUBLE ALARM WHILE OPERATING AT 60% POWER, THE DC FEED BREAKER
TO DIESEL GENERATOR E3 WAS DISCOVERED TO BE OPEN PREVENTING THE
DIESEL FROM STARTING. IT HAD BEEN OPENED AT 3 AM WHILE TRYING
TO ISOLATE A DC SYSTEM GROUND. THE BREAKER WAS RECLOSED AND
THE SYSTEM SATISFACTORILY TESTED FOR OPERABILITY. THE
IMPORTANCE OF PROPER RE-ESTABLISHMENT OF CIRCUITS DURING GROUND
INVESTIGATION WAS STRONGLY EMPHASIZED.