

ATTACHMENT 2

8602140058 860210  
PDR ADDCK 05000387  
P PDR

## INSTRUMENTATION

### FIRE DETECTION INSTRUMENTATION

#### LIMITING CONDITION FOR OPERATION

---

3.3.7.9 As a minimum, the fire detection instrumentation for each fire detection zone shown in Table 3.3.7.9-1 shall be OPERABLE..

APPLICABILITY: Whenever equipment protected by the fire detection instrument is required to be OPERABLE.

#### ACTION:

With the number of OPERABLE fire detection instruments less than the Minimum Instruments OPERABLE requirement of Table 3.3.7.9-1:

- a. Within 1 hour, establish a fire watch patrol to inspect the zone(s) with the inoperable instrument(s) at least once per hour, unless the instrument(s) is located inside an inaccessible zone, then inspect the area surrounding the inaccessible zone at least once per hour.
- b. The provisions of Specifications 3.0.3 and 3.0.4 are not applicable.

#### SURVEILLANCE REQUIREMENTS

---

4.3.7.9.1 Each of the above required fire detection instruments which are accessible during unit operation shall be demonstrated OPERABLE at least once per 6 months by performance of a CHANNEL FUNCTIONAL TEST. Fire detectors which are not accessible during unit operation shall be demonstrated OPERABLE by the performance of a CHANNEL FUNCTIONAL TEST during each COLD SHUTDOWN exceeding 24 hours unless performed in the previous 6 months.

4.3.7.9.2 The supervised circuits supervision associated with the detector alarms of each of the above required fire detection instruments shall be demonstrated OPERABLE at least once per 6 months.

TABLE 3.3.7.9-1

FIRE DETECTION INSTRUMENTATIONINSTRUMENT LOCATIONINSTRUMENTS OPERABLE

<u>FIRE ZONE</u>	<u>ROOM OR AREA</u>	<u>ELEV.</u>	<u>HEAT TOTAL MIN.</u>		<u>IONIZATION TOTAL MIN.</u>		<u>PHOTO-ELECTRIC TOTAL MIN.</u>	
a. <u>Control Building</u>								
0-24D	Lower Relay Room	698'-1"	4	2	4	2	NA	NA
0-24D	PGCC	698'-1"	54	27	30	15	NA	NA
0-25E	Lower Cable Spreading Rm.	714'-0"	26	13	6	3	NA	NA
0-25A	Lower Cable Spreading Rm.	714'-0"	20	10	6	3	NA	NA
0-26H	Control Rm. (Under Flr. Unit 1)*	729'-1"	NA	NA	18	9	NA	NA
0-26H	Control Room (Under Flr. Unit 2)*	729'-1"	NA	NA	15	8	NA	NA
0-26H	Control Room	729'-1"	NA	NA	10	5	NA	NA
0-26H	Control Rm. (Above Clg)*	729'-1"	NA	NA	9	5	NA	NA
0-27C	Upper Cable Spreading Rm.	753'-0"	29	15	8	4	NA	NA
0-27B	Upper Cable Spreading Rm.	753'-0"	28	14	5	3	NA	NA
0-27E	Upper Relay Room	754'-1"	4	2	2	1	NA	NA
0-27E	PGCC	754'-1"	55	28	30	15	NA	NA
0-28K	Battery Room	771'-0"	NA	NA	1	1	NA	NA
0-28L	Battery Room	771'-0"	NA	NA	1	1	NA	NA
0-28M	Battery Room	771'-0"	NA	NA	1	1	NA	NA
0-28N	Battery Room	771'-0"	NA	NA	1	1	NA	NA
0-28I	Battery Room	771'-0"	NA	NA	1	1	NA	NA
0-28J	Battery Room	771'-0"	NA	NA	1	1	NA	NA
0-28G	Battery Room	771'-0"	NA	NA	1	1	NA	NA
0-28F	Battery Room	771'-0"	NA	NA	1	1	NA	NA
0-28E	Battery Room	771'-0"	NA	NA	1	1	NA	NA
0-28C	Battery Room	771'-0"	NA	NA	1	1	NA	NA
0-28D	Battery Room	771'-0"	NA	NA	1	1	NA	NA
0-28T	Battery Room	771'-0"	NA	NA	1	1	NA	NA

TABLE 3.3.7.9-1 (Continued)

FIRE DETECTION INSTRUMENTATIONINSTRUMENT LOCATIONINSTRUMENTS OPERABLE

<u>FIRE ZONE</u>	<u>ROOM OR AREA</u>	<u>ELEV.</u>	<u>HEAT TOTAL MIN.</u>		<u>IONIZATION TOTAL MIN.</u>		<u>PHOTO-ELECTRIC TOTAL MIN.</u>	
0-22A	Filter Area	687'-8"	NA	NA	11	6	NA	NA
0-26B	South Cable Chase	729'-1"	NA	NA	1	1	NA	NA
0-26C	Center Cable Chase	729'-1"	NA	NA	1	1	NA	NA
0-26D	North Cable Chase	729'-1"	NA	NA	1	1	NA	NA
0-26F	Vestibule	729'-1"	NA	NA	1	1	NA	NA
0-26G	Shift Office	729'-1"	NA	NA	1	1	NA	NA
0-26J	Vestibule	729'-1"	NA	NA	1	1	NA	NA
0-26M	Soffit	729'-1"	NA	NA	4	2	NA	NA
0-26N	Control Room Soffit	729'-1"	NA	NA	2	1	NA	NA
0-26P	Control Room Soffit	729'-1"	NA	NA	2	1	NA	NA
0-26R	Soffit	729'-1"	NA	NA	4	2	NA	NA
0-26S	South Cable Chase	729'-1"	1	1	NA	NA	NA	NA
0-26T	Center Cable Chase	729'-1"	1	1	NA	NA	NA	NA
0-26V	North Cable Chase	729'-1"	1	1	NA	NA	NA	NA
0-27F	South Cable Chase	754'-1"	1	1	NA	NA	NA	NA
0-27G	Center Cable Chase	754'-1"	1	1	NA	NA	NA	NA
0-27H	North Cable Chase	754'-1"	1	1	NA	NA	NA	NA
0-28A	Equipment Room	771'-0"	NA	NA	4	2	NA	NA
0-28B	Equipment Room	771'-0"	NA	NA	4	2	NA	NA
0-28H	Repair Shop	771'-0"	NA	NA	2	1	NA	NA
0-28P	South Cable Chase	771'-0"	1	1	NA	NA	NA	NA
0-28R	North Cable Chase	771'-0"	1	1	NA	NA	NA	NA
0-29B	H&V Equipment Room	783'-0"	NA	NA	10	5	NA	NA
0-30A	HVAC Equipment Room	806'-0"	NA	NA	20	10	NA	NA
0-25B	South Cable Chase	714'-0"	1	1	NA	NA	NA	NA
0-25C	Center Cable Chase	714'-0"	1	1	NA	NA	NA	NA
0-25D	North Cable Chase	714'-0"	1	1	NA	NA	NA	NA
0-28Q	Center Cable Chase	771'-0"	1	1	NA	NA	NA	NA
0-26I	Operational Support Center	729'-1"	NA	NA	1	1	NA	NA



TABLE 3.3.7.9-1 (Continued)

FIRE DETECTION INSTRUMENTATION

<u>INSTRUMENT LOCATION</u>		<u>INSTRUMENTS OPERABLE</u>						
<u>FIRE ZONE</u>	<u>ROOM OR AREA</u>	<u>ELEV.</u>	<u>HEAT TOTAL MIN.</u>		<u>IONIZATION TOTAL MIN.</u>		<u>PHOTO-ELECTRIC TOTAL MIN.</u>	
b. <u>Reactor Building</u>								
1-1B	Core Spray Pump Room	645'-0"	NA	NA	5	3	NA	NA
1-1A	Core Spray Pump Room	645'-0"	NA	NA	7	4	NA	NA
1-1E	RHR Pump Room	645'-0"	NA	NA	NA	NA	13	7
1-1F	RHR Pump Room	645'-0"	NA	NA	NA	NA	15	8
1-1D	RCIC Pump Room	645'-0"	2	1	NA	NA	5	3
1-1C	HPCI Pump Room	645'-0"	2	1	NA	NA	7	4
1-1G	Sump Room	645'-0"	NA	NA	2	1	NA	NA
1-2B	Access Area	670'-0"	NA	NA	7	4	NA	NA
1-5A	Fuel Pool Pumps and Heat Exchangers	749'-1"	NA	NA	22	11	7	4
1-2D	Remote Shutdown Panel Rm.	670'-0"	NA	NA	2	1	NA	NA
1-4C	Switchgear Room	719'-0"	NA	NA	2	1	NA	NA
1-4D	Switchgear Room	719'-0"	NA	NA	2	1	NA	NA
1-4A	Containment Access Area	719'-0"	NA	NA	27	14	4	2
1-5F	Load Center Room	749'-1"	NA	NA	2	1	NA	NA
1-5G	Load Center Room	749'-1"	NA	NA	2	1	NA	NA
1-2A	Access Area	670'-0"	NA	NA	7	4	NA	NA
1-3A	Access Area	683'-0"	NA	NA	7	4	NA	NA
1-3B	Access Area	683'-0"	NA	NA	12	6	NA	NA
1-3C	Access Area	683'-0"	NA	NA	NA	NA	13	7
1-4B	Pipe Penetration Room	719'-1"	NA	NA	1	1	NA	NA
1-4G	Main Steam Piping	719'-1"	NA	NA	NA	NA	6	3
1-5B	Valve Access Area	761'-10"	NA	NA	NA	NA	2	1
1-5D	RWCU Pumps & Heat Exchangers	749'-1"	NA	NA	NA	NA	12	6
1-5E	Penetration Room	749'-1"	NA	NA	NA	NA	2	1
1-6A	Access Area	779'-1"	NA	NA	9	5	NA	NA
1-6I	Fuel Pooling Holding Pump Room	779'-1	NA	NA	NA	NA	2	1



TABLE 3.3.7.9-1 (Continued)

FIRE DETECTION INSTRUMENTATION

INSTRUMENT LOCATION		INSTRUMENTS OPERABLE							
FIRE ZONE	ROOM OR AREA	ELEV.	HEAT TOTAL MIN.		IONIZATION TOTAL MIN.		PHOTO-ELECTRIC TOTAL MIN.		
Reactor Building (Continued)									
1-6D	H&V Equipment Room	779'-1"	NA	NA	12	6	NA	NA	
1-6E	Recirculation Fans Area	779'-1"	NA	NA	2	1	NA	NA	
0-6G	Surge Tank Vault	779'-4"	NA	NA	2	1	NA	NA	
1-7A	H&V Fan and Filter Rooms	799'-1"	24	12	15	8	NA	NA	
0-8A	Refueling Floor.	818'-1"	NA	NA	NA	NA	59	30	
c. <u>ESSW Pumphouse</u>									
0-51	Pump Room	685'-6"	NA	NA	6	3	NA	NA	
0-52	Pump Room	685'-6"	NA	NA	6	3	NA	NA	
INFRA-RED (FLAME) TOTAL MIN.									
d. <u>Diesel Generator Building</u>									
0-41A	Diesel Generator Rooms and	660'-0" 677'-0"	22	11	2	1	15	8	
0-41C	Diesel Generator Rooms and	660'-0" 677'-0"	22	11	2	1	15	8	
0-41B	Diesel Generator Rooms and	660'-0" 677'-0"	23	12	2	1	15	8	
0-41D	Diesel Generator Rooms and	660'-0" 677'-0"	22	11	2	1	15	8	
e. <u>Diesel Generator E Building</u>									
0-41E	Diesel Generator Rooms and	656'-6" 675'-6" 708'-0"	1 NA NA	1 NA NA	NA 6 4	NA 3 2	18 3 NA	9 2 NA	

\*Not accessible.





## SPRAY AND SPRINKLER SYSTEMS

### LIMITING CONDITION FOR OPERATION

3.7.6.2 The following spray and sprinkler systems shall be OPERABLE:

- a. RCIC Pump Room, Unit 1
- b. HPCI Pump Room, Unit 1
- c. Upper Cable Spreading Room, Unit 1
- d. Lower Cable Spreading Room, Unit 1
- e. Diesel Generator A Room
- f. Diesel Generator B Room
- g. Diesel Generator C Room
- h. Diesel Generator D Room
- i. Fire Zones 1-3A and 1-3B
- j. Fire Zone 1-4A
- k. Fire Zone 1-5A
- l. Fire Zone 1-2B
- m. Fire Zone 0-29B
- n. Fire Zone 0-30A

SEE  
INSERT A

**APPLICABILITY:** Whenever equipment protected by the spray and/or sprinkler systems is required to be OPERABLE.

#### ACTION:

- a. With one or more of the above required spray and/or sprinkler systems inoperable, within 1 hour establish a continuous fire watch with backup fire suppression equipment for those areas in which redundant systems or components could be damaged; for other areas, establish an hourly fire watch patrol.
- b. The provisions of Specification 3.0.3 and 3.0.4 are not applicable.

INSERT A

o. Diesel Generator E Building, Fire Zone 0-41E



## SURVEILLANCE REQUIREMENTS

4.7.6.2. Each of the above required spray and sprinkler systems shall be demonstrated OPERABLE:

- a. At least once per 31 days by verifying that each valve, manual, power operated or automatic, in the flow path is in its correct position.
- b. At least once per 12 months by cycling each testable valve in the flow path through at least one complete cycle of full travel.
- c. At least once per 18 months:
  1. By performing a system functional test which includes simulated automatic actuation of the system, and:
    - a) Verifying that the automatic valves in the flow path actuate to their correct positions on a test signal, and
    - b) Cycling each valve in the flow path that is not testable during plant operation through at least one complete cycle of full travel.
  2. By a visual inspection of the dry pipe spray and sprinkler headers to verify their integrity, and
  3. By a visual inspection of each deluge nozzle's spray area to verify that the spray pattern is not obstructed.
- d. At least once per 3 years by performing an air or water flow test through each open head spray and sprinkler header and verifying each open head spray and sprinkler nozzle is unobstructed.

## FIRE HOSE STATIONS

### LIMITING CONDITION FOR OPERATION

3.7.6.5 The fire hose stations shown in Table 3.7.6.5-1 shall be OPERABLE.

APPLICABILITY: Whenever equipment in the areas protected by the fire hose stations is required to be OPERABLE.

ACTION:

- a. With one or more of the fire hose stations shown in Table 3.7.6.5-1 inoperable, route an additional fire hose of equal or greater diameter to the unprotected area(s) from an OPERABLE hose station within 1 hour if the inoperable fire hose is the primary means of fire suppression; otherwise, route the additional hose within 24 hours. | 26
- b. The provisions of Specifications 3.0.3 and 3.0.4 are not applicable.

### SURVEILLANCE REQUIREMENTS

4.7.6.5 Each of the fire hose stations shown in Table 3.7.6.5-1 shall be demonstrated OPERABLE:

- a. At least once per 31 days by a visual inspection of the fire hose stations accessible during plant operation to assure all required equipment is at the station.
- b. At least once per 18 months by:
  1. Visual inspection of the fire hose stations not accessible during plant operation to assure all required equipment is at the station.
  2. Removing the hose for inspection and re-racking for all fire hose stations, and | 29
  3. Inspecting all gaskets and replacing any degraded gaskets in the couplings for all fire hose stations. | 29
- c. At least once per 3 years by:
  1. Partially opening each hose station valve to verify valve OPERABILITY and no flow blockage.
  2. Conducting a hose hydrostatic test at a pressure of 150 psig or at least 50 psig above the maximum fire main operating pressure, whichever is greater.

TABLE 3.7.6.5-1  
FIRE HOSE STATIONS

<u>LOCATIONS</u>	<u>COLUMN</u>	<u>HOSE RACK NUMBER</u>
a. Control Structure		
E1. 697'-0"	L-26	1HR-171
E1. 697'-0"	L-32	2HR-171
E1. 714'-0"	L-26	1HR-162
E1. 714'-0"	L-31	2HR-162
E1. 729'-0"	L-25.9	1HR-158
E1. 729'-0"	L-32.1	2HR-158
E1. 754'-0"	L-26	1HR-136
E1. 754'-0"	L-32	2HR-136
E1. 771'-0"	L-26	1HR-125
E1. 771'-0"	L-31	2HR-125
b. Reactor Building		
E1. 645'-0"	R-29	1HR-271
E1. 645'-0"	P-20.6	1HR-272
E1. 645'-0"	U-22	1HR-273
E1. 645'-0"	R-37.4	2HR-271
E1. 645'-0"	U-30.5	2HR-272
E1. 645'-0"	R-30	2HR-273
E1. 670'-0"	O-27.5	1HR-261
E1. 670'-0"	Q-29	1HR-262
E1. 670'-0"	T-22	1HR-263
E1. 683'-0"	Q-27.5	1HR-251
E1. 683'-0"	Q-20.6	1HR-252
E1. 683'-0"	T-22	1HR-253
E1. 719'-1"	Q-27.5	1HR-241
E1. 719'-1"	S-27.5	1HR-242
E1. 719'-1"	Q-20.6	1HR-243
E1. 719'-1"	T-20.6	1HR-244
E1. 719'-1"	T-23.5	1HR-245
E1. 749'-1"	S-27.5	1HR-231
E1. 749'-1"	S-27.5	1HR-231
E1. 749'-1"	Q-20.6	1HR-232
E1. 749'-1"	T-20.6	1HR-233
E1. 779'-1"	P-26.5	1HR-221
E1. 779'-1"	S-26.5	1HR-222
E1. 779'-1"	Q-22	1HR-223
E1. 779'-1"	U-20.6	1HR-224
E1. 779'-1"	T-23.3	1HR-211
E1. 818'-1"	P-26.5	1HR-201
E1. 818'-1"	U-26.5	1HR-202
E1. 818'-1"	Q-20.6	1HR-203

c. Diesel Generator E Building

E1. 656'-6"  
E1. 656'-6"  
E1. 676'-6"  
E1. 676'-6"  
E1. 708'-0"  
E1. 708'-0"

NEAR NORTH STAIRWELL  
NEAR SOUTH STAIRWELL  
NEAR NORTH STAIRWELL  
NEAR SOUTH STAIRWELL  
NEAR NORTH STAIRWELL  
NEAR SOUTH STAIRWELL

OHR-811  
OHR-812  
OHR-821  
OHR-822  
OHR-831  
OHR-832

### 3/4.8 ELECTRICAL POWER SYSTEMS

#### 3/4.8.1 A.C. SOURCES

#### A.C. SOURCES - OPERATING

#### LIMITING CONDITION FOR OPERATION

3.8.1.1 As a minimum, the following A.C. electrical power sources shall be OPERABLE:

- a. Two physically independent circuits between the offsite transmission network and the onsite Class 1E distribution system, and
- b. Four, separate and independent diesel generators\*, each with:

of the five

1. Separate engine mounted day fuel tanks containing a minimum of 325 gallons of fuel,
2. A separate fuel storage system containing a minimum of 47,570 gallons of fuel, and for diesel generators A, B, C, & D, and 60,480 gallons
3. A separate fuel transfer pump. for diesel generator E, and

APPLICABILITY: OPERATIONAL CONDITIONS 1, 2, and 3.

#### ACTION: #

for any reason other than aligning diesel generator E to the Class 1E distribution system

- a. With either one offsite circuit or one diesel generator of the above required A.C. electrical power sources inoperable, demonstrate the OPERABILITY of the remaining A.C. sources by performing Surveillance Requirements 4.8.1.1.1.a within 1 hour and 4.8.1.1.2.a.4, for one diesel generator at a time, within 4 hours and at least once per 8 hours thereafter; restore at least two offsite circuits and four diesel generators to OPERABLE status within 72 hours or be in at least HOT SHUTDOWN within the next 12 hours and in COLD SHUTDOWN within the following 24 hours.
- b. With one offsite circuit and one diesel generator of the above required A.C. electrical power sources inoperable, demonstrate the OPERABILITY of the remaining A.C. sources by performing Surveillance Requirements 4.8.1.1.1.a within 1 hour and 4.8.1.1.2.a.4, for one diesel generator at a time, within 3 hours and at least once per 8 hours thereafter; restore at least one of the inoperable A.C. sources to OPERABLE status within 12 hours or be in at least HOT SHUTDOWN within the next 12 hours and in COLD SHUTDOWN within the following 24 hours. Restore at least two offsite circuits and four diesel generators to OPERABLE status within 72 hours from time of initial loss or be in at least HOT SHUTDOWN within the next 12 hours and in COLD SHUTDOWN within the following 24 hours.

\*Shared with Unit 2.





# Prior to but within 24 hours of removing any diesel generator from service in order to do work associated with tying in the additional diesel generator, Surveillance Requirement 4.8.1.1.2.a.4 shall be performed on the diesel generators which are to remain in service.

When any diesel generator is removed from service in order to do work associated with tying in the additional diesel generator, the ACTIONS shall read as follows:

- a. With one diesel generator of the above required A.C. electrical power sources inoperable, demonstrate the OPERABILITY of the remaining A.C. sources by performing Surveillance Requirements 4.8.1.1.1.a within one hour and 4.8.1.1.2.a.4, within 72 hours and at least once per 72 hours thereafter; restore at least four diesel generators to OPERABLE status within 60 days of accumulated tie-in outage time for all four diesels or be in at least HOT SHUTDOWN within the next 12 hours and in COLD SHUTDOWN within the following 24 hours. The provisions of Specification 3.0.4 are not applicable.
- b. With one offsite circuit and one diesel generator of the above required A.C. electrical power sources inoperable, demonstrate the OPERABILITY of the remaining A.C. sources by performing Surveillance Requirements 4.8.1.1.1.a within one hour and 4.8.1.1.2.a.4, within 24 hours and at least once per 72 hours thereafter; restore at least two offsite circuits to OPERABLE status within 12 hours or be in at least HOT SHUTDOWN within the next 12 hours and in COLD SHUTDOWN within the following 24 hours. With the two offsite circuits restored to OPERABLE status, follow ACTION a.
- c. With one diesel generator of the above required A.C. electrical power sources inoperable, in addition to ACTION a or b, above, verify within 2 hours that all required systems, subsystems, trains, components and devices that depend on the remaining diesel generators as a source of emergency power are also OPERABLE except as noted in Specification 3.7.1.2; otherwise, be in at least HOT SHUTDOWN within the next 12 hours and in COLD SHUTDOWN within the following 24 hours.
- d. With two of the above required offsite circuits inoperable, demonstrate the OPERABILITY of four diesel generators by performing Surveillance Requirement 4.8.1.1.2.a.4, for one diesel generator at a time, within four hours and at least once per 8 hours thereafter, unless the diesel generators are already operating; restore at least one of the inoperable offsite circuits to OPERABLE status within 24 hours or be in at least HOT SHUTDOWN within the next 12 hours. With only one offsite circuit restored to OPERABLE status, restore at least two offsite circuits to OPERABLE status within 72 hours from time of initial loss or be in at least HOT SHUTDOWN within the next 12 hours and in COLD SHUTDOWN within the following 24 hours.
- e. With two or more of the above required diesel generators inoperable, demonstrate the OPERABILITY of the remaining A.C. sources by performing Surveillance Requirement 4.8.1.1.1.a within one hour and 4.8.1.1.2.a.4, for one diesel generator at a time, within 2 hours; restore at least three of the diesel generators to OPERABLE status within 2 hours or be in at least HOT SHUTDOWN within the next 12 hours and in COLD SHUTDOWN within the following 24 hours. With three diesel generators restored to OPERABLE status, follow ACTION a.



## LIMITING CONDITION FOR OPERATION (Continued)

### ACTION (Continued)

for any reason other than aligning diesel generator E to the Class 1E distribution system,

- c. With one diesel generator of the above required A.C. electrical power sources inoperable, in addition to ACTION a or b, above, verify within 2 hours that all required systems, subsystems, trains, components and devices that depend on the remaining diesel generators as a source of emergency power are also OPERABLE; otherwise, be in at least HOT SHUTDOWN within the next 12 hours and in COLD SHUTDOWN within the following 24 hours.
- d. With two of the above required offsite circuits inoperable, demonstrate the OPERABILITY of four diesel generators by performing Surveillance Requirement 4.8.1.1.2.a.4, for one diesel generator at a time, within four hours and at least once per 8 hours thereafter, unless the diesel generators are already operating; restore at least one of the inoperable offsite circuits to OPERABLE status within 24 hours or be in at least HOT SHUTDOWN within the next 12 hours. With only one offsite circuit restored to OPERABLE status, restore at least two offsite circuits to OPERABLE status within 72 hours from time of initial loss or be in at least HOT SHUTDOWN within the next 12 hours and in COLD SHUTDOWN within the following 24 hours.
- e. With two or more of the above required diesel generators inoperable, demonstrate the OPERABILITY of the remaining A.C. sources by performing Surveillance Requirement 4.8.1.1.1.a within one hour and 4.8.1.1.2.a.4, for one diesel generator at a time, within 2 hours, and at least once per 8 hours thereafter; restore at least three of the diesel generators to OPERABLE status within 2 hours or be in at least HOT SHUTDOWN within the next 12 hours and in COLD SHUTDOWN within the following 24 hours. Restore four diesel generators to OPERABLE status within 72 hours from time of initial loss or be in at least HOT SHUTDOWN within the next 12 hours and in COLD SHUTDOWN within the following 24 hours.

## ELECTRICAL POWER SYSTEMS

### SURVEILLANCE REQUIREMENTS

4.8.1.1.1 Each of the above required independent circuits between the offsite transmission network and the onsite Class 1E distribution system shall be:

- a. Determined OPERABLE at least once per 7 days by verifying correct breaker alignments and indicated power availability, and
- b. Demonstrated OPERABLE at least once per 18 months during shutdown by transferring, manually and automatically, unit power supply from the normal circuit to the alternate circuit.

4.8.1.1.2 Each of the above required diesel generators shall be demonstrated OPERABLE:

- a. In accordance with the frequency specified in Table 4.8.1.1.2-1 on a STAGGERED TEST BASIS by:
  1. Verifying the fuel level in the engine-mounted day fuel tank.
  2. Verifying the fuel level in the fuel storage tank.
  3. Verifying the fuel transfer pump starts and transfers fuel from the storage system to the engine-mounted day fuel tank.
  4. Verifying the diesel starts from ambient condition and accelerates to at least 600 rpm in less than or equal to 10 seconds. The generator voltage and frequency shall be  $4160 \pm 400$  volts and  $60 \pm 3.0$  Hz within 10 seconds after the start signal. The diesel generator shall be started for this test by using one of the following signals:
    - a) Manual.
    - b) Simulated loss of offsite power by itself.
    - c) Simulated loss of offsite power in conjunction with an ESF actuation test signal.
    - d) An ESF actuation test signal by itself.
  5. Verifying the diesel generator is synchronized, loaded to greater than or equal to 4000 kw in less than or equal to 90 seconds, and operates with this load for at least 60 minutes.
  6. Verifying the diesel generator is aligned to provide standby power to the associated emergency busses.
  7. Verifying the pressure in all diesel generator air start receivers to be greater than or equal to 240 psig.
- b. At least once per 31 days and after each operation of the diesel where the period of operation was greater than or equal to 1 hour by checking for and removing accumulated water from the engine-mounted day fuel tanks.



## ELECTRICAL POWER SYSTEMS

### SURVEILLANCE REQUIREMENTS (Continued)

- c. At least once per 92 days and from new fuel oil prior to addition to the storage tanks by verifying that a sample obtained in accordance with ASTM-D270-1975 has a water and sediment content of less than or equal to .05 volume percent and a kinematic viscosity @ 40°C of greater than or equal to 1.3 but less than or equal to 2.4 for 1D oil or >1.9 but <4.1 for 2D oil when tested in accordance with ASTM-D975-77, and an impurity level of less than 2 mg. of insolubles per 100 ml. when tested in accordance with ASTM-D2274-70.
- d. At least once per 18 months by:
1. Subjecting the diesel to an inspection in accordance with procedures prepared in conjunction with its manufacturer's recommendations for this class of standby service.
  2. Verifying the diesel generator capability to reject a load of greater than or equal to 1425 kw while maintaining voltage at  $4160 \pm 400$  volts and frequency at  $60 \pm 3.0$  Hz.
  3. Verifying the diesel generator capability to reject a load of 4000 kw without tripping. The generator voltage shall not exceed ~~4360~~ <sup>4160</sup> volts during and following the load rejection.
  4. Simulating a loss of offsite power by itself, and:
    - a) Verifying deenergization of the emergency busses and load shedding from the emergency busses.
    - b) Verifying the diesel generator starts on the auto-start signal, energizes the emergency busses with permanently connected loads within 10 seconds and operates for greater than or equal to 5 minutes while its generator is loaded with the shutdown loads. After energization, the steady state voltage and frequency of the emergency busses shall be maintained at  $4160 \pm 200$  volts and  $60 \pm 0.5$  Hz during this test.
  5. Verifying that on an ECCS actuation test signal, without loss of offsite power, the diesel generator starts on the auto-start signal and operates on standby for greater than or equal to 5 minutes. The generator voltage and frequency shall be  $4160 \pm 200$  volts and  $60 \pm 0.5$  Hz within 10 seconds after the auto-start signal; the steady state generator voltage and frequency shall be maintained within these limits during this test.

## ELECTRICAL POWER SYSTEMS

### SURVEILLANCE REQUIREMENTS (Continued)

6. Simulating a loss-of-offsite power in conjunction with an ECCS actuation test signal, and: 29
- a) Verifying deenergization of the emergency busses and load shedding from the emergency busses.
  - b) Verifying the diesel generator starts on the auto-start signal, energizes the emergency busses with permanently connected loads within 10 seconds, energizes the auto-connected loads through the load timers and operates for greater than or equal to 5 minutes while its generator is loaded with the emergency loads. After energization, the steady state voltage and frequency of the emergency busses shall be maintained at  $4160 \pm 400$  volts and  $60 \pm 3.0$  Hz during this test.
  - c) Verifying that all automatic diesel generator trips, except engine overspeed, generator differential and engine low lube oil pressure, are automatically bypassed upon loss of voltage on the emergency bus concurrent with an ECCS actuation signal.
7. Verifying the diesel generator operates for at least 24 hours. During the first 2 hours of this test, the diesel generator shall be loaded to greater than or equal to 4700 kW and during the remaining 22 hours of this test, the diesel generator shall be loaded to 4000 kW. The generator voltage and frequency shall be  $4160 \pm 400$  volts and  $60 \pm 3.0$  Hz within 10 seconds after the start signal; the steady state generator voltage and frequency shall be maintained within these limits during this test. Within 5 minutes after completing this 24-hour test, perform Surveillance Requirement 4.8.1.1.2.d.4.b).\* 29
8. Verifying that the auto-connected loads to each diesel generator do not exceed the 2000-hour rating of 4700 kW. 29
9. Verifying the diesel generator's capability to:
- a) Synchronize with the offsite power source while the generator is loaded with its emergency loads upon a simulated restoration of offsite power,
  - b) Transfer its loads to the offsite power source, and
  - c) Be restored to its standby status.

for diesel generators A, B, C, D;  
and the continuous rating  
of 5000 kW for diesel  
generator E.

\* If Surveillance Requirement 4.8.1.1.2.d.4.b) is not satisfactorily completed, it is not necessary to repeat the preceding 24 hour test. Rather, the diesel generator may be operated at 4000 kW for 1 hour or until operating temperature has stabilized. 29





## ELECTRICAL POWER SYSTEMS

### SURVEILLANCE REQUIREMENTS (Continued)

10. Verifying that with the diesel generator operating in a test mode and connected to its bus, a simulated ECCS actuation signal overrides the test mode by (1) returning the diesel generator to standby operation, and (2) automatically energizes the emergency loads with offsite power.
- ~~11. Verifying that the fuel transfer pump transfers fuel from each fuel storage tank to the engine-mounted day tank of each diesel via the installed cross-connection lines.~~
- ~~11.~~  
~~12.~~ Verifying that each diesel generator loading sequence timer shown in Table 4.8.1.1.2-2 is OPERABLE with its setpoint within  $\pm 10\%$  of its design setpoint.
12.  
~~13.~~ Verifying that the following diesel generator lockout features prevent diesel generator starting and/or operation only when required:
- a) Engine overspeed.
  - b) Generator differential.
  - c) Engine low lube oil pressure.
- e. At least once per 10 years or after any modifications which could affect diesel generator interdependence by starting all diesel generators simultaneously; during shutdown, and verifying that all diesel generators accelerate to at least 600 rpm in less than or equal to 10 seconds.
- f. At least once per 10 years by:
- 1. Draining each fuel oil storage tank, removing the accumulated sediment and cleaning the tank using a sodium hypochlorite or equivalent solution, and
  - 2. Performing a pressure test of those portions of the diesel fuel oil system designed to Section III, subsection ND of the ASME Code in accordance with ASME Code Section XI Article IWD-5000.
- 4.8.1.1.3 Reports - All diesel generator failures, valid or non-valid, shall be reported to the Commission in a Special Report pursuant to Specification 6.9.2 within 30 days. Reports of diesel generator failures shall include the information recommended in Regulatory Position C.3.b of Regulatory Guide 1.108, Revision 1, August 1977. If the number of failures in the last 100 valid tests, on a per nuclear unit basis, is greater than or equal to 7, the report shall be supplemented to include the additional information recommended in Regulatory Position C.3.b of Regulatory Guide 1.108, Revision 1, August 1977.

SEE  
INSERT A

4.8.1.1.3

4.8.1.1.4

4.8.1.1.3

of the required diesel generators

TABLE 4.8.1.1.2-1

DIESEL GENERATOR TEST SCHEDULE

Number of Failures in  
Last 100 Valid Tests\* <sup>#</sup>

Test Frequency

$\leq 1$

At least once per 31 days

2

At least once per 14 days

3

At least once per 7 days

$\geq 4$

At least once per 3 days

\*Criteria for determining number of failures and number of valid tests shall be in accordance with Regulatory Position C.2.e of Regulatory Guide 1.108, Revision 1, August 1977, where the last 100 tests are determined on a per nuclear unit basis. For the purposes of this test schedule, only valid tests conducted after the OL issuance date shall be included in the computation of the "last 100 valid tests." Entry into this test schedule shall be made at the 31 day test frequency.

# When diesel generator E is not aligned to the Class 1E distribution system, any failures will not be credited to the total failures for determining the test frequency of the diesel generators required to be OPERABLE



TABLE 4.8.1.1.2-2  
UNIT 1 UNIT 2  
DIESEL GENERATOR LOADING TIMERS

<u>DEVICE TAG NO.</u>	<u>SYSTEM</u>	<u>LOCATION</u>	<u>TIME SETTING</u>
62A-20102	RHR Pump 1A	1A201	3 sec
62A-20202	RHR Pump 1B	1A202	3 sec
62A-20302	RHR Pump 1C	1A203	3 sec
62A-20402	RHR Pump 1D	1A204	3 sec
62A-20102	RHR Pump 2A	2A201	3 sec
62A-20202	RHR Pump 2B	2A202	3 sec
62A-20302	RHR Pump 2C	2A203	3 sec
62A-20402	RHR Pump 2D	2A204	3 sec
K116A	CS pp 1A	1C626	10.5 sec
K116B	CS pp 1B	1C627	10.5 sec
K125A	CS pp 1C	1C626	10.5 sec
K125B	CS pp 1D	1C627	10.5 sec
K116A	CS pp 2A	2C626	10.5 sec
K116B	CS pp 2B	2C627	10.5 sec
K125A	CS pp 2C	2C626	10.5 sec
K125B	CS pp 2D	2C627	10.5 sec
62AX2-20108	Emergency Service Water (ESW)	1A201	40 sec
62AX2-20208	Emergency Service Water (ESW)	1A202	40 sec
62AX2-20303	Emergency Service Water (ESW)	1A203	44 sec
62AX2-20403	Emergency Service Water (ESW)	1A204	48 sec
62X3-20304	Control Structure Chilled Water System	0C877A	60 sec
62X3-20404	Control Structure Chilled Water System	0C877B	60 sec
62X-20104	Emergency Switchgear Rm. Cooler A & RHR SW pp H&V Fan A	0C877A	60 sec

TABLE 4.8.1.1.2-2 (Continued)

## UNIT 1 AND UNIT 2

DIESEL GENERATOR LOADING TIMERS

<u>DEVICE TAG NO.</u>	<u>SYSTEM</u>	<u>LOCATION</u>	<u>TIME SETTING</u>
62X-20204	Emergency Switchgear Rm Cooler B & RHR SW pp H&V Fan B	0C877B	60 sec
262X-20104	Emergency Switchgear Rm Cooler A	0C877A	120 sec
262X-20204	Emergency Switchgear Rm Cooler B	0C877B	120 sec
* 62X-516	DG Rm Exh Fan A	0B516	2 min
* 62X-526	DG Rm Exh Fan B	0B526	2 min
* 62X-536	DG Rm Exh Fan C	0B536	2 min
* 62X-546	DG Rm Exh Fan D	0B546	2 min
62X1-20304	Control Structure Chilled Water System	0C877A	3 min
62X1-20404	Control Structure Chilled Water System	0C877B	3 min
62X1-20310	Control Structure Chilled Water System	0C876A	3 min
62X2-20410	Control Structure Chilled Water System	0C876B	3 min
62X2-20304	Control Structure Chilled Water System	0C877A	3.5 min
62X2-20404	Control Structure Chilled Water System	0C877B	3.5 min
62X-K11AB	Emergency Switchgear Rm Cooling Compressor A	2CB250A	260 sec
62X-K11BB	Emergency Switchgear Rm Cooling Compressor B	2CB250B	260 sec

INSERT  
A

CRX-5652A	DG Room SUPPLY FAN E1	0B565	2 min
CRX-5652A	DG Room SUPPLY FAN E2	0B565	2 min.
62X-5653A	DG Room EXHAUST FAN E3	0B565	3 min **
62X-56552A	DG Room EXHAUST FAN E4	0B565	3 min ***

SUSQUEHANNA - UNIT 1

3/4 8-8a

Amendment No. 36

\* When associated diesel generator is declared OPERABLE

\*\* Starts 1 minute after E2 starts

\*\*\* Starts 1 minute after E1 starts

INSERT A

4.8.1.1.3 When substituting diesel generator E for diesel generator A,B,C or D, diesel generator E shall be demonstrated OPERABLE by:

- a. Verifying diesel generator E energizes the appropriate emergency bus.
- b. Verifying that at least once within the previous 31 days the following have been verified:
  1. The fuel level in the engine-mounted day fuel tank.
  2. The fuel level in the fuel storage tank.
  3. The fuel transfer pump started and transferred fuel from the storage system to the engine-mounted day fuel tank.
  4. The diesel manually started from ambient condition and accelerates to at least 600 rpm in less than or equal to 10 seconds. The generator voltage and frequency were  $4160 \pm 400$  volts and  $60 \pm 3.0$  Hz within 10 seconds after the start signal.
  5. The diesel generator was synchronized, loaded to greater than or equal to 4000 kw in less than or equal to 90 seconds, and operated with this load for at least 60 minutes.
  6. The pressure in the diesel generator air start receivers to be greater than or equal to 240 psig.
- c. Verifying that at least once within the previous 31 days and after each operation of the diesel, within the previous 31 days, where the period of operation was greater than or equal to 1 hour that a check was made for accumulated water from the engine-mounted day fuel tanks.
- d. Verifying that at least once within the previous 92 days and from new fuel oil prior to addition to the storage tanks that a sample obtained in accordance with ASTM-D270-1975 has a water and sediment content of less than or equal to .05 volume percent and a kinematic viscosity @ 40°C of greater than or equal to 1.3 but less than or equal to 2.4 for 1D oil or 1.9 but 4.1 for 2D oil when tested in accordance with ASTM-D975-77, and an impurity level of less than 2 mg. of insolubles per 100 ml. when tested in accordance with ASTM-D2274-70.
- e. Verifying that at least once within the previous 18 months if specification 4.8.1.1.2.d has not been performed:
  1. An inspection in accordance with procedures prepared in conjunction with its manufacturer's recommendations for this class of standby service was performed.
  2. The diesel generators capability to reject a load of greater than or equal to 1425 kw while maintaining voltage at  $4160 \pm 400$  volts and frequency at  $60 \pm 3.0$  Hz was tested.



3. The diesel generators capability to reject a load of 4000 kw without tripping. The generator voltage shall not exceed 4360 volts during and following the load rejection was tested.
4. The diesel generator operated for at least 24 hours. During the first 2 hours of this test, the diesel generator was loaded to greater than or equal to 4700 kW and during the remaining 22 hours of this test, the diesel generator was be loaded to 4000 kW. The generator voltage and frequency shall be  $4160 \pm 400$  volts and  $60 \pm 3.0$  Hz within 10 seconds after the start signal; the steady state generator voltage and frequency were maintained within these limits during this test.
5. The following diesel generator lockout features prevented diesel generator starting and/or operation only when required:
  - a) Engine overspeed.
  - b) Generator differential.
  - c) Engine low lube oil pressure.
6. Either:
  - a) That on a rotational basis, diesel generator E was substituted for diesel generator A, B, C, or D and a loss-of-offsite power was simulated in conjunction with an ECCS actuation test signal and:
    - i) Diesel generator E started on the auto start signal, energized the emergency busses with permanently connected loads within 10 seconds, energized the auto-connected loads through the load timers and operated for greater than or equal to 5 minutes while its generator is loaded with the emergency loads. After energization, the steady state voltage and frequency of the emergency busses were maintained at  $4160 \pm 400$  volts and  $60 \pm 30$  Hz during this test, and
    - ii) With the diesel generator operating in a test mode and connected to its bus, a simulated ECCS actuation signal overrode the test mode by (1) returning the diesel generator to standby operation, and (2) automatically energizes the emergency loads with off-site power; or
  - b) That by simulating a loss-of-offsite power in conjunction with an ECCS actuation test signal and:
    - i) Diesel generator E started on the auto start signal, energized the simulated emergency bus with simulated permanently connected loads within 10 seconds, energized the simulated auto-connected loads and operated for greater than or equal to 5 minutes while





its generator is loaded with the simulated emergency loads. After energization, the steady state voltage and frequency of the emergency busses were maintained at  $4160 \pm 400$  volts and  $60 \pm 3.0$  Hz during this test, and

ii) On a rotational basis, diesel generator E was substituted for diesel generator A, B, C, or D and verify that diesel generator E energized the appropriate emergency bus.

e. Verifying that once per 10 years if Specification 4.8.1.1.2f has not been performed:

1. The fuel oil storage tank has been drained, removing the accumulated sediment and cleaned using a sodium hypochlorite or equivalent solution, and
2. A pressure test of those portions of the diesel fuel oil system designed to Section III, subsection ND of the ASME Code in accordance with ASME Code Section II Article IWD-5000 has been performed.

1. The first part of the document is a list of names and addresses of the members of the committee. The names are listed in alphabetical order, and the addresses are given in full. The list is as follows:

Mr. J. H. Smith, 123 Main St., New York, N. Y.  
Mr. J. D. Jones, 456 Elm St., New York, N. Y.  
Mr. W. E. Brown, 789 Oak St., New York, N. Y.  
Mr. R. L. Green, 101 Pine St., New York, N. Y.  
Mr. S. K. White, 202 Cedar St., New York, N. Y.  
Mr. T. M. Black, 303 Maple St., New York, N. Y.  
Mr. U. N. Gray, 404 Birch St., New York, N. Y.  
Mr. V. P. Hall, 505 Spruce St., New York, N. Y.  
Mr. W. Q. King, 606 Willow St., New York, N. Y.  
Mr. X. R. Lee, 707 Ash St., New York, N. Y.  
Mr. Y. S. Clark, 808 Hickory St., New York, N. Y.  
Mr. Z. T. Adams, 909 Walnut St., New York, N. Y.  
Mr. A. B. Baker, 1010 Chestnut St., New York, N. Y.  
Mr. C. D. Carter, 1111 Locust St., New York, N. Y.  
Mr. E. F. Evans, 1212 Mulberry St., New York, N. Y.  
Mr. G. H. Fisher, 1313 Olive St., New York, N. Y.  
Mr. I. J. Gibson, 1414 Poplar St., New York, N. Y.  
Mr. K. L. Hall, 1515 Sycamore St., New York, N. Y.  
Mr. M. N. Hill, 1616 Tulip St., New York, N. Y.  
Mr. O. P. Hunt, 1717 Union St., New York, N. Y.  
Mr. Q. R. Ingram, 1818 Vine St., New York, N. Y.  
Mr. S. T. Jackson, 1919 Washington St., New York, N. Y.  
Mr. U. V. Johnson, 2020 Madison St., New York, N. Y.  
Mr. W. X. Keith, 2121 Monroe St., New York, N. Y.  
Mr. Y. Z. Knight, 2222 Taylor St., New York, N. Y.  
Mr. A. B. Lamb, 2323 Adams St., New York, N. Y.  
Mr. C. D. Little, 2424 Franklin St., New York, N. Y.  
Mr. E. F. Long, 2525 Lincoln St., New York, N. Y.  
Mr. G. H. Martin, 2626 Jefferson St., New York, N. Y.  
Mr. I. J. Miller, 2727 Madison St., New York, N. Y.  
Mr. K. L. Moore, 2828 Monroe St., New York, N. Y.  
Mr. M. N. Myers, 2929 Taylor St., New York, N. Y.  
Mr. O. P. Nichols, 3030 Adams St., New York, N. Y.  
Mr. Q. R. Oliver, 3131 Franklin St., New York, N. Y.  
Mr. S. T. Parker, 3232 Lincoln St., New York, N. Y.  
Mr. U. V. Quinn, 3333 Jefferson St., New York, N. Y.  
Mr. W. X. Reed, 3434 Madison St., New York, N. Y.  
Mr. Y. Z. Rice, 3535 Monroe St., New York, N. Y.  
Mr. A. B. Scott, 3636 Taylor St., New York, N. Y.  
Mr. C. D. Shaw, 3737 Adams St., New York, N. Y.  
Mr. E. F. Smith, 3838 Franklin St., New York, N. Y.  
Mr. G. H. Snow, 3939 Lincoln St., New York, N. Y.  
Mr. I. J. Stone, 4040 Jefferson St., New York, N. Y.  
Mr. K. L. Sullivan, 4141 Madison St., New York, N. Y.  
Mr. M. N. Swanwick, 4242 Monroe St., New York, N. Y.  
Mr. O. P. Swanwick, 4343 Taylor St., New York, N. Y.  
Mr. Q. R. Swanwick, 4444 Adams St., New York, N. Y.  
Mr. S. T. Swanwick, 4545 Franklin St., New York, N. Y.  
Mr. U. V. Swanwick, 4646 Lincoln St., New York, N. Y.  
Mr. W. X. Swanwick, 4747 Jefferson St., New York, N. Y.  
Mr. Y. Z. Swanwick, 4848 Madison St., New York, N. Y.  
Mr. A. B. Swanwick, 4949 Monroe St., New York, N. Y.  
Mr. C. D. Swanwick, 5050 Taylor St., New York, N. Y.  
Mr. E. F. Swanwick, 5151 Adams St., New York, N. Y.  
Mr. G. H. Swanwick, 5252 Franklin St., New York, N. Y.  
Mr. I. J. Swanwick, 5353 Lincoln St., New York, N. Y.  
Mr. K. L. Swanwick, 5454 Jefferson St., New York, N. Y.  
Mr. M. N. Swanwick, 5555 Madison St., New York, N. Y.  
Mr. O. P. Swanwick, 5656 Monroe St., New York, N. Y.  
Mr. Q. R. Swanwick, 5757 Taylor St., New York, N. Y.  
Mr. S. T. Swanwick, 5858 Adams St., New York, N. Y.  
Mr. U. V. Swanwick, 5959 Franklin St., New York, N. Y.  
Mr. W. X. Swanwick, 6060 Lincoln St., New York, N. Y.  
Mr. Y. Z. Swanwick, 6161 Jefferson St., New York, N. Y.  
Mr. A. B. Swanwick, 6262 Madison St., New York, N. Y.  
Mr. C. D. Swanwick, 6363 Monroe St., New York, N. Y.  
Mr. E. F. Swanwick, 6464 Taylor St., New York, N. Y.  
Mr. G. H. Swanwick, 6565 Adams St., New York, N. Y.  
Mr. I. J. Swanwick, 6666 Franklin St., New York, N. Y.  
Mr. K. L. Swanwick, 6767 Lincoln St., New York, N. Y.  
Mr. M. N. Swanwick, 6868 Jefferson St., New York, N. Y.  
Mr. O. P. Swanwick, 6969 Madison St., New York, N. Y.  
Mr. Q. R. Swanwick, 7070 Monroe St., New York, N. Y.  
Mr. S. T. Swanwick, 7171 Taylor St., New York, N. Y.  
Mr. U. V. Swanwick, 7272 Adams St., New York, N. Y.  
Mr. W. X. Swanwick, 7373 Franklin St., New York, N. Y.  
Mr. Y. Z. Swanwick, 7474 Lincoln St., New York, N. Y.  
Mr. A. B. Swanwick, 7575 Jefferson St., New York, N. Y.  
Mr. C. D. Swanwick, 7676 Madison St., New York, N. Y.  
Mr. E. F. Swanwick, 7777 Monroe St., New York, N. Y.  
Mr. G. H. Swanwick, 7878 Taylor St., New York, N. Y.  
Mr. I. J. Swanwick, 7979 Adams St., New York, N. Y.  
Mr. K. L. Swanwick, 8080 Franklin St., New York, N. Y.  
Mr. M. N. Swanwick, 8181 Lincoln St., New York, N. Y.  
Mr. O. P. Swanwick, 8282 Jefferson St., New York, N. Y.  
Mr. Q. R. Swanwick, 8383 Madison St., New York, N. Y.  
Mr. S. T. Swanwick, 8484 Monroe St., New York, N. Y.  
Mr. U. V. Swanwick, 8585 Taylor St., New York, N. Y.  
Mr. W. X. Swanwick, 8686 Adams St., New York, N. Y.  
Mr. Y. Z. Swanwick, 8787 Franklin St., New York, N. Y.  
Mr. A. B. Swanwick, 8888 Lincoln St., New York, N. Y.  
Mr. C. D. Swanwick, 8989 Jefferson St., New York, N. Y.  
Mr. E. F. Swanwick, 9090 Madison St., New York, N. Y.  
Mr. G. H. Swanwick, 9191 Monroe St., New York, N. Y.  
Mr. I. J. Swanwick, 9292 Taylor St., New York, N. Y.  
Mr. K. L. Swanwick, 9393 Adams St., New York, N. Y.  
Mr. M. N. Swanwick, 9494 Franklin St., New York, N. Y.  
Mr. O. P. Swanwick, 9595 Lincoln St., New York, N. Y.  
Mr. Q. R. Swanwick, 9696 Jefferson St., New York, N. Y.  
Mr. S. T. Swanwick, 9797 Madison St., New York, N. Y.  
Mr. U. V. Swanwick, 9898 Monroe St., New York, N. Y.  
Mr. W. X. Swanwick, 9999 Taylor St., New York, N. Y.

## ELECTRICAL POWER SYSTEMS

### A.C. SOURCES - SHUTDOWN

#### LIMITING CONDITION FOR OPERATION

3.8.1.2 As a minimum, the following A.C. electrical power sources shall be OPERABLE:

- a. One circuit between the offsite transmission network and the onsite Class 1E distribution system, and

of the five  
separate and independent

- b. Two diesel generators, <sup>each</sup> with:

1. An engine mounted day fuel tank containing a minimum of 325 gallons of fuel <sup>for diesels A, B, C & D; and 60,480 gallons for diesel generator E.</sup>
2. A fuel storage system containing a minimum of 47,570 gallons of fuel.
3. A fuel transfer pump.

APPLICABILITY: OPERATIONAL CONDITIONS 4, 5 and \*.

#### ACTION:

- a. With less than the above required A.C. electrical power sources OPERABLE, suspend CORE ALTERATIONS, handling of irradiated fuel in the secondary containment, operations with a potential for draining the reactor vessel and crane operations over the spent fuel pool when fuel assemblies are stored therein. In addition, when in OPERATIONAL CONDITION 5 with the water level less than 22 feet above the reactor pressure vessel flange, immediately initiate corrective action to restore the required power sources to OPERABLE status as soon as practical.
- b. The provisions of Specification 3.0.3 are not applicable.

#### SURVEILLANCE REQUIREMENTS

4.8.1.2 At least the above required A.C. electrical power sources shall be demonstrated OPERABLE per Surveillance Requirements 4.8.1.1.1, 4.8.1.1.2 and ~~4.8.1.1.3~~, except for the requirement of 4.8.1.1.2.a.5.

4.8.1.1.4

\*When handling irradiated fuel in the secondary containment.



### 3/4.8.2 D.C. SOURCES

#### D.C. SOURCES - OPERATING

##### LIMITING CONDITION FOR OPERATION

3.8.2.1 As a minimum, the following D.C. electrical power sources shall be OPERABLE:

a. Division I, consisting of:

1. Load group Channel "A" power source consisting of:
  - a) 125 volt DC battery bank 10610, 20610\*
  - b) Full capacity charger 10613, 20613\*
2. Load group Channel "C" power source consisting of:
  - a) 125 volt DC battery bank 10630, 20630\*
  - b) Full capacity charger 10633, 20633\*
3. Load group "I" power source consisting of:
  - a) 250 volt DC battery 10650
  - b) Half-capacity chargers 10653A, 10653B
4. Load group "I" power source consisting of:
  - a)  $\pm$  24 volt DC battery bank 10670
  - b) Two half-capacity chargers 10673, 10674

b. Division II, consisting of:

1. Load group Channel "B" power source consisting of:
  - a) 125 volt DC battery bank 10620, 20620\*
  - b) Full capacity charger 10623, 20623\*
2. Load group Channel "D" power source consisting of:
  - a) 125 volt DC battery bank 10640, 20640\*
  - b) Full capacity charger 10643, 20643\*
3. Load group "II" power source consisting of:
  - a) 250 volt DC battery bank 10660
  - b) Full capacity charger 10663
4. Load group "II" power source consisting of:
  - a)  $\pm$  24 volt DC battery bank 10680
  - b) Two half-capacity chargers 10683, 10684

SEE  
INSERT A ← C.

APPLICABILITY: OPERATIONAL CONDITIONS 1, 2, and 3

ACTION:

- a. With one of the above required Unit 1 125 volt or 250 volt DC load group battery banks inoperable, restore the inoperable battery bank to OPERABLE status within 2 hours or be in at least HOT SHUTDOWN within the next 12 hours and in COLD SHUTDOWN within the following 24 hours.
- b. With one or more of the above required Unit 2 125-volt DC load group battery banks inoperable, within 2 hours either:
  1. Restore the inoperable battery bank(s) to OPERABLE status, or

\*Not required to be OPERABLE when the requirements of ACTION b have been satisfied.

Insert A

c. Diesel Generator E

1. Load group power source, consisting of:

- a) 125 volt DC battery bank      OD595
- b) Full capacity charger      OD596

## ELECTRICAL POWER SYSTEMS

### LIMITING CONDITION FOR OPERATION (Continued)

#### ACTION: (Continued)

2. Transfer the Unit 1 and common loads aligned to the inoperable Unit 2 battery bank(s) to the corresponding Unit 1 battery bank(s). 31

Otherwise, declare the Unit 1 and common loads aligned to the inoperable Unit 2 battery bank(s) inoperable and take the ACTION required by the applicable Specification(s).

- c. With the Unit 1 loads associated with one or more of the above required Unit 1 125-volt DC load group battery bank(s) aligned to the corresponding Unit 2 load group battery bank(s), realign the Unit 1 loads to the Unit 1 battery bank(s) within 72 hours after restoring the Unit 1 battery bank(s) to OPERABLE status; otherwise, declare the Unit 1 loads aligned to the Unit 2 battery bank(s) inoperable and take the ACTION required by the applicable Specification(s).

- d. With one of the above required  $\pm 24$  volt DC load group battery banks inoperable, declare the associated equipment inoperable and take the ACTION required by the applicable Specification(s). 31

- e. With one of the above required chargers inoperable, demonstrate the OPERABILITY of its associated battery bank by performing Surveillance Requirement 4.8.2.1.a.1 within 1 hour and at least once per 8 hours thereafter. If any Category A limit in Table 4.8.2.1-1 is not met, declare the battery inoperable. 31

Division I or Division II

f.  
g.  
h.  
i.

SGE  
INSERT B

#### SURVEILLANCE REQUIREMENTS

4.8.2.1 Each of the above required  $\pm 24$ -volt, 125-volt and 250-volt batteries and chargers shall be demonstrated OPERABLE:

- a. At least once per 7 days by verifying that:

1. The parameters in Table 4.8.2.1-1 meet the Category A limits, and
2. There is correct breaker alignment to the battery chargers, and total battery terminal voltage is greater than or equal to 26, 129, 258-volts on float charge.

- b. At least once per 92 days and within 7 days after a battery discharge with battery terminal voltage below 22, 110 or 220 volts, as applicable, or battery overcharge with battery terminal voltage above 30, 150 or 300 volts, as applicable, by verifying that:

1. The parameters in Table 4.8.2.1-1 meet the Category B limits,
2. There is no visible corrosion at either terminals or connectors, or the connection resistance of these items is less than  $150 \times 10^{-6}$  ohm, and 29
3. The average electrolyte temperature of 4, 10 or 20, as applicable, of connected cells for the 24, 125 and 250 volt batteries is above 60°F.





Insert B

- f. With the above required diesel generator E 125 volt DC load group battery bank inoperable and diesel generator E not aligned to the Class 1E distribution system, restore the battery bank to OPERABLE status within 2 hours or verify that all ESW valves associated with diesel generator E are closed and diesel generator E is not running within 2 hours. The provisions of Specification 3.0.4 are not applicable.
- g. With the above required diesel generator E 125 volt DC load group battery bank inoperable and diesel generator E aligned to the Class 1E distribution system, restore the battery bank to OPERABLE status within 2 hours or declare diesel generator E inoperable and take the ACTION required by specification 3.8.1.1.
- h. With the above required diesel generator E 125 volt DC charger inoperable and diesel generator E aligned to the Class 1E distribution system, demonstrate the OPERABILITY of the associated battery bank by performing Surveillance Requirement 4.8.2.1.a.1 within one hour and at least once per 8 hours thereafter. If any Category A limit in Table 4.8.2.1-1 is not met, declare diesel generator E inoperable and take the ACTION required by specification 3.8.1.1.
- i. With the above required diesel generator E charger inoperable and diesel generator E not aligned to the Class 1E distribution system, demonstrate the OPERABILITY of its associated battery bank by performing Surveillance Requirement 4.8.2.1.a.1 within 1 hour and at least once per 8 hours thereafter. If any Category A limit in Table 4.8.2.1-1 is not met, declare the battery inoperable, and take the ACTION required by specification 3.8.2.1.f. The provisions of Specification 3.0.4 are not applicable.

...the ... of ...  
...the ... of ...  
...the ... of ...

...the ... of ...  
...the ... of ...  
...the ... of ...

...the ... of ...  
...the ... of ...  
...the ... of ...

...the ... of ...  
...the ... of ...  
...the ... of ...

## ELECTRICAL POWER SYSTEMS

### SURVEILLANCE REQUIREMENTS (Continued)

- c. At least once per 18 months by verifying that:
1. The cells, cell plates and battery racks show no visual indication of physical damage or abnormal deterioration,
  2. The cell-to-cell and terminal connections are clean, tight, free of corrosion and coated with anti-corrosion material,
  3. The resistance of each cell-to-cell and terminal connection of each 125-volt and 250-volt battery is less than or equal to  $150 \times 10^{-6}$  ohm, and
  4. The battery charger, for at least 4 hours, will supply at least:
    - a) For the + 24-volt batteries, 25 amperes at a minimum of 25.7 volts.
    - b) For the 125-volt batteries, 100 amperes at a minimum of 127.8 volts.
    - c) For the 250-volt batteries, 300 amperes at a minimum of 255.6 volts.
    - d) For the 125-volt diesel generator E batteries, 200 amperes at a minimum of 127.8 volts
- d. At least once per 18 months by verifying that either:
1. The battery capacity is adequate to supply and maintain in OPERABLE status all of the actual emergency loads for the design duty cycle when the battery is subjected to a battery service test, or
  2. The battery capacity is adequate to supply a dummy load of the following profile, which is verified to be greater than the actual emergency loads, while maintaining the battery terminal voltage greater than or equal to  $\pm 21$ , 105 or 210 volts, as applicable.
    - a) For + 24-volt battery banks 1D670, 1D670-1, 1D680 and 1D680-1, 9.37 amperes for the entire 4 hour test.
    - b) For 125-volt batteries:
      - 1) Channel A battery 1D612:  
325 amperes for 60 seconds  
107 amperes for the remainder of the 4 hour test
      - 2) Channel "B" battery 1D622:  
323 amperes for 60 seconds  
105 amperes for the remainder of the 4 hour test
      - 3) Channel "C" battery 1D632:  
340 amperes for 60 seconds  
121 amperes for the remainder of the 4 hour test
      - 4) Channel "D" battery 1D642:  
323 amperes for 60 seconds  
104 amperes for the remainder of the 4 hour test.

## SURVEILLANCE REQUIREMENTS (Continued)

q) Channel "H" battery 00595:

286 amperes for the first 60 seconds

95 amperes for the next 238 minutes

155 amperes for the last minute of the  
4 hour test.

- 5) Channel "A" battery 20612:  
328 amperes for 60 seconds  
112 amperes for the remainder of the 4 hour test.
- 6) Channel "B" battery 20622:  
326 amperes for 60 seconds  
110 amperes for the remainder of the 4 hour test.
- 7) Channel "C" battery 20632:  
343 amperes for 60 seconds  
128 amperes for the remainder of the 4 hour test.
- 8) Channel "D" battery 20642:  
326 amperes for 60 seconds  
111 amperes for the remainder of the 4 hour test.

### c) For 250-volt batteries:

- 1) Battery bank 10650:  
1091 amperes for 60 seconds  
567 amperes for 29.0 minutes  
113 amperes for 60.0 minutes  
24 amperes for 150.0 minutes
- 2) Battery bank 10660:  
1314 amperes for 60 seconds  
465 amperes for 60 seconds  
365 amperes for 28.0 minutes  
323 amperes for 15.0 minutes  
185 amperes for 195.0 minutes

- e. At least once per 60 months by verifying that the battery capacity is at least 80% of the manufacturer's rating when subjected to a performance discharge test. Once per 60 month interval, this performance discharge test may be performed in lieu of the battery service test.
- f. Annual performance discharge tests of battery capacity shall be given to any battery that shows signs of degradation or has reached 85% of the service life expected for the application. Degradation is indicated when the battery capacity drops more than 10% of rated capacity from its average on previous performance tests, or is below 90% of the manufacturer's rating.



TABLE 4.8.2.1-1

BATTERY SURVEILLANCE REQUIREMENTS

Parameter	CATEGORY A <sup>(1)</sup>	CATEGORY B <sup>(2)</sup>	
	Limits for each designated pilot cell	Limits for each connected cell	Allowable <sup>(3)</sup> value for each connected cell
Electrolyte Level	>Minimum level indication mark, and < $\frac{1}{4}$ " above maximum level indication mark	>Minimum level indication mark, and < $\frac{1}{4}$ " above maximum level indication mark	Above top of plates, and not overflowing
Float Voltage	> 2.13 volts	$\geq$ 2.13 volts <sup>(c)</sup>	> 2.07 volts
Specific Gravity <sup>(a)</sup>	$\geq$ 1.200 <sup>(b)</sup>	$\geq$ 1.195 <sup>(b)</sup>  Average of all connected cells $>$ 1.205 <sup>(b)</sup>	Not more than .020 below the average of all connected cells  Average of all connected cells $\geq$ 1.195 <sup>(b)</sup>

- (a) Corrected for electrolyte temperature and level.
- (b) Or battery charging current is less than 0.01, 0.1 and 0.25 amperes for the  $\pm 24$ , 125 and 250 volt batteries, respectively, when on float charge.
- (c) May be corrected for average electrolyte temperature.
- (1) For any Category A parameter(s) outside the limit(s) shown, the battery may be considered OPERABLE provided that within 24 hours all the Category B measurements are taken and found to be within their allowable values, and provided all Category A and B parameter(s) are restored to within limits within the next 6 days.
- (2) For any Category B parameter(s) outside the limit(s) shown, the battery may be considered OPERABLE provided that the Category B parameters are within their allowable values and provided the Category B parameter(s) are restored to within limits within 7 days.
- (3) Any Category B parameter not within its allowable value indicates an inoperable battery.





## D.C. SOURCES - SHUTDOWN

### LIMITING CONDITION FOR OPERATION

3.8.2.2 As a minimum, Division I or Division II of the D.C. electrical power sources shall be OPERABLE with: and diesel generator E

a. Division I consisting of:

1. Load group Channel "A" power source, consisting of:
  - a) 125 volt DC battery bank 1D610, 2D610\*\*
  - b) Full capacity charger 1D613, 2D613\*\*
2. Load group Channel "C" power source, consisting of:
  - a) 125 volt DC battery bank 1D630, 2D630\*\*
  - b) Full capacity charger 1D633, 2D633\*\*
3. Load group "I" power source, consisting of:
  - a) 250 volt DC battery bank 1D650
  - b) Half-capacity chargers 1D653A, 1D653B
4. Load group "I" power source, consisting of:
  - a)  $\pm$  24 volt DC battery bank 1D670
  - b) Two half-capacity chargers 1D673, 1D674

b. Division II consisting of:

1. Load group Channel "B" power source, consisting of:
  - a) 125 volt DC battery bank 1D620, 2D620\*\*
  - b) Full capacity charger 1D623, 2D623\*\*
2. Load group Channel "D" power source, consisting of:
  - a) 125 volt DC battery bank 1D640, 2D640\*\*
  - b) Full capacity charger 1D643, 2D643\*\*
3. Load group "II" power source, consisting of:
  - a) 250 volt DC battery bank 1D660
  - b) Full capacity charger 1D663
4. Load group "II" power source, consisting of:
  - a)  $\pm$  24 volt DC battery bank 1D680
  - b) Two half-capacity chargers 1D683, 1D684

SEE  
INSERT A

C.

APPLICABILITY: OPERATIONAL CONDITIONS 4, 5, and \*.

ACTION:

Division I ~~(3-8-2-2)~~ or Division II ~~(3-8-2-2)~~

- a. With less than the above required Unit 1 125 volt and/or 250 volt DC load group battery banks OPERABLE, suspend CORE ALTERATIONS, handling of irradiated fuel in the secondary containment and operations with a potential for draining the reactor vessel.
- b. With less than the above required Unit 2 125-volt DC load group battery banks OPERABLE, either:

\*When handling irradiated fuel in the secondary containment.

\*\*Not required to be OPERABLE when the requirements of ACTION b have been satisfied.

Insert A

c. Diesel Generator E

1. Load group power source, consisting of:
  - a) 125 volt DC battery bank OD595
  - b) Full capacity charger OD596



## LIMITING CONDITION FOR OPERATION (Continued)

### ACTION: (Continued)

1. Suspend CORE ALTERATIONS, handling of irradiated fuel in the secondary containment and operations with a potential for draining the reactor vessel, or
2. Transfer the Unit 1 and common loads aligned to the inoperable Unit 2 battery bank(s) to the corresponding Unit 1 battery bank(s).

Otherwise, declare the Unit 1 and common loads aligned to the inoperable Unit 2 battery bank(s) inoperable and take the ACTION required by the applicable Specification(s).

- c. With the Unit 1 loads associated with one or more of the above required Unit 1 125-volt DC load group battery bank(s) aligned to the corresponding Unit 2 load group battery bank(s), realign the Unit 1 loads to the Unit 1 battery bank(s) within 72 hours after restoring the Unit 1 battery bank to OPERABLE status; otherwise, declare the Unit 1 loads aligned to the Unit 2 battery bank(s) inoperable and take the ACTION required by the applicable Specification(s).

Division I (3.8.2.2a) or  
Division II (3.8.2.2b)

- d. With the above required  $\pm 24$  volt D.C. load group battery banks inoperable, declare the associated equipment inoperable and take the ACTION required by the applicable Specification(s).
- e. With the above required charger(s) inoperable, demonstrate the OPERABILITY of the associated battery by performing Surveillance Requirement 4.8.2.1.a.1 within one hour and at least once per 8 hours thereafter. If any Category A limit in Table 4.8.2.1-1 is not met, declare the battery inoperable.

- f. The provisions of Specification 3.0.3 are not applicable.

SEE  
INSERT B

9  
h.  
1.

### SURVEILLANCE REQUIREMENTS

4.8.2.2 At least the above required battery and charger shall be demonstrated OPERABLE per Surveillance Requirement 4.8.2.1.



Insert B

- g. With the above required diesel generator E 125 volt DC load group battery bank inoperable and diesel generator E not aligned to the Class 1E distribution system, restore the battery bank to OPERABLE status within 2 hours or verify that all ESW valves associated with diesel generator E are closed and diesel generator E is not running within 2 hours. The provisions of Specification 3.0.4 are not applicable.
- h. With the above required diesel generator E 125 volt DC load group battery bank inoperable and diesel generator E aligned to the Class 1E distribution system, restore the battery bank to OPERABLE status within 2 hours or declare diesel generator E inoperable and take the ACTION required by specification 3.8.1.2.
- i. With the above required diesel generator E 125 volt DC charger inoperable and diesel generator E aligned to the Class 1E distribution system, demonstrate the OPERABILITY of the associated battery bank by performing Surveillance Requirement 4.8.2.1.a.1 within one hour and at least once per 8 hours thereafter. If any Category A limit in Table 4.8.2.1-1 is not met, declare diesel E inoperable and take the ACTION required by specification 3.8.1.2.
- j. With the above diesel generator E charger inoperable and diesel generator E not aligned to the Class 1E distribution system, demonstrate the OPERABILITY of the associated battery by performing Surveillance Requirement 4.8.2.1.a.1 within 1 hour and at least once per 8 hours thereafter. If any Category A limit in Table 4.8.2.1-1 is not met, declare the battery inoperable, and take the ACTION required by specification 3.8.2.2.g. The provisions of Specification 3.0.4 are not applicable.

The first part of the report deals with the general situation of the country. It is a very interesting and informative study of the country's development. The author has done a great deal of research and has gathered a wealth of material. The report is well written and is a valuable contribution to the study of the country.

The second part of the report deals with the economic situation of the country. It is a very interesting and informative study of the country's economic development. The author has done a great deal of research and has gathered a wealth of material. The report is well written and is a valuable contribution to the study of the country.

The third part of the report deals with the social situation of the country. It is a very interesting and informative study of the country's social development. The author has done a great deal of research and has gathered a wealth of material. The report is well written and is a valuable contribution to the study of the country.

The fourth part of the report deals with the political situation of the country. It is a very interesting and informative study of the country's political development. The author has done a great deal of research and has gathered a wealth of material. The report is well written and is a valuable contribution to the study of the country.

### 3/4.8.3 ONSITE POWER DISTRIBUTION SYSTEMS

#### DISTRIBUTION - OPERATING

#### LIMITING CONDITION FOR OPERATION

3.8.3.1 The following power distribution system divisions shall be energized with tie breakers open both between redundant buses within the unit and between units at the same station:

a. A.C. power distribution:

1. Division I, consisting of:

a) Load group Channel "A", consisting of:

- 1) 4160 volt A.C. switchgear bus 1A201
- 2) 480 volt A.C. load center 1B210
- 3) 480 volt A.C. motor control center 0B516

b) Load group Channel "C", consisting of:

- 1) 4160 volt A.C. switchgear bus 1A203
- 2) 480 volt A.C. load center 1B230
- 3) 480 volt A.C. motor control center 0B536

~~c) Load group 480 volt A.C. motor control centers 0B517, 0B126,  
1B216, 1B236,  
1B217, 1B237~~

~~d) Load group 208/120 volt A.C. instrument panels 1Y216, 1Y236~~

e) Isolated 480 volt A.C. swing bus, including: 1B219

- 1) Preferred power source
- 2) Preferred power source MG set
- 3) Alternate power source
- 4) Automatic transfer switch

2. Division II, consisting of:

a) Load group Channel "B", consisting of:

- 1) 4160 volt A.C. switchgear bus 1A202
- 2) 480 volt A.C. load center 1B220
- 3) 480 volt A.C. motor control center 0B526

b) Load group Channel "D", consisting of:

- 1) 4160 volt A.C. switchgear bus 1A204
- 2) 480 volt A.C. load center 1B240
- 3) 480 volt A.C. motor control center 0B546

~~c) Load group 480 volt A.C. motor control centers 0B527, 0B146,  
1B226, 1B246,  
1B227, 1B247~~

~~d) Load group 208/120 volt A.C. instrument panels 1Y226, 1Y246~~

e) Isolated 480 volt A.C. swing bus, including: 1B229

- 1) Preferred power source
- 2) Preferred power source MG set
- 3) Alternate power source
- 4) Automatic transfer switch

b. D.C. power distribution:

1. Division I, consisting of:

a) Load group Channel "A", consisting of:

- 1) 125 volt DC buses 1D612, 2D612,\*  
1D614, 2D614\*
- 2) Fuse box 1D611, 2D611\*

\*Not required to be OPERABLE when the requirements of ACTION c have been satisfied.  
SUSQUEHANNA - UNIT 1 3/4 8-17 Amendment No. 48

Previous change:  
Submitted under PIA-2562  
as Proposed Amendment  
#74

SEE  
INSERT  
A

SEE  
INSERT B





INSERT A

a. A.C. power distribution:

1. Division I, consisting of:

a) Load group Channel "A", consisting of:

- 1) 4160 volt A.C. switchgear bus
- 2) 480 volt A.C. load center
- 3) 480 volt A.C. motor control centers

1A201, OAS10A  
1B210  
OB516, OB517  
1B216, 1B217  
1Y216

New change

- 4) 208/120 volt A.C. instrument panels

b) Load group Channel "C", consisting of:

- 1) 4160 volt A.C. switchgear bus
- 2) 480 volt A.C. load center
- 3) 480 volt A.C. motor control centers

1A203, OAS10C  
1B230  
OB536, OB136  
1B236, 1B237  
1Y236  
1B219

New change

- 4) 208/120 volt A.C. instrument panels

c) Isolated 480 volt A.C. swing bus, including:

- 1) Preferred power source
- 2) Preferred power source MG set
- 3) Alternate power source
- 4) Automatic transfer switch

2. Division II, consisting of:

a) Load group Channel "B", consisting of:

- 1) 4160 volt A.C. switchgear bus
- 2) 480 volt A.C. load center
- 3) 480 volt A.C. motor control centers

1A202, OAS10B  
1B220  
OB526, OB527  
1B226, 1B227  
1Y226

New change

- 4) 208/120 volt A.C. instrument panels

b) Load group Channel "D", consisting of:

- 1) 4160 volt A.C. switchgear bus
- 2) 480 volt A.C. load center
- 3) 480 volt A.C. motor control centers

1A204, OAS10D  
1B240  
OB546, OB146  
1B246, 1B247  
1Y246  
1B229

New change

- 4) 208/120 volt A.C. instrument panels

c) Isolated 480 volt A.C. swing bus, including:

- 1) Preferred power source
- 2) Preferred power source MG set
- 3) Alternate power source
- 4) Automatic transfer switch

Insert B

3. Diesel Generator E, when aligned to the Class 1E system

a) Load group consisting of:

- 1) 4160 volt A.C. switchgear bus            0A510E
- 2) 480 volt A.C. motor control center    0B565

1. The first part of the document is a list of names and addresses of the members of the committee.

2. The second part of the document is a list of names and addresses of the members of the committee.

3. The third part of the document is a list of names and addresses of the members of the committee.

4. The fourth part of the document is a list of names and addresses of the members of the committee.

5. The fifth part of the document is a list of names and addresses of the members of the committee.

## ELECTRICAL POWER SYSTEMS

### LIMITING CONDITION FOR OPERATION (Continued)

#### D.C. power distribution: (Continued)

- b) Load group Channel "C", consisting of:
  - 1) 125 volt DC buses 10632, 20632\*  
10634, 20634\*  
10631, 20631\*
  - 2) Fuse box
- c) Load group "I", consisting of:
  - 1) 250 volt DC buses 10652, 10254
  - 2) Fuse box 10651
- d) Load group "I", consisting of:
  - 1)  $\pm$  24 volt DC buses 10672
  - 2) Fuse box 10671
- 2. Division II, consisting of:
  - a) Load group Channel "B" consisting of:
    - 1) 125 volt DC buses 10622, 20622\*  
10624, 20624\*  
10621, 20621\*
    - 2) Fuse box
  - b) Load group Channel "D" consisting of:
    - 1) 125 volt DC buses 10642, 20642\*  
10644, 20644\*  
10641, 20641\*
    - 2) Fuse box
  - c) Load group "II" consisting of:
    - 1) 250 volt DC buses 10662, 10264, 10274
    - 2) Fuse box 10661
  - d) Load group "II" consisting of:
    - 1)  $\pm$  24 volt DC buses 10682
    - 2) Fuse box 10681

SEE  
INSERT C

3.

APPLICABILITY: OPERATIONAL CONDITIONS 1, 2 and 3.

#### ACTION:

Division I or Division II

- a. With one of the above required A.C. distribution system load groups not energized, re-energize the load group within 8 hours or be in at least HOT SHUTDOWN within the next 12 hours and in COLD SHUTDOWN within the following 24 hours. Division I or Division II
- b. With one of the above required Unit 1 D.C. distribution system load groups not energized, re-energize the load group within 2 hours or be in at least HOT SHUTDOWN within the next 12 hours and in COLD SHUTDOWN within the following 24 hours.
- c. With one or more of the above required Unit 2 D.C. distribution system load groups not energized, within 2 hours either:
  - 1. Reenergize the load group(s), or
  - 2. Transfer the Unit 1 and common loads aligned to the deenergized Unit 2 load group(s) to the corresponding Unit 1 load group(s).

\*Not required to be OPERABLE when the requirements of ACTION c have been satisfied.

Insert C

3. Diesel Generator E

a) Load group consisting of:

1) 125 volt D.C. bus      OD 597



## ELECTRICAL POWER SYSTEMS

### LIMITING CONDITION FOR OPERATION (Continued)

#### ACTION (Continued)

Otherwise, declare the Unit 1 and common loads aligned to the deenergized Unit 2 load group(s) inoperable and take the ACTION required by the applicable Specification(s).

- d. With the Unit 1 loads associated with one or more of the above required Unit 1 125-volt D.C. load group(s) aligned to the corresponding Unit 2 load group(s), realign the Unit 1 loads to the Unit 1 load group(s) within 72 hours after restoring the Unit 1 load group(s) to OPERABLE status; otherwise, declare the Unit 1 loads aligned to the Unit 2 load group(s) inoperable and take the ACTION required by the applicable Specification(s).

- e. With one or both of the isolated 480 volt A.C. swing busses inoperable, declare the associated LPCI loop inoperable (see Specification 3.5.1).

SEE  
INSERT D

f.  
g.  
h.

#### SURVEILLANCE REQUIREMENTS

4.8.3.1.1 Each of the above required power distribution system load groups shall be determined energized at least once per 7 days by verifying correct breaker alignment and voltage on the busses/MCCs/panels.

4.8.3.1.2 The isolated 480 volt A.C. swing bus automatic transfer switches shall be demonstrated OPERABLE at least once per 31 days by actuating the load test switch or by disconnecting the preferred power source to the transfer switch and verifying that swing bus automatic transfer is accomplished.





Insert D

- f. With the above required diesel generator E A.C. distribution system load group not energized and diesel generator E aligned to the Class 1E distribution system, re-energize the load group within 24 hours or be in at least HOT SHUTDOWN within the next 12 hours and in COLD SHUTDOWN within the following 24 hours.
- g. With the above required diesel generator E 125 volt D.C. distribution system load group not energized and diesel generator E not aligned to the Class 1E distribution system, re-energize the load group within 2 hours or shutdown diesel generator E and close all ESW valves associated with diesel generator E within 2 hours. The provisions of Specification 3.0.4 are not applicable.
- h. With the above required diesel generator E 125 volt D.C. distribution system load group not energized and diesel generator E aligned to the Class 1E distribution system, re-energize the load group within 2 hours or declare diesel generator E inoperable and take the ACTION required by specification 3.8.1.1.

... ..  
... ..  
... ..  
... ..

... ..  
... ..  
... ..  
... ..  
... ..

... ..  
... ..  
... ..  
... ..  
... ..

## DISTRIBUTION - SHUTDOWN

### LIMITING CONDITION FOR OPERATION

3.8.3.2 As a minimum, the following power distribution system divisions shall be energized:

a. For A.C. power distribution, Division I or Division II with:

1. Division I consisting of:

a) Load group Channel "A", consisting of:

- |                                       |       |
|---------------------------------------|-------|
| 1) 4160 volt A.C. switchgear bus      | 1A201 |
| 2) 480 volt A.C. load center          | 1B210 |
| 3) 480 volt A.C. motor control center | 0B516 |

b) Load group Channel "C", consisting of:

- |                                       |       |
|---------------------------------------|-------|
| 1) 4160 volt A.C. switchgear bus      | 1A203 |
| 2) 480 volt A.C. load center          | 1B230 |
| 3) 480 volt A.C. motor control center | 0B536 |

~~c) Load group 480 volt A.C. motor control centers~~ ~~0B517, 0B136~~  
~~1B216, 1B236~~  
~~1B217, 1B237~~

~~d) Load group 208/120 volt A.C. instrument panels~~ ~~1Y216, 1Y236~~

e) Isolated 480 volt A.C. swing bus, including: 1B219\*

- |                                  |
|----------------------------------|
| 1) Preferred power source        |
| 2) Preferred power source MG set |
| 3) Alternate power source        |
| 4) Automatic transfer switch     |

2. Division II consisting of:

a) Load group Channel "B", consisting of:

- |                                       |       |
|---------------------------------------|-------|
| 1) 4160 volt A.C. switchgear bus      | 1A202 |
| 2) 480 volt A.C. load center          | 1B220 |
| 3) 480 volt A.C. motor control center | 0B526 |

b) Load group Channel "D", consisting of:

- |                                       |       |
|---------------------------------------|-------|
| 1) 4160 volt A.C. switchgear bus      | 1A204 |
| 2) 480 volt A.C. load center          | 1B240 |
| 3) 480 volt A.C. motor control center | 0B546 |

~~c) Load group 480 volt A.C. motor control centers~~ ~~0B527, 0B146~~  
~~1B226, 1B246~~  
~~1B227, 1B247~~

~~d) Load group 208/120 volt A.C. instrument panels~~ ~~1Y226, 1Y246~~

e) Isolated 480 volt A.C. swing bus, including: 1B229\*\*

- |                                  |
|----------------------------------|
| 1) Preferred power source        |
| 2) Preferred power source MG set |
| 3) Alternate power source        |
| 4) Automatic transfer switch     |

\*The swing bus shall be OPERABLE if the Division I LPCI subsystem alone is fulfilling the requirements of Specification 3.5.2.

\*\*The swing bus shall be OPERABLE if the Division II LPCI subsystem alone is fulfilling the requirements of Specification 3.5.2.

Previous change;  
Submitted under PLA-2562  
as proposed Amendment  
#74.

SEE  
INSERT  
'A'

SEE  
INSERT B

3.

# INSERT A

NEW CHANGE

and diesel generator E

a. For A.C. power distribution, Division I, or Division II, with:

## 1. Division I consisting of:

### a) Load group Channel "A", consisting of:

- 1) 4160 volt A.C. switchgear bus
- 2) 480 volt A.C. load center
- 3) 480 volt A.C. motor control centers

1A201, <sup>NEW CHANGE</sup> OAS10A  
1B210  
OB516, OB517  
1B216, 1B217  
1Y216

### b) Load group Channel "C", consisting of:

- 1) 4160 volt A.C. switchgear bus 1A203
- 2) 480 volt A.C. load center
- 3) 480 volt A.C. motor control centers

1A203, <sup>NEW CHANGE</sup> OAS10C  
1B230  
OB536, OB136  
1B236, 1B237  
1Y236  
1B219\*

### 4) 208/120-volt A.C. instrument panels

### c) Isolated 480 volt A.C. swing bus, including:

- 1) Preferred power source
- 2) Preferred power source MG set
- 3) Alternate power source
- 4) Automatic transfer switch

## 2. Division II consisting of:

### a) Load group Channel "B", consisting of:

- 1) 4160 volt A.C. switchgear bus
- 2) 480 volt A.C. load center
- 3) 480 volt A.C. motor control centers

1A202, <sup>NEW CHANGE</sup> OAS10B  
1B220  
OB526, OB527  
1B226, 1B227  
1Y226

### b) Load group Channel "D", consisting of:

- 1) 4160 volt A.C. switchgear bus
- 2) 480 volt A.C. load center
- 3) 480 volt A.C. motor control centers

1A204, <sup>NEW CHANGE</sup> OAS10D  
1B240  
OB546, OB146  
1B246, 1B247  
1Y246  
1B229\*\*

### 4) 208/120 volt A.C. instrument panels

### c) Isolated 480 volt A.C. swing bus, including:

- 1) Preferred power source
- 2) Preferred power source MG set
- 3) Alternate power source
- 4) Automatic transfer switch

Insert B

3. Diesel Generator E

a) Load Group, consisting of:

- 1) 4160 volt A.C. switchgear bus 0A510E
- 2) 480 volt A.C. motor control center 0B565

1. The first part of the document discusses the importance of maintaining accurate records of all transactions. It emphasizes that this is essential for the proper management of the organization's finances and for ensuring compliance with relevant regulations.

2. The second part of the document outlines the various methods used to collect and analyze data. It describes how this information is used to identify trends, assess risks, and make informed decisions about the future of the organization.

3. The third part of the document provides a detailed overview of the organization's current financial position. It includes a breakdown of revenues, expenses, and assets, as well as a comparison of these figures to the previous year's data.

4. The fourth part of the document discusses the organization's plans for the future. It outlines the various initiatives that are being implemented to improve efficiency, reduce costs, and increase the overall value of the organization.

5. The fifth part of the document provides a summary of the key findings of the analysis. It highlights the areas where the organization is performing well and identifies the areas where further improvement is needed.

6. The sixth part of the document provides a list of recommendations for the future. It includes suggestions for how the organization can better manage its resources, improve its financial performance, and ensure that it remains competitive in the market.

7. The seventh part of the document provides a conclusion. It summarizes the main points of the document and expresses the organization's confidence in its ability to achieve its goals in the future.



## ELECTRICAL POWER SYSTEMS

### LIMITING CONDITION FOR OPERATION (Continued)

b. For D.C. power distribution, Division I or Division II, with:

1. Division I consisting of:

a) Load group Channel "A", consisting of:

1) 125 volt DC buses

1D612, 2D612\*\*

2) Fuse box

1D614, 2D614\*\*

1D611, 2D611\*\*

b) Load group Channel "C", consisting of:

1) 125 volt DC buses

1D632, 2D632\*\*

2) Fuse box

1D634, 2D634\*\*

1D631, 2D631\*\*

c) Load group "I", consisting of:

1) 250 volt DC buses

1D652, 1D254

2) Fuse box

1D651

d) Load group "I", consisting of:

1)  $\pm$  24 volt DC buses

1D672

2) Fuse box

1D671

2. Division II consisting of:

a) Load group Channel "B", consisting of:

1) 125 volt DC buses

1D622, 2D622\*\*

2) Fuse box

1D624, 2D624\*\*

1D621, 2D621\*\*

b) Load group Channel "D", consisting of:

1) 125 volt DC buses

1D642, 2D642\*\*

2) Fuse box

1D644, 2D644\*\*

1D641, 2D641\*\*

c) Load group "II", consisting of:

1) 250 volt DC buses

1D662, 1D264, 1D274

2) Fuse box

1D661

d) Load group "II", consisting of:

1)  $\pm$  24 volt DC buses

1D682

2) Fuse box

1D681

SEE  
INSERT C

3  
APPLICABILITY: OPERATIONAL CONDITIONS 4, 5 and \*.

\*When handling irradiated fuel in the secondary containment.

\*\*Not required to be OPERABLE when the requirements of ACTION c have been satisfied.





Insert C

3. Diesel Generator E

a) Load group consisting of:

1) 125 volt D.C. bus            OD 597

## LIMITING CONDITION FOR OPERATION (Continued)

### ACTION:

- a. With less than the Division I or Division II load groups of the above required A.C. distribution system energized, suspend CORE ALTERATIONS, handling of irradiated fuel in the secondary containment and operations with a potential for draining the reactor vessel.
- b. With less than the Division I or Division II load groups of the above required Unit 1 D.C. distribution system energized, suspend CORE ALTERATIONS, handling of irradiated fuel in the secondary containment and operations with a potential for draining the reactor vessel.
- c. With less than Division I or Division II of the above required Unit 2 D.C. distribution system energized, either:
  1. Suspend CORE ALTERATIONS, handling of irradiated fuel in the secondary containment, and operations with a potential for draining the reactor vessel, or
  2. Transfer the Unit 1 and common loads aligned to the deenergized Unit 2 load group(s) to the corresponding Unit 1 load group(s).Otherwise, declare the Unit 1 and common loads aligned to the deenergized Unit 2 load group(s) inoperable and take the ACTION required by the applicable Specification(s).
- d. With the Unit 1 loads aligned to one or more of the above required Unit 1 125-volt D.C. load group(s) aligned to the corresponding Unit 2 load group(s), realign the Unit 1 loads to the Unit 1 load group(s) within 72 hours after restoring the Unit 1 load group(s) to OPERABLE status; otherwise, declare the Unit 1 loads aligned to the Unit 2 load group(s) inoperable and take the ACTION required by the applicable Specification(s).
- e. With one or both of the isolated 480 volt A.C. swing busses inoperable, declare the associated LPCI loop inoperable (see Specification 3.5.2).
- f. The provisions of Specification 3.0.3 are not applicable.

SEE  
INSERT D

### SURVEILLANCE REQUIREMENTS

4.8.3.2.1 At least the above required power distribution system divisions shall be determined energized at least once per 7 days by verifying correct breaker alignment and voltage on the busses/MCCs/panels.

4.8.3.2.2 The isolated 480-volt A.C. swing bus automatic transfer switch shall be demonstrated OPERABLE at least once per 31 days by actuating the load test switch or by disconnecting the preferred power source to the transfer switch and verifying that swing bus automatic transfer is accomplished.



Insert D

- g. With the above required diesel generator E A.C. distribution system load group not energized and diesel generator E aligned to the Class 1E distribution system, suspend CORE ALTERATIONS, handling of irradiated fuel in the secondary containment and operations with a potential for draining the reactor vessel.
- h. With the above required diesel generator E 125 volt D.C. distribution system load group not energized and diesel generator E not aligned to the Class 1E distribution system, re-energize the load group within 2 hours or verify that all ESW valves associated with diesel generator E are closed and diesel generator E is not running within 2 hours. The provisions of Specification 3.0.4 are not applicable.
- i. With the above required diesel generator E 125 volt D.C. distribution system load group not energized and diesel generator E aligned to the Class 1E distribution system, re-energize the load group within 2 hours or declare diesel generator E inoperable and take the ACTION required by specification 3.8.1.2.



## ELECTRICAL POWER SYSTEMS

### MOTOR OPERATED VALVES THERMAL OVERLOAD PROTECTION - (CONTINUOUS)

#### LIMITING CONDITION FOR OPERATION

3.8.4.2.1

~~3.8.4.2~~ The thermal overload protection of each valve shown in Table ~~3.8.4.2-1~~ shall be bypassed continuously by an OPERABLE bypass device integral with the motor starter.

3.8.4.2.1-1

APPLICABILITY: Whenever the motor operated valve is required to be OPERABLE *unless*

ACTION:

*otherwise specified.*

- a. With thermal overload protection for one or more of the above required valves not bypassed continuously by an OPERABLE integral bypass device, take administrative action to continuously bypass the thermal overload within 8 hours or declare the affected valve(s) inoperable and apply the appropriate ACTION statement(s) for the affected system(s).
- b. The provisions of Specification 3.0.4 are not applicable.

#### SURVEILLANCE REQUIREMENTS

4.8.4.2.1.1

~~4.8.4.2.1~~ The thermal overload protection for the above required valves shall be verified to be bypassed continuously by an OPERABLE integral bypass device by verifying that the thermal overload protection is bypassed:

29

- a. At least once per 18 months, and

- b. Following maintenance on the motor starter.

4.8.4.2.1.2

~~4.8.4.2.2~~ The thermal overload protection shall be verified to be bypassed following activities during which the thermal overload protection was temporarily placed in force.

29

3.8.4.2.1-1  
TABLE 3.8.4.2-1

MOTOR OPERATED VALVES THERMAL OVERLOAD PROTECTION - CONTINUOUS

<u>VALVE NUMBER</u>	<u>SYSTEM(S) AFFECTED</u>
HV-01222A	RHRSW
HV-01222B	RHRSW
HV-01224A1	RHRSW
HV-01224B1	RHRSW
HV-01224A2	RHRSW
HV-01224B2	RHRSW
* HV-01112A	ESW
* HV-01112B	ESW
* HV-01122A	ESW
* HV-01122B	ESW
* HV-01112C	ESW
* HV-01112D	ESW
* HV-01122C	ESW
* HV-01122D	ESW
* HV-01110A	ESW
* HV-01110B	ESW
* HV-01120A	ESW
* HV-01120B	ESW
* HV-01110C	ESW
* HV-01110D	ESW
* HV-01120C	ESW
* HV-01120D	ESW
HV-08693A	ESW
HV-08693B	ESW
HV-01201A1	RHRSW
HV-01201A2	RHRSW
HV-01201B1	RHRSW
HV-01201B2	RHRSW
HV-11210A	RHRSW
HV-11210B	RHRSW
HV-11215A	RHRSW
HV-11215B	RHRSW
HV-15766	Cont. Isol.
HV-15768	Cont. Isol.
HV-12603	Cont. Isol.
HV-11345	Cont. Isol.
HV-11313	Cont. Isol.
HV-11346	Cont. Isol.
HV-11314	Cont. Isol.
HV-E11-1F009	RHR
HV-E11-1F040	RHR
HV-G33-1F001	RWCU
HV-E11-1F103A	RHR
HV-E11-1F075A	RHRSW
HV-E11-1F048A	RHR
HV-E11-1F006C	RHR

\* HV-01110E  
\* HV-01120E  
\* HV-01112E  
\* HV-01122E

ESW  
BSW  
BSN  
ESW





TABLE 3.8.4.2-1 (Continued)

MOTOR OPERATED VALVES THERMAL OVERLOAD PROTECTION

<u>VALVE NUMBER</u>	<u>SYSTEM(S) AFFECTED</u>
HV-E11-1F004C	RHR
HV-E11-1F015A	RHR
HV-E11-1F024A	RHR
HV-E21-1F015A	CS
HV-E41-1F002	HPCI
HV-B21-1F016	NSSS
HV-E11-1F022	RHR
HV-E11-1F010A	RHR
HV-E11-1F011A	RHR
HV-E11-1F004A	RHR
HV-E11-1F006A	RHR
HV-E11-1F027A	RHR
HV-E11-1F007A	RHR
HV-E11-1F104A	RHR
HV-E11-1F026A	RHR
HV-E11-1F028A	RHR
HV-E11-1F047A	RHR
HV-E11-1F073A	RHR
HV-E11-1F003A	RHR
HV-E11-1F017A	RHR
HV-E21-1F001A	CS
HV-E21-1F031A	CS
HV-E21-1F004A	CS
HV-E21-1F005A	CS
HV-E11-1F021A	RHR
HV-E11-1F016A	RHR
HV-15112	RHR
HV-E51-1F007	RCIC
HV-E51-1F084	RCIC
HV-E11-1F027B	RHR
HV-E11-1F048B	RHR
HV-E11-1F015B	RHR
HV-E11-1F006B	RHR
HV-E11-1F021B	RHR
HV-E11-1F010B	RHR
HV-E11-1F011B	RHR
HV-E11-1F004B	RHR
HV-E11-1F007B	RHR
HV-E11-1F104B	RHR
HV-E11-1F026B	RHR

TABLE 3.8.4.2-1 (Continued)

MOTOR OPERATED VALVES THERMAL OVERLOAD PROTECTION

<u>VALVE NUMBER</u>	<u>SYSTEM(S) AFFECTED</u>
HV-E11-1F028B	RHR
HV-E11-1F047B	RHR
HV-E11-1F016B	RHR
HV-E11-1F003B	RHR
HV-E11-1F017B	RHR
HV-E21-1F031B	CS
HV-E21-1F001B	CS
HV-E11-1F103B	RHR
HV-E11-1F075B	RHRSW
HV-E11-1F073B	RHRSW
HV-E11-1F006D	RHR
HV-E11-1F004D	RHR
HV-E11-1F024B	RHR
HV-E21-1F015B	CS
HV-E21-1F004B	CS
HV-E21-1F005B	CS
HV-E32-1F001K	MSIV
HV-E32-1F002K	MSIV
HV-E32-1F003K	MSIV
HV-E32-1F001P	MSIV
HV-E32-1F002P	MSIV
HV-E32-1F003P	MSIV
HV-E32-1F001B	MSIV
HV-E32-1F002B	MSIV
HV-E32-1F003B	MSIV
HV-E32-1F001F	MSIV
HV-E32-1F002F	MSIV
HV-E32-1F003F	MSIV
HV-E32-1F006	MSIV
HV-E32-1F007	MSIV
HV-E32-1F008	MSIV
HV-E32-1F009	MSIV
HV-E51-1F045	RCIC
HV-E51-1F012	RCIC
HV-E51-1F013	RCIC
HV-15012	RCIC
HV-E51-1F046	RCIC
HV-E51-1F008	RCIC
HV-E51-1F031	RCIC
HV-E51-1F010	RCIC

16



TABLE 3.8.4.2-1 (Continued)

MOTOR OPERATED VALVES THERMAL OVERLOAD PROTECTION

<u>VALVE NUMBER</u>	<u>SYSTEM(S) AFFECTED</u>
HV-E51-1F019	RCIC
HV-E51-1F060	RCIC
HV-E51-1F059	RCIC
HV-E51-1F022	RCIC
HV-E51-1F062	RCIC
HV-E41-1F012	HPCI
HV-E41-1F001	HPCI
HV-E41-1F011	HPCI
HV-E41-1F006	HPCI
HV-E41-1F079	HPCI
HV-E41-1F059	HPCI
HV-E41-1F004	HPCI
HV-E41-1F003	HPCI
HV-E41-1F042	HPCI
HV-E41-1F075	HPCI
HV-E41-1F008	HPCI
HV-E41-1F007	HPCI
HV-E41-1F066	HPCI
HV-G33-1F004	RWCU
HV-B21-1F019	NSSS
HV-E11-1F008	RHR
HV-E11-1F023	RHR
HV-E11-1F049	RHR
HV-B31-1F032A	RX RECIRC
HV-B31-1F032B8	RX RECIRC
HV-B31-1F031A	RX RECIRC
HV-B31-1F031B	RX RECIRC

## ELECTRICAL POWER SYSTEMS

### MOTOR OPERATED VALVES THERMAL OVERLOAD PROTECTION - AUTOMATIC

#### LIMITING CONDITION FOR OPERATION

---

3.8.4.2.2 The thermal overload protection of each valve shown in Table 3.8.4.2.2-1 shall be bypassed automatically by an OPERABLE bypass device integral with the motor starter.

APPLICABILITY: When diesel generator E is not aligned to the Class 1E distribution system.

#### ACTION:

- a. With thermal overload protection automatic bypass inoperable for one or more valves listed above, take administrative action to continuously bypass the thermal overload within 8 hours, or verify that all diesel generator E ESW valves are closed and diesel generator E is not running within 8 hours.
- b. The provision of Specification 3.0.4 are not applicable.

#### SURVEILLANCE REQUIREMENTS

---

4.8.4.2.2.1 The automatic bypass of thermal overload protection for those valves listed above shall be demonstrated OPERABLE at least once per 18 months.

TABLE 3.8.4.2.2-1

MOTOR OPERATED VALVES THERMAL OVERLOAD PROTECTION - AUTOMATIC

<u>Valve Number</u>	<u>System(s) Affected</u>
HV-01110E	ESW
HV-01120E	ESW
HV-01112E	ESW
HV-01122E	ESW

### 3/4.8 ELECTRICAL POWER SYSTEMS

#### BASES

#### 3/4.8.1, 3/4.8.2 and 3/4.8.3 A.C. SOURCES, D.C. SOURCES and ONSITE POWER DISTRIBUTION SYSTEMS

The OPERABILITY of the A.C. and D.C. power sources and associated distribution systems during operation ensures that sufficient power will be available to supply the safety related equipment required for (1) the safe shutdown of the facility and (2) the mitigation and control of accident conditions within the facility. The minimum specified independent and redundant A.C. and D.C. power sources and distribution systems satisfy the requirements of General Design Criteria 17 of Appendix "A" to 10 CFR 50.

The ACTION requirements specified for the levels of degradation of the power sources provide restriction upon continued facility operation commensurate with the level of degradation. The OPERABILITY of the power sources are consistent with the initial condition assumptions of the accident analyses and are based upon maintaining at least three of the onsite A.C. and the corresponding D.C. power sources and associated distribution systems OPERABLE during accident conditions coincident with an assumed loss of offsite power and single failure of one other onsite A.C. source. *INSGRFA*

The A.C. and D.C. source allowable out-of-service times are based on Regulatory Guide 1.93, "Availability of Electrical Power Sources," December 1974. When one diesel generator is inoperable, there is an additional ACTION requirement to verify that all required systems, subsystems, trains, components and devices, that depend on the remaining OPERABLE diesel generator as a source of emergency power, are also OPERABLE. This requirement is intended to provide assurance that a loss of offsite power event will not result in a complete loss of safety function of critical systems during the period one of the diesel generators is inoperable. The term verify as used in this context means to administratively check by examining logs or other information to determine if certain components are out-of-service for maintenance or other reasons. It does not mean to perform the surveillance requirements needed to demonstrate the OPERABILITY of the component.

The OPERABILITY of the minimum specified A.C. and D.C. power sources and associated distribution systems during shutdown and refueling ensures that (1) the facility can be maintained in the shutdown or refueling condition for extended time periods and (2) sufficient instrumentation and control capability is available for monitoring and maintaining the unit status.

The surveillance requirements for demonstrating the OPERABILITY of the diesel generators are in accordance with the recommendations of Regulatory Guide 1.9, "Selection of Diesel Generator Set Capacity for Standby Power Supplies", March 10, 1971, Regulatory Guide 1.108, "Periodic Testing of Diesel Generator Units Used as Onsite Electric Power Systems at Nuclear Power Plants", Revision 1, August 1977 and Regulatory Guide 1.137 "Fuel-Oil Systems for Standby Diesel Generators", Revision 1, October 1979.

SUSQUEHANNA - UNIT 1

B 3/4 8-1

*INSGRFA: The plant configuration consists of four diesel generators - A, B, C & D - and a spare fifth diesel generator - E - which can be substituted for any one of the other four diesel generators*





## ELECTRICAL POWER SYSTEMS

### BASES

#### A.C. SOURCES, D.C. SOURCES, and ONSITE POWER DISTRIBUTION SYSTEMS (Continued)

The surveillance requirements for demonstrating the OPERABILITY of the unit batteries are in accordance with the recommendations of Regulatory Guide 1.129, "Maintenance Testing and Replacement of Large Lead Storage Batteries for Nuclear Power Plants", February 1978, and IEEE Std 450-1980, "IEEE Recommended Practice for Maintenance, Testing, and Replacement of Large Lead Storage Batteries for Generating Stations and Substations."

Verifying average electrolyte temperature above the minimum for which the battery was sized, total battery terminal voltage onfloat charge, connection resistance values and the performance of battery service and discharge tests ensures the effectiveness of the charging system, the ability to handle high discharge rates and compares the battery capacity at that time with the rated capacity.

Table 4.8.2.1-1 specifies the normal limits for each designated pilot cell and each connected cell for electrolyte level, float voltage and specific gravity. The limits for the designated pilot cells float voltage and specific gravity, greater than 2.13 volts and .015 below the manufacturer's full charge specific gravity or a battery charger current that had stabilized at a low value, is characteristic of a charged cell with adequate capacity. The normal limits for each connected cell for float voltage and specific gravity, greater than 2.13 volts and not more than .020 below the manufacturer's full charge specific gravity with an average specific gravity of all the connected cells not more than .010 below the manufacturer's full charge specific gravity, ensures the OPERABILITY and capability of the battery.

Operation with a battery cell's parameter outside the normal limit but within the allowable value specified in Table 4.8.2.1-1 is permitted for up to 7 days. During this 7 day period: (1) the allowable values for electrolyte level ensures no physical damage to the plates with an adequate electron transfer capability; (2) the allowable value for the average specific gravity of all the cells, not more than .020 below the manufacturer's recommended full charge specific gravity, ensures that the decrease in rating will be less than the safety margin provided in sizing; (3) the allowable value for an individual cell's specific gravity ensures that an individual cell's specific gravity will not be more than .040 below the manufacturer's full charge specific gravity and that the overall capability of the battery will be maintained within an acceptable limit; and (4) the allowable value for an individual cell's float voltage, greater than 2.07 volts, ensures the battery's capability to perform its design function.

## ELECTRICAL POWER SYSTEMS

### BASES

---

#### 3/4.8.4 ELECTRICAL EQUIPMENT PROTECTIVE DEVICES

Primary containment electrical penetrations and penetration conductors are protected by either de-energizing circuits not required during reactor operation or demonstrating the OPERABILITY of primary and backup overcurrent protection circuit breakers by periodic surveillance.

The surveillance requirements applicable to lower voltage circuit breakers and fuses provides assurance of breaker and fuse reliability by testing at least one representative sample of each manufacturers brand of circuit breaker and/or fuse. Each manufacturer's molded case and metal case circuit breakers and/or fuses are grouped into representative samples which are then tested on a rotating basis to ensure that all breakers and/or fuses are tested. If a wide variety exists within any manufacturer's brand of circuit breakers and/or fuses, it is necessary to divide that manufacturer's breakers and/or fuses into groups and treat each group as a separate type of breaker or fuses for surveillance purposes.

The bypassing of the motor operated valve thermal overload protection continuously by integral bypass devices ensures that the thermal overload protection will not prevent safety related valves from performing their function. The surveillance requirements for demonstrating the bypassing of the thermal overload protection continuously are in accordance with Regulatory Guide 1.106 "Thermal Overload Protection for Electric Motors on Motor Operated Valves", Revision 1, March 1977.

## INSTRUMENTATION

### FIRE DETECTION INSTRUMENTATION

#### LIMITING CONDITION FOR OPERATION

---

3.3.7.9 As a minimum, the fire detection instrumentation for each fire detection zone shown in Table 3.3.7.9-1 shall be OPERABLE.

APPLICABILITY: Whenever equipment protected by the fire detection instrument is required to be OPERABLE.

#### ACTION:

With the number of OPERABLE fire detection instruments less than the Minimum Instruments OPERABLE requirement of Table 3.3.7.9-1:

- a. Within 1 hour, establish a fire watch patrol to inspect the zone(s) with the inoperable instrument(s) at least once per hour, unless the instrument(s) is located inside an inaccessible zone, then inspect the area surrounding the inaccessible zone at least once per hour.
- b. The provisions of Specifications 3.0.3 and 3.0.4 are not applicable.

#### SURVEILLANCE REQUIREMENTS

---

4.3.7.9.1 Each of the above required fire detection instruments which are accessible during unit operation shall be demonstrated OPERABLE at least once per 6 months by performance of a CHANNEL FUNCTIONAL TEST. Fire detectors which are not accessible during unit operation shall be demonstrated OPERABLE by the performance of a CHANNEL FUNCTIONAL TEST during each COLD SHUTDOWN exceeding 24 hours unless performed in the previous 6 months.

4.3.7.9.2 The supervised circuits supervision associated with the detector alarms of each of the above required fire detection instruments shall be demonstrated OPERABLE at least once per 6 months.

TABLE 3.3.7.9-1

FIRE DETECTION INSTRUMENTATION

<u>INSTRUMENT LOCATION</u>		<u>INSTRUMENTS OPERABLE</u>							
<u>FIRE ZONE</u>	<u>ROOM OR AREA</u>	<u>ELEV.</u>	<u>HEAT TOTAL MIN.</u>		<u>IONIZATION TOTAL MIN.</u>		<u>PHOTO-ELECTRIC TOTAL MIN.</u>		
a. <u>Control Building</u>									
0-22A	Filter Area	687'-8"	NA	NA	11	6	NA	NA	
0-24D	Lower Relay Room	698'-1"	4	2	4	2	NA	NA	
0-24G	Lower Relay Room	698'-1"	4	2	4	2	NA	NA	
0-24G	PGCC	698'-1"	54	27	30	15	NA	NA	
0-25A	Lower Cable Spreading Rm.	714'-0"	20	10	6	3	NA	NA	
0-25B	South Cable Chase	714'-0"	1	1	NA	NA	NA	NA	
0-25C	Center Cable Chase	714'-0"	1	1	NA	NA	NA	NA	
0-25D	North Cable Chase	714'-0"	1	1	NA	NA	NA	NA	
0-25E	Lower Cable Spreading Rm.	714'-0"	26	13	6	3	NA	NA	
0-26B	South Cable Chase	729'-1"	NA	NA	1	1	NA	NA	
0-26C	Center Cable Chase	729'-1"	NA	NA	1	1	NA	NA	
0-26D	North Cable Chase	729'-1"	NA	NA	1	1	NA	NA	
0-26F	Vestibule	729'-1"	NA	NA	1	1	NA	NA	
0-26G	Shift Office	729'-1"	NA	NA	1	1	NA	NA	
0-26H	Control Rm. (Under Flr. Unit 1)*	729'-1"	NA	NA	18	9	NA	NA	
0-26H	Control Room (Under Flr. Unit 2)*	729'-1"	NA	NA	15	8	NA	NA	
0-26H	Control Room	729'-1"	NA	NA	10	5	NA	NA	
0-26H	Control Rm. (Above Clg)*	729'-1"	NA	NA	6	3	NA	NA	
0-26I	Operational Support Center	729'-1"	NA	NA	1	1	NA	NA	
0-26J	Vestibule	729'-1"	NA	NA	1	1	NA	NA	
0-26M	Soffit	729'-1"	NA	NA	4	2	NA	NA	
0-26N	Control Room Soffit	729'-1"	NA	NA	2	1	NA	NA	
0-26P	Control Room Soffit	729'-1"	NA	NA	2	1	NA	NA	
0-26R	Soffit	729'-1"	NA	NA	4	2	NA	NA	
0-26S	South Cable Chase	729'-1"	1	1	NA	NA	NA	NA	

TABLE 3.3.7.9-1 (Continued)

FIRE DETECTION INSTRUMENTATION

<u>INSTRUMENT LOCATION</u>			<u>INSTRUMENTS OPERABLE</u>					
<u>FIRE ZONE</u>	<u>ROOM OR AREA</u>	<u>ELEV.</u>	<u>HEAT TOTAL MIN.</u>		<u>IONIZATION TOTAL MIN.</u>		<u>PHOTO-ELECTRIC TOTAL MIN.</u>	
a. <u>Control Building (Continued)</u>								
0-26T	Center Cable Chase	729'-1"	1	1	NA	NA	NA	NA
0-26V	North Cable Chase	729'-1"	1	1	NA	NA	NA	NA
0-27A	Upper Relay Room	754'-1"	2	1	2	1	NA	NA
0-27A	PGCC	754'-1"	55	28	30	15	NA	NA
0-27B	Upper Cable Spreading Rm.	753'-0"	24	12	5	2	NA	NA
0-27C	Upper Cable Spreading Rm.	753'-0"	25	13	6	3	NA	NA
0-27E	Upper Relay Room	754'-1"	4	2	2	1	NA	NA
0-27F	South Cable Chase	754'-1"	1	1	NA	NA	NA	NA
0-27G	Center Cable Chase	754'-1"	1	1	NA	NA	NA	NA
0-27H	North Cable Chase	754'-1"	1	1	NA	NA	NA	NA
0-28A	Equipment Room	771'-0"	NA	NA	4	2	NA	NA
0-28B	Equipment Room	771'-0"	NA	NA	4	2	NA	NA
0-28C	Battery Room	771'-0"	NA	NA	1	1	NA	NA
0-28D	Battery Room	771'-0"	NA	NA	1	1	NA	NA
0-28E	Battery Room	771'-0"	NA	NA	1	1	NA	NA
0-28F	Battery Room	771'-0"	NA	NA	1	1	NA	NA
0-28G	Battery Room	771'-0"	NA	NA	1	1	NA	NA
0-28H	Repair Shop	771'-0"	NA	NA	2	1	NA	NA
0-28I	Battery Room	771'-0"	NA	NA	1	1	NA	NA
0-28J	Battery Room	771'-0"	NA	NA	1	1	NA	NA
0-28K	Battery Room	771'-0"	NA	NA	1	1	NA	NA
0-28L	Battery Room	771'-0"	NA	NA	1	1	NA	NA
0-28M	Battery Room	771'-0"	NA	NA	1	1	NA	NA
0-28N	Battery Room	771'-0"	NA	NA	1	1	NA	NA
0-28P	South Cable Chase	771'-0"	1	1	NA	NA	NA	NA
0-28Q	Center Cable Chase	771'-0"	1	1	NA	NA	NA	NA
0-28R	North Cable Chase	771'-0"	1	1	NA	NA	NA	NA

TABLE 3.3.7.9-1 (Continued)  
FIRE DETECTION INSTRUMENTATION.

<u>INSTRUMENT LOCATION</u>		<u>INSTRUMENTS OPERABLE</u>						
<u>FIRE ZONE</u>	<u>ROOM OR AREA</u>	<u>ELEV.</u>	<u>HEAT TOTAL MIN.</u>		<u>IONIZATION TOTAL MIN.</u>		<u>PHOTO-ELECTRIC TOTAL MIN.</u>	
a. <u>Control Building (Continued)</u>								
0-28T	Battery Room	771'-0"	NA	NA	1	1	NA	NA
0-29B	H&V Equipment Room	783'-0"	NA	NA	10	5	NA	NA
0-30A	HVAC Equipment Room	806'-0"	NA	NA	20	10	NA	NA
b. <u>Reactor Building</u>								
2-1B	Core Spray Pump Room	645'-0"	NA	NA	6	3	NA	NA
2-1A	Core Spray Pump Room	645'-0"	NA	NA	8	4	NA	NA
2-1E	RHR Pump Room	645'-0"	NA	NA	NA	NA	13	7
2-1F	RHR Pump Room	645'-0"	NA	NA	NA	NA	15	8
2-1D	RCIC Pump Room	645'-0"	2	1	NA	NA	5	3
2-1C	HPCI Pump Room	645'-0"	2	1	NA	NA	7	4
2-1G	Sump Room	645'-0"	NA	NA	2	1	NA	NA
2-2B	Core Spray Pump Room	670'-0"	NA	NA	11	6	NA	NA
2-4C	Switchgear Room	719'-0"	NA	NA	2	1	NA	NA
2-4D	Switchgear Room	719'-0"	NA	NA	2	1	NA	NA
2-4A	Containment Access Area	719'-0"	NA	NA	26	13	3	2
2-5F	Load Center Room	749'-1"	NA	NA	2	1	NA	NA
2-5G	Load Center Room	749'-1"	NA	NA	2	1	NA	NA
2-2A	Access Area and Remote Shutdown Panel Room	670'-0"	NA	NA	6	3	NA	NA
2-3A	Access Area	683'-0"	NA	NA	4	2	NA	NA
2-3B	Access Area	683'-0"	NA	NA	14	7	NA	NA
2-3C	Access Area	683'-0"	NA	NA	NA	NA	13	7
2-4B	Pipe Penetration Room	719'-1"	NA	NA	1	1	NA	NA
2-4G	Main Steam Piping	719'-1"	NA	NA	NA	NA	4	2
2-5A	Fuel Pool Pumps and Heat Exchangers	749'-1"	NA	NA	21	11	7	4
2-5B	Valve Access Area	761'-10"	NA	NA	NA	NA	2	1
2-5C	RWCU Backwash Tank	749'-1"	NA	NA	1	1	2	1

TABLE 3.3.7.9-1 (Continued)

FIRE DETECTION INSTRUMENTATION

<u>INSTRUMENT LOCATION</u>			<u>INSTRUMENTS OPERABLE</u>					
<u>FIRE ZONE</u>	<u>ROOM OR AREA</u>	<u>ELEV.</u>	<u>HEAT TOTAL MIN.</u>		<u>IONIZATION TOTAL MIN.</u>		<u>PHOTO-ELECTRIC TOTAL MIN.</u>	
b. <u>Reactor Building (Continued)</u>								
2-5D	RWCU Pumps & Heat Exchangers	749'-1"	NA	NA	NA	NA	10	5
2-5E	Penetration Room	749'-1"	NA	NA	NA	NA	2	1
2-5H	Instrument Repair Room	749'-1"	NA	NA	2	1	NA	NA
2-6A	Access Area	779'-1"	NA	NA	10	5	NA	NA
2-6B	Load Center Room	779'-1"	NA	NA	4	2	NA	NA
2-6C	Electric Equipment Room	779'-1"	NA	NA	2	1	NA	NA
2-6E	Hatch and Laydown Area	779'-1"	NA	NA	2	1	NA	NA
2-6D	H&V Equipment Room	779'-1"	NA	NA	12	6	NA	NA
0-6G	Surge Tank Vault	779'-4"	NA	NA	2	1	NA	NA
2-7A	H&V Fan and Filter Rooms	799'-1"	24	12	14	7	NA	NA
0-8A	Refueling Floor	818'-1"	NA	NA	NA	NA	59	30
c. <u>ESSW Pumphouse</u>								
0-51	Pump Room	685'-6"	NA	NA	6	3	NA	NA
0-52	Pump Room	685'-6"	NA	NA	6	3	NA	NA
					<u>INFRA-RED (FLAME) TOTAL MIN.</u>			
d. <u>Diesel Generator Building</u>								
0-41A	Diesel Generator Rooms and	660'-0" 677'-0"	22	11	2	1	15	8
0-41C	Diesel Generator Rooms and	660'-0" 677'-0"	22	11	2	1	15	8
0-41B	Diesel Generator Rooms and	660'-0" 677'-0"	23	12	2	1	15	8
0-41D	Diesel Generator Rooms and	660'-0" 677'-0"	22	11	2	1	15	8

INFRA-RED  
(FLAME)  
TOTAL MIN.

e.

\*Not accessible.

SUSQUEHANNA - UNIT 2

3/4 3-81

e. Diesel Generator E Building

0-41E Diesel Generator Rooms  
and  
and

656'-6"  
675'-6"  
708'-0"

1 1  
NA NA  
NA NA

NA NA  
6 3  
4 2

IONIZATION  
TOTAL MIN.

18 9  
8 2  
NA NA



PLANT SYSTEMS

SPRAY AND SPRINKLER SYSTEMS

LIMITING CONDITION FOR OPERATION

3.7.6.2 The following spray and sprinkler systems shall be OPERABLE:-

- a. RCIC Pump Room, Unit 2
- b. HPCI Pump Room, Unit 2
- c. Upper Cable Spreading Room, Unit 2
- d. Lower Cable Spreading Room, Unit 2
- e. Diesel Generator A Room
- f. Diesel Generator B Room
- g. Diesel Generator C Room
- h. Diesel Generator D Room
- i. Fire Zone 2-3B
- j. Fire Zones 2-4A and 2-4B
- k. Fire Zone 2-5A
- l. Fire Zone 0-29B
- m. Fire Zone 0-30A
- n.

 APPLICABILITY: Whenever equipment protected by the spray and/or sprinkler systems is required to be OPERABLE.

ACTION:

- a. With one or more of the above required spray and/or sprinkler systems inoperable, within 1 hour establish a continuous fire watch with backup fire suppression equipment for those areas in which redundant systems or components could be damaged; for other areas, establish an hourly fire watch patrol.
- b. The provisions of Specification 3.0.3 and 3.0.4 are not applicable.

*INSERT A: n. Diesel Generator E. Building, Fire Zone 0-41E.*

## PLANT SYSTEMS

### SURVEILLANCE REQUIREMENTS

---

4.7.6.2 Each of the above required spray and sprinkler systems shall be demonstrated OPERABLE:

- a. At least once per 31 days by verifying that each valve, manual, power operated or automatic, in the flow path is in its correct position.
- b. At least once per 12 months by cycling each testable valve in the flow path through at least one complete cycle of full travel.
- c. At least once per 18 months:
  1. By performing a system functional test which includes simulated automatic actuation of the system, and:
    - a) Verifying that the automatic valves in the flow path actuate to their correct positions on a test signal, and
    - b) Cycling each valve in the flow path that is not testable during plant operation through at least one complete cycle of full travel.
  2. By a visual inspection of the dry pipe spray and sprinkler headers to verify their integrity, and
  3. By a visual inspection of each deluge nozzle's spray area to verify that the spray pattern is not obstructed.
- d. At least once per 3 years by performing an air or water flow test through each open head spray and sprinkler header and verifying each open head spray and sprinkler nozzle is unobstructed.



## PLANT SYSTEMS

### FIRE HOSE STATIONS

#### LIMITING CONDITION FOR OPERATION

3.7.6.5 The fire hose stations shown in Table 3.7.6.5-1 shall be OPERABLE.

APPLICABILITY: Whenever equipment in the areas protected by the fire hose stations is required to be OPERABLE.

#### ACTION:

- a. With one or more of the fire hose stations shown in Table 3.7.6.5-1 inoperable, route an additional fire hose of equal or greater diameter to the unprotected area(s) from an OPERABLE hose station within 1 hour if the inoperable fire hose is the primary means of fire suppression; otherwise, route the additional hose within 24 hours.
- b. The provisions of Specifications 3.0.3 and 3.0.4 are not applicable.

#### SURVEILLANCE REQUIREMENTS

4.7.6.5 Each of the fire hose stations shown in Table 3.7.6.5-1 shall be demonstrated OPERABLE:

- a. At least once per 31 days by a visual inspection of the fire hose stations accessible during plant operation to assure all required equipment is at the station.
- b. At least once per 18 months by:
  1. Visual inspection of the fire hose stations not accessible during plant operation to assure all required equipment is at the station.
  2. Removing the hose for inspection and re-racking for all fire hose stations, and
  3. Inspecting all gaskets and replacing any degraded gaskets in the couplings for all fire hose stations.
- c. At least once per 3 years by:
  1. Partially opening each hose station valve to verify valve OPERABILITY and no flow blockage.
  2. Conducting a hose hydrostatic test at a pressure of 150 psig or at least 50 psig above the maximum fire main operating pressure, whichever is greater.

TABLE 3.7.6.5-1  
FIRE HOSE STATIONS

<u>LOCATIONS</u>	<u>COLUMN</u>	<u>HOSE RACK NUMBER</u>
a. Control Structure		
EL. 697'-0"	L-26	1HR-171
EL. 697'-0"	L-32	2HR-171
EL. 714'-0"	L-26	1HR-162
EL. 714'-0"	L-31	2HR-162
EL. 729'-0"	L-25.9	1HR-158
EL. 729'-0"	L-32.1	2HR-158
EL. 754'-0"	L-26	1HR-136
EL. 754'-0"	L-32	2HR-136
EL. 771'-0"	L-26	1HR-125
EL. 771'-0"	L-31	2HR-125
b. Reactor Building		
EL. 645'-0"	R-37.4	2HR-271
EL. 645'-0"	U-30.5	2HR-272
EL. 645'-0"	R-30	2HR-273
EL. 670'-0"	Q-36	2HR-261
EL. 670'-0"	P-30.3	2HR-262
EL. 670'-0"	S-29	2HR-263
EL. 683'-0"	Q-36	2HR-251
EL. 683'-0"	Q-29	2HR-252
EL. 683'-0"	Y-29	2HR-253
EL. 719'-1"	Q-36	2HR-241
EL. 719'-1"	S-36	2HR-242
EL. 719'-1"	Q-29	2HR-243
EL. 719'-1"	T-29	2HR-244
EL. 719'-1"	S-30.5	2HR-245
EL. 749'-1"	S-36	2HR-231
EL. 749'-1"	Q-30.5	2HR-232
EL. 749'-1"	T-29	2HR-233
EL. 779'-1"	Q-36	2HR-221
EL. 779'-1"	S-34.5	2HR-222
EL. 779'-1"	Q-31.5	2HR-223
EL. 779'-1"	U-29	2HR-224
EL. 779'-1"	T-33	2HR-211
EL. 818'-1"	R-33	2HR-201
EL. 818'-1"	U-33	2HR-202

c. Diesel Generator E Building

EL. 656' 6"	NEAR North Stairwell	OHR-811
EL. 656' 6"	NEAR South Stairwell	OHR-812
EL. 676' 6"	NEAR North Stairwell	OHR-821
EL. 676' 6"	NEAR South Stairwell	OHR-822
EL. 708' 0"	NEAR North Stairwell	OHR-831
EL. 708' 0"	NEAR South Stairwell	OHR-832

### 3/4.8 ELECTRICAL POWER SYSTEMS

#### 3/4.8.1 A.C. SOURCES

##### A.C. SOURCES - OPERATING

##### LIMITING CONDITION FOR OPERATION

3.8.1.1 As a minimum, the following A.C. electrical power sources shall be OPERABLE:

- a. Two physically independent circuits between the offsite transmission network and the onsite Class 1E distribution system, and
- b. Four separate and independent diesel generators\*, each with:

of the five

- 1. Separate engine mounted day fuel tanks containing a minimum of 325 gallons of fuel,
- 2. A separate fuel storage system containing a minimum of 47,570 gallons of fuel, and
- 3. A separate fuel transfer pump.

for diesel generators A, B, C & D; and 60,480 gallons for diesel generator E, and

APPLICABILITY: OPERATIONAL CONDITIONS 1, 2, and 3.

##### ACTION: #

X for any reason other than aligning diesel generator E to the Class 1E distribution system.

- a. With either one offsite circuit or one diesel generator of the above required A.C. electrical power sources inoperable, demonstrate the OPERABILITY of the remaining A.C. sources by performing Surveillance Requirements 4.8.1.1.1.a within 1 hour and 4.8.1.1.2.a.4, for one diesel generator at a time, within 4 hours and at least once per 8 hours thereafter; restore at least two offsite circuits and four diesel generators to OPERABLE status within 72 hours or be in at least HOT SHUTDOWN within the next 12 hours and in COLD SHUTDOWN within the following 24 hours.
- b. With one offsite circuit and one diesel generator of the above required A.C. electrical power sources inoperable, demonstrate the OPERABILITY of the remaining A.C. sources by performing Surveillance Requirements 4.8.1.1.1.a within 1 hour and 4.8.1.1.2.a.4, for one diesel generator at a time, within 3 hours and at least once per 8 hours thereafter; restore at least one of the inoperable A.C. sources to OPERABLE status within 12 hours or be in at least HOT SHUTDOWN within the next 12 hours and in COLD SHUTDOWN within the following 24 hours. Restore at least two offsite circuits and four diesel generators to OPERABLE status within 72 hours from time of initial loss or be in at least HOT SHUTDOWN within the next 12 hours and in COLD SHUTDOWN within the following 24 hours.

\*Shared with Unit 1.



# Prior to but within 24 hours of removing any diesel generator from service in order to do work associated with tying in the additional diesel generator, Surveillance Requirement 4.8.1.1.2.a.4 shall be performed on the diesel generators which are to remain in service.

When any diesel generator is removed from service in order to do work associated with tying in the additional diesel generator, the ACTIONS shall read as follows:

- a. With one diesel generator of the above required A.C. electrical power sources inoperable, demonstrate the OPERABILITY of the remaining A.C. sources by performing Surveillance Requirements 4.8.1.1.1.a within one hour and 4.8.1.1.2.a.4, within 72 hours and at least once per 72 hours thereafter; restore at least four diesel generators to OPERABLE status within 60 days of accumulated tie-in outage time for all four diesels or be in at least HOT SHUTDOWN within the next 12 hours and in COLD SHUTDOWN within the following 24 hours. The provisions of Specification 3.0.4 are not applicable.
- b. With one offsite circuit and one diesel generator of the above required A.C. electrical power sources inoperable, demonstrate the OPERABILITY of the remaining A.C. sources by performing Surveillance Requirements 4.8.1.1.1.a within one hour and 4.8.1.1.2.a.4, within 24 hours and at least once per 72 hours thereafter; restore at least two offsite circuits to OPERABLE status within 12 hours or be in at least HOT SHUTDOWN within the next 12 hours and in COLD SHUTDOWN within the following 24 hours. With the two offsite circuits restored to OPERABLE status, follow ACTION a.
- c. With one diesel generator of the above required A.C. electrical power sources inoperable, in addition to ACTION a or b, above, verify within 2 hours that all required systems, subsystems, trains, components and devices that depend on the remaining diesel generators as a source of emergency power are also OPERABLE except as noted in Specification 3.7.1.2; otherwise, be in at least HOT SHUTDOWN within the next 12 hours and in COLD SHUTDOWN within the following 24 hours.
- d. With two of the above required offsite circuits inoperable, demonstrate the OPERABILITY of four diesel generators by performing Surveillance Requirement 4.8.1.1.2.a.4, for one diesel generator at a time, within four hours and at least once per 8 hours thereafter, unless the diesel generators are already operating; restore at least one of the inoperable offsite circuits to OPERABLE status within 24 hours or be in at least HOT SHUTDOWN within the next 12 hours. With only one offsite circuit restored to OPERABLE status, restore at least two offsite circuits to OPERABLE status within 72 hours from time of initial loss or be in at least HOT SHUTDOWN within the next 12 hours and in COLD SHUTDOWN within the following 24 hours.
- e. With two or more of the above required diesel generators inoperable, demonstrate the OPERABILITY of the remaining A.C. sources by performing Surveillance Requirement 4.8.1.1.1.a within one hour and 4.8.1.1.2.a.4, for one diesel generator at a time, within 2 hours; restore at least three of the diesel generators to OPERABLE status within 2 hours or be in at least HOT SHUTDOWN within the next 12 hours and in COLD SHUTDOWN within the following 24 hours. With three diesel generators restored to OPERABLE status, follow ACTION a.





## ELECTRICAL POWER SYSTEMS

### LIMITING CONDITION FOR OPERATION (Continued)

#### ACTION (Continued)

for any reason other than aligning diesel generator E to the Class 1E distribution system,

- c. With one diesel generator of the above required A.C. electrical power sources inoperable, in addition to ACTION a or b, above, verify within 2 hours that all required systems, subsystems, trains, components and devices that depend on the remaining diesel generators as a source of emergency power are also OPERABLE; otherwise, be in at least HOT SHUTDOWN within the next 12 hours and in COLD SHUTDOWN within the following 24 hours.
- d. With two of the above required offsite circuits inoperable, demonstrate the OPERABILITY of four diesel generators by performing Surveillance Requirement 4.8.1.1.2.a.4, for one diesel generator at a time, within four hours and at least once per 8 hours thereafter, unless the diesel generators are already operating; restore at least one of the inoperable offsite circuits to OPERABLE status within 24 hours or be in at least HOT SHUTDOWN within the next 12 hours. With only one offsite circuit restored to OPERABLE status, restore at least two offsite circuits to OPERABLE status within 72 hours from time of initial loss or be in at least HOT SHUTDOWN within the next 12 hours and in COLD SHUTDOWN within the following 24 hours.
- e. With two or more of the above required diesel generators inoperable, demonstrate the OPERABILITY of the remaining A.C. sources by performing Surveillance Requirement 4.8.1.1.1.a within one hour and 4.8.1.1.2.a.4, for one diesel generator at a time, within 2 hours, and at least once per 8 hours thereafter; restore at least three of the diesel generators to OPERABLE status within 2 hours or be in at least HOT SHUTDOWN within the next 12 hours and in COLD SHUTDOWN within the following 24 hours. Restore four diesel generators to OPERABLE status within 72 hours from time of initial loss or be in at least HOT SHUTDOWN within the next 12 hours and in COLD SHUTDOWN within the following 24 hours.



## ELECTRICAL POWER SYSTEMS

### SURVEILLANCE REQUIREMENTS

4.8.1.1.1 Each of the above required independent circuits between the offsite transmission network and the onsite Class 1E distribution system shall be:

- a. Determined OPERABLE at least once per 7 days by verifying correct breaker alignments and indicated power availability, and
- b. Demonstrated OPERABLE at least once per 18 months during shutdown by transferring, manually and automatically, unit power supply from the normal circuit to the alternate circuit.

4.8.1.1.2 Each of the above required diesel generators shall be demonstrated OPERABLE:

- a. In accordance with the frequency specified in Table 4.8.1.1.2-1 on a STAGGERED TEST BASIS by:
  1. Verifying the fuel level in the engine-mounted day fuel tank.
  2. Verifying the fuel level in the fuel storage tank.
  3. Verifying the fuel transfer pump starts and transfers fuel from the storage system to the engine-mounted day fuel tank.
  4. Verifying the diesel starts from ambient condition and accelerates to at least 600 rpm in less than or equal to 10 seconds. The generator voltage and frequency shall be  $4160 \pm 400$  volts and  $60 \pm 3.0$  Hz within 10 seconds after the start signal. The diesel generator shall be started for this test by using one of the following signals:
    - a) Manual.
    - b) Simulated loss of offsite power by itself.
    - c) Simulated loss of offsite power in conjunction with an ESF actuation test signal.
    - d) An ESF actuation test signal by itself.
  5. Verifying the diesel generator is synchronized, loaded to greater than or equal to 4000 kw in less than or equal to 90 seconds, and operates with this load for at least 60 minutes.
  6. Verifying the diesel generator is aligned to provide standby power to the associated emergency busses.
  7. Verifying the pressure in all diesel generator air start receivers to be greater than or equal to 240 psig.
- b. At least once per 31 days and after each operation of the diesel where the period of operation was greater than or equal to 1 hour by checking for and removing accumulated water from the engine-mounted day fuel tanks.



## ELECTRICAL POWER SYSTEMS

### SURVEILLANCE REQUIREMENTS (Continued)

- c. At least once per 92 days and from new fuel oil prior to addition to the storage tanks by verifying that a sample obtained in accordance with ASTM-D270-1975 has a water and sediment content of less than or equal to 0.05 volume percent and a kinematic viscosity @ 40°C of greater than or equal to 1.3 but less than or equal to 2.4 for 1D oil or  $>1.9$  but  $\leq 4.1$  for 2D oil when tested in accordance with ASTM-D975-77, and an impurity level of less than 2 mg of insolubles per 100 mL when tested in accordance with ASTM-D2274-70.
- d. At least once per 18 months by:
  - 1. Subjecting the diesel to an inspection in accordance with procedures prepared in conjunction with its manufacturer's recommendations for this class of standby service.
  - 2. Verifying the diesel generator capability to reject a load of greater than or equal to 1425 kW while maintaining voltage at  $4160 \pm 400$  volts and frequency at  $60 \pm 3.0$  Hz.
  - 3. Verifying the diesel generator capability to reject a load of 4000 kW without tripping. The generator voltage shall not exceed 4560 volts during and following the load rejection.
  - 4. Simulating a loss-of-offsite power by itself, and:
    - a) Verifying deenergization of the emergency busses and load shedding from the emergency busses.
    - b) Verifying the diesel generator starts on the auto-start signal, energizes the emergency busses with permanently connected loads within 10 seconds and operates for greater than or equal to 5 minutes while its generator is loaded with the shutdown loads. After energization, the steady state voltage and frequency of the emergency busses shall be maintained at  $4160 \pm 400$  volts and  $60 \pm 3.0$  Hz during this test.
  - 5. Verifying that on an ECCS actuation test signal, without loss-of-offsite power, the diesel generator starts on the auto-start signal and operates on standby for greater than or equal to 5 minutes. The generator voltage and frequency shall be  $4160 \pm 400$  volts and  $60 \pm 3.0$  Hz within 10 seconds after the auto-start signal; the steady state generator voltage and frequency shall be maintained within these limits during this test.

## ELECTRICAL POWER SYSTEMS

### SURVEILLANCE REQUIREMENTS (Continued)

6. Simulating a loss-of-offsite power in conjunction with an ECCS actuation test signal, and:
  - a) Verifying deenergization of the emergency busses and load shedding from the emergency busses.
  - b) Verifying the diesel generator starts on the auto-start signal, energizes the emergency busses with permanently connected loads within 10 seconds, energizes the auto-connected loads through the load timers and operates for greater than or equal to 5 minutes while its generator is loaded with the emergency loads. After energization, the steady state voltage and frequency of the emergency busses shall be maintained at  $4160 \pm 400$  volts and  $60 \pm 3.0$  Hz during this test.
  - c) Verifying that all automatic diesel generator trips, except engine overspeed, generator differential and engine low lube oil pressure, are automatically bypassed upon loss of voltage on the emergency bus concurrent with an ECCS actuation signal.
7. Verifying the diesel generator operates for at least 24 hours. During the first 2 hours of this test, the diesel generator shall be loaded to greater than or equal to 4700 kW and during the remaining 22 hours of this test, the diesel generator shall be loaded to 4000 kW. The generator voltage and frequency shall be  $4160 \pm 400$  volts and  $60 \pm 3.0$  Hz within 10 seconds after the start signal; the steady state generator voltage and frequency shall be maintained within these limits during this test. Within 5 minutes after completing this 24-hour test, perform Surveillance Requirement 4.8.1.1.2.d.4.b).\*
8. Verifying that the auto-connected loads to each diesel generator do not exceed the 2000-hour rating of 4700 kW.
9. Verifying the diesel generator's capability to:
  - a) Synchronize with the offsite power source while the generator is loaded with its emergency loads upon a simulated restoration of offsite power,
  - b) Transfer its loads to the offsite power source, and
  - c) Be restored to its standby status.

for diesel generators A, B, C & D and the continuous rating of 3000 kW for diesel generator E.

\*If Surveillance Requirement 4.8.1.1.2.d.4.b) is not satisfactorily completed, it is not necessary to repeat the preceding 24-hour test. Rather, the diesel generator may be operated at 4000 kW for 1 hour or until operating temperature has stabilized.





## ELECTRICAL POWER SYSTEMS

### SURVEILLANCE REQUIREMENTS (Continued)

10. Verifying that with the diesel generator operating in a test mode and connected to its bus, a simulated ECCS actuation signal overrides the test mode by (1) returning the diesel generator to standby operation, and (2) automatically energizes the emergency loads with offsite power.

~~11. Verifying that the fuel transfer pump transfers fuel from each fuel storage tank to the engine-mounted day tank of each diesel via the installed cross connection lines.~~

- ~~11.~~  
12. Verifying that each diesel generator loading sequence timer shown in Table 4.8.1.1.2-2 is OPERABLE with its setpoint within  $\pm 10\%$  of its design setpoint.

- ~~12.~~  
13. Verifying that the following diesel generator lockout features prevent diesel generator starting and/or operation only when required:

- a) Engine overspeed.
- b) Generator differential.
- c) Engine low lube oil pressure.

- e. At least once per 10 years or after any modifications which could affect diesel generator interdependence by starting all diesel generators simultaneously, during shutdown, and verifying that all diesel generators accelerate to at least 600 rpm in less than or equal to 10 seconds.

- f. At least once per 10 years by:

- 1. Draining each fuel oil storage tank, removing the accumulated sediment and cleaning the tank using a sodium hypochlorite or equivalent solution, and
- 2. Performing a pressure test of those portions of the diesel fuel oil system designed to Section III, subsection ND of the ASME Code in accordance with ASME Code Section XI Article IWD-5000.

4.8.1.1.3  
4.8.1.1.4  
~~4.8.1.1.3~~ Reports - All diesel generator failures, valid or nonvalid, shall be reported to the Commission in a Special Report pursuant to Specification 6.9.2 within 30 days. Reports of diesel generator failures shall include the information recommended in Regulatory Position C.3.b of Regulatory Guide 1.108, Revision 1, August 1977. If the number of failures in the last 100 valid tests, on a per nuclear unit basis, is greater than or equal to 7, the report shall be supplemented to include the additional information recommended in Regulatory Position C.3.b of Regulatory Guide 1.108, Revision 1, August 1977.

of the required diesel generators



TABLE 4.8.1.1.2-1

DIESEL GENERATOR TEST SCHEDULE

<u>Number of Failures in Last 100 Valid Tests*</u> <sup>(#)</sup>	<u>Test Frequency</u>
$\leq 1$	At least once per 31 days
2	At least once per 14 days
3	At least once per 7 days
$\geq 4$	At least once per 3 days

\*Criteria for determining number of failures and number of valid tests shall be in accordance with Regulatory Position C.2.e of Regulatory Guide 1.108, Revision 1, August 1977, where the last 100 tests are determined on a per nuclear unit basis. For the purposes of this test schedule, only valid tests conducted after the OL issuance date shall be included in the computation of the "last 100 valid tests." Entry into this test schedule shall be made at the 31 day test frequency.

# When diesel generator E is not aligned to the Class 1E distribution system, any failures will not be credited to the total failures for determining the test frequency of the diesel generators required to be OPERABLE

TABLE 4.8.1.1.2-2

## UNIT 1 AND UNIT 2

DIESEL GENERATOR LOADING TIMERS

<u>DEVICE TAG NO.</u>	<u>SYSTEM</u>	<u>LOCATION</u>	<u>TIME SETTING</u>
62A-20102	RHR Pump 1A	1A201	3 sec
62A-20202	RHR Pump 1B	1A202	3 sec
62A-20302	RHR Pump 1C	1A203	3 sec
62A-20402	RHR Pump 1D	1A204	3 sec
62A-20102	RHR Pump 2A	2A201	3 sec
62A-20202	RHR Pump 2B	2A202	3 sec
62A-20302	RHR Pump 2C	2A203	3 sec
62A-20402	RHR Pump 2D	2A204	3 sec
K116A	CS pp 1A	1C626	10.5 sec
K116B	CS pp 1B	1C627	10.5 sec
K125A	CS pp 1C	1C626	10.5 sec
K125B	CS pp 1D	1C627	10.5 sec
K116A	CS pp 2A	2C626	10.5 sec
K116B	CS pp 2B	2C627	10.5 sec
K125A	CS pp 2C	2C626	10.5 sec
K125B	CS pp 2D	2C627	10.5 sec
62AX2-20108	Emergency Service Water (ESW)	1A201	40 sec
62AX2-20208	Emergency Service Water (ESW)	1A202	40 sec
62AX2-20303	Emergency Service Water (ESW)	1A203	44 sec
62AX2-20403	Emergency Service Water (ESW)	1A204	48 sec
62X3-20304	Control Structure Chilled Water System	0C877A	60 sec
62X3-20404	Control Structure Chilled Water System	0C877B	60 sec
62X-20104	Emergency Switchgear Rm Cooler A & RHR SW pp H&V Fan A	0C877A	60 sec

TABLE 4.8.1.1.2-2 (Continued)

UNIT 1 AND UNIT 2

DIESEL GENERATOR LOADING TIMERS

DEVICE TAG NO.	SYSTEM	LOCATION	TIME SETTING
62X-20204	Emergency Switchgear Rm Cooler B & RHR SW pp H&V Fan B	0C877B	60 sec
262X-20104	Emergency Switchgear Rm Cooler A	0C877A	120 sec
262X-20204	Emergency Switchgear Rm Cooler B	0C877B	120 sec
* 62X-516	DG Rm Exh Fan A	0B516	2 min
* 62X-526	DG Rm Exh Fan B	0B526	2 min
* 62X-536	DG Rm Exh Fan C	0B536	2 min
* 62X-546	DG Rm Exh Fan D	0B546	2 min
62X1-20304	Control Structure Chilled Water System	0C877A	3 min
62X1-20404	Control Structure Chilled Water System	0C877B	3 min
62X2-20310	Control Structure Chilled Water System	0C876A	3 min
62X2-20410	Control Structure Chilled Water System	0C876B	3 min
62X2-20304	Control Structure Chilled Water System	0C877A	3.5 min
62X2-20404	Control Structure Chilled Water System	0C877B	3.5 min
62X-K11AB	Emergency Switchgear Rm Cooling Compressor A	2CB250A	260 sec
62X-K11BB	Emergency Switchgear Rm Cooling Compressor B	2CB250B	260 sec

INSERT  
A

INSERT  
A

* CRX-5652A	DG Room SUPPLY FAN E1	0B565	2 min
* CRX-5652A	DG Room SUPPLY FAN E2	0B565	2 min.
* 62X-5653A	DG Room EXHAUST FAN E3	0B565	3 min **
* 62X-56552A	DG Room EXHAUST FAN E4	0B565	3 min ***

SUSQUEHANNA - UNIT 2

3/4 8-9

\* When associated diesel generator is declared  
OPERABLE

\*\* Starts 1 min after E2 starts

\*\*\* Starts 1 min after E1 starts

INSERT A

4.8.1.1.3 When substituting diesel generator E for diesel generator A,B,C or D, diesel generator E shall be demonstrated OPERABLE by:

- a. Verifying diesel generator E energizes the appropriate emergency bus.
- b. Verifying that at least once within the previous 31 days the following have been verified:
  1. The fuel level in the engine-mounted day fuel tank.
  2. The fuel level in the fuel storage tank.
  3. The fuel transfer pump started and transferred fuel from the storage system to the engine-mounted day fuel tank.
  4. The diesel manually started from ambient condition and accelerates to at least 600 rpm in less than or equal to 10 seconds. The generator voltage and frequency were  $4160 \pm 400$  volts and  $60 \pm 3.0$  Hz within 10 seconds after the start signal.
  5. The diesel generator was synchronized, loaded to greater than or equal to 4000 kw in less than or equal to 90 seconds, and operated with this load for at least 60 minutes.
  6. The pressure in the diesel generator air start receivers to be greater than or equal to 240 psig.
- c. Verifying that at least once within the previous 31 days and after each operation of the diesel, within the previous 31 days, where the period of operation was greater than or equal to 1 hour that a check was made for accumulated water from the engine-mounted day fuel tanks.
- d. Verifying that at least once within the previous 92 days and from new fuel oil prior to addition to the storage tanks that a sample obtained in accordance with ASTM-D270-1975 has a water and sediment content of less than or equal to .05 volume percent and a kinematic viscosity @ 40°C of greater than or equal to 1.3 but less than or equal to 2.4 for 1D oil or 1.9 but 4.1 for 2D oil when tested in accordance with ASTM-D975-77, and an impurity level of less than 2 mg. of insolubles per 100 ml. when tested in accordance with ASTM-D2274-70.
- e. Verifying that at least once within the previous 18 months if specification 4.8.1.1.2.d has not been performed:
  1. An inspection in accordance with procedures prepared in conjunction with its manufacturer's recommendations for this class of standby service was performed.
  2. The diesel generators capability to reject a load of greater than or equal to 1425 kw while maintaining voltage at  $4160 \pm 400$  volts and frequency at  $60 \pm 3.0$  Hz was tested.

...the ... of ...  
...the ... of ...  
...the ... of ...

...the ... of ...  
...the ... of ...  
...the ... of ...  
...the ... of ...  
...the ... of ...

...the ... of ...  
...the ... of ...  
...the ... of ...

...the ... of ...  
...the ... of ...  
...the ... of ...

...the ... of ...  
...the ... of ...  
...the ... of ...  
...the ... of ...  
...the ... of ...

...the ... of ...  
...the ... of ...  
...the ... of ...  
...the ... of ...

...the ... of ...  
...the ... of ...  
...the ... of ...

3. The diesel generators capability to reject a load of 4000 kw without tripping. The generator voltage shall not exceed 4360 volts during and following the load rejection was tested.
4. The diesel generator operated for at least 24 hours. During the first 2 hours of this test, the diesel generator was loaded to greater than or equal to 4700 kW and during the remaining 22 hours of this test, the diesel generator was be loaded to 4000 kW. The generator voltage and frequency shall be  $4160 \pm 400$  volts and  $60 \pm 3.0$  Hz within 10 seconds after the start signal; the steady state generator voltage and frequency were maintained within these limits during this test.
5. The following diesel generator lockout features prevented diesel generator starting and/or operation only when required:
  - a) Engine overspeed.
  - b) Generator differential.
  - c) Engine low lube oil pressure.
6. Either:
  - a) That on a rotational basis, diesel generator E was substituted for diesel generator A, B, C, or D and a loss-of-offsite power was simulated in conjunction with an ECCS actuation test signal and:
    - i) Diesel generator E started on the auto start signal, energized the emergency busses with permanently connected loads within 10 seconds, energized the auto-connected loads through the load timers and operated for greater than or equal to 5 minutes while its generator is loaded with the emergency loads. After energization, the steady state voltage and frequency of the emergency busses were maintained at  $4160 \pm 400$  volts and  $60 \pm 30$  Hz during this test, and
    - ii) With the diesel generator operating in a test mode and connected to its bus, a simulated ECCS actuation signal overrode the test mode by (1) returning the diesel generator to standby operation, and (2) automatically energizes the emergency loads with off-site power; or
  - b) That by simulating a loss-of-offsite power in conjunction with an ECCS actuation test signal and:
    - i) Diesel generator E started on the auto start signal, energized the simulated emergency bus with simulated permanently connected loads within 10 seconds, energized the simulated auto-connected loads and operated for greater than or equal to 5 minutes while



1. The first part of the report deals with the general situation of the country and the progress of the work during the year. It is a summary of the work done by the various departments and a statement of the results achieved. It is a general statement of the work done by the various departments and a statement of the results achieved.

2. The second part of the report deals with the work done by the various departments during the year. It is a detailed statement of the work done by the various departments and a statement of the results achieved.

3. The third part of the report deals with the work done by the various departments during the year. It is a detailed statement of the work done by the various departments and a statement of the results achieved.

4. The fourth part of the report deals with the work done by the various departments during the year. It is a detailed statement of the work done by the various departments and a statement of the results achieved.

5. The fifth part of the report deals with the work done by the various departments during the year. It is a detailed statement of the work done by the various departments and a statement of the results achieved.

6. The sixth part of the report deals with the work done by the various departments during the year. It is a detailed statement of the work done by the various departments and a statement of the results achieved.

its generator is loaded with the simulated emergency loads. After energization, the steady state voltage and frequency of the emergency busses were maintained at  $4160 \pm 400$  volts and  $60 \pm 3.0$  Hz during this test, and

- ii) On a rotational basis, diesel generator E was substituted for diesel generator A, B, C, or D and verify that diesel generator E energized the appropriate emergency bus.
- e. Verifying that once per 10 years if Specification 4.8.1.1.2f has not been performed:
- 1. The fuel oil storage tank has been drained, removing the accumulated sediment and cleaned using a sodium hypochlorite or equivalent solution, and
  - 2. A pressure test of those portions of the diesel fuel oil system designed to Section III, subsection ND of the ASME Code in accordance with ASME Code Section II Article IWD-5000 has been performed.

1. The first part of the document is a list of names and addresses of the members of the committee. The names are written in a cursive hand, and the addresses are written in a printed hand. The list is organized in two columns, with names on the left and addresses on the right.

2. The second part of the document is a list of names and addresses of the members of the committee. The names are written in a cursive hand, and the addresses are written in a printed hand. The list is organized in two columns, with names on the left and addresses on the right.

3. The third part of the document is a list of names and addresses of the members of the committee. The names are written in a cursive hand, and the addresses are written in a printed hand. The list is organized in two columns, with names on the left and addresses on the right.

4. The fourth part of the document is a list of names and addresses of the members of the committee. The names are written in a cursive hand, and the addresses are written in a printed hand. The list is organized in two columns, with names on the left and addresses on the right.

5. The fifth part of the document is a list of names and addresses of the members of the committee. The names are written in a cursive hand, and the addresses are written in a printed hand. The list is organized in two columns, with names on the left and addresses on the right.

## ELECTRICAL POWER SYSTEMS

### A.C. SOURCES - SHUTDOWN

#### LIMITING CONDITION FOR OPERATION

3.8.1.2 As a minimum, the following A.C. electrical power sources shall be OPERABLE:

- a. One circuit between the offsite transmission network and the onsite Class 1E distribution system, and

- b. Two diesel generators <sup>each</sup> with:

1. An engine mounted day fuel tank containing a minimum of 325 gallons of fuel <sup>for diesel generators A, B, C, and D; and 60,480 gallons of fuel for diesel generator E,</sup>
2. A fuel storage system containing a minimum of 47,570 gallons of fuel.
3. A fuel transfer pump.

of the five separate and independent

APPLICABILITY: OPERATIONAL CONDITIONS 4, 5 and \*.

#### ACTION:

- a. With less than the above required A.C. electrical power sources OPERABLE, suspend CORE ALTERATIONS, handling of irradiated fuel in the secondary containment, operations with a potential for draining the reactor vessel and crane operations over the spent fuel pool when fuel assemblies are stored therein. In addition, when in OPERATIONAL CONDITION 5 with the water level less than 22 feet above the reactor pressure vessel flange, immediately initiate corrective action to restore the required power sources to OPERABLE status as soon as practical.
- b. The provisions of Specification 3.0.3 are not applicable.

#### SURVEILLANCE REQUIREMENTS

4.8.1.2 At least the above required A.C. electrical power sources shall be demonstrated OPERABLE per Surveillance Requirements 4.8.1.1.1, 4.8.1.1.2 and ~~4.8.1.1.3~~, except for the requirement of 4.8.1.1.2.a.5.

4.8.1.1.4

\*When handling irradiated fuel in the secondary containment.

## ELECTRICAL POWER SYSTEMS

### 3/4.8.2 D.C. SOURCES

#### D.C. SOURCES - OPERATING

##### LIMITING CONDITION FOR OPERATION

3.8.2.1 As a minimum, the following D.C. electrical power sources shall be OPERABLE:

- a. Division I, consisting of:
  - 1. Load group Channel "A" power source consisting of:
    - a) 125-volt D.C. battery bank 1D610\*, 2D610
    - b) Full capacity charger 1D613\*, 2D613
  - 2. Load group Channel "C" power source consisting of:
    - a) 125-volt D.C. battery bank 1D630\*, 2D630
    - b) Full capacity charger 1D633\*, 2D633
  - 3. Load group "I" power source consisting of:
    - a) 250-volt D.C. battery 2D650
    - b) Half-capacity chargers 2D653A, 2D653B
  - 4. Load group "I" power source consisting of:
    - a)  $\pm$  24-volt D.C. battery bank 2D670
    - b) Two half-capacity chargers 2D673, 2D674
- b. Division II, consisting of:
  - 1. Load group Channel "B" power source consisting of:
    - a) 125-volt D.C. battery bank 1D620\*, 2D620
    - b) Full capacity charger 1D623\*, 2D623
  - 2. Load group Channel "D" power source consisting of:
    - a) 125-volt D.C. battery bank 1D640\*, 2D640
    - b) Full capacity charger 1D643\*, 2D643
  - 3. Load group "II" power source consisting of:
    - a) 250-volt D.C. battery bank 2D660
    - b) Full capacity charger 2D663
  - 4. Load group "II" power source consisting of:
    - a)  $\pm$  24-volt D.C. battery bank 2D680
    - b) Two half-capacity chargers 2D683, 2D684

c.

APPLICABILITY: OPERATIONAL CONDITIONS 1, 2, and 3

##### ACTION:

- a. With one of the above required Unit 2 125-volt or 250-volt D.C. load group battery banks inoperable, restore the inoperable battery bank to OPERABLE status within 2 hours or be in at least HOT SHUTDOWN within the next 12 hours and in COLD SHUTDOWN within the following 24 hours.

\*Not required to be OPERABLE when the requirements of ACTION b have been satisfied.

Insert A

c. Diesel Generator E

1. Load group power source, consisting of:

- a) 125 volt DC battery bank OD595
- b) Full capacity charger OD596

## ELECTRICAL POWER SYSTEMS

### LIMITING CONDITION FOR OPERATION (Continued)

#### ACTION: (Continued)

- b. With one or more of the above required Unit 1 125-volt D.C. load group battery banks inoperable, within 2 hours either:

1. Restore the inoperable battery bank(s) to OPERABLE status, or
2. Transfer the common loads aligned to the inoperable Unit 1 battery bank(s) to the corresponding Unit 2 battery bank(s).

Otherwise, declare the common loads aligned to the inoperable Unit 1 battery bank(s) inoperable and take the ACTION required by the applicable Specification(s).

- c. With one of the above required  $\pm$  24-volt D.C. load group battery banks inoperable, declare the associated equipment inoperable and take the ACTION required by the applicable Specification(s).

d. With one of the above required chargers inoperable, demonstrate the OPERABILITY of its associated battery bank by performing Surveillance Requirement 4.8.2.1a.1. within 1 hour and at least once per 8 hours thereafter. If any Category A limit in Table 4.8.2.1-1 is not met, declare the battery inoperable.

Division I or Division II

SEE  
INSERT B

e.  
f.  
g.  
h.

#### SURVEILLANCE REQUIREMENTS

4.8.2.1 Each of the above required  $\pm$  24-volt, 125-volt, and 250-volt batteries and chargers shall be demonstrated OPERABLE:

- a. At least once per 7 days by verifying that:
1. The parameters in Table 4.8.2.1-1 meet the Category A limits, and
  2. There is correct breaker alignment to the battery chargers, and total battery terminal voltage is greater than or equal to 26, 129, 258 volts on float charge.
- b. At least once per 92 days and within 7 days after a battery discharge with battery terminal voltage below 22, 110, or 220 volts, as applicable, or battery overcharge with battery terminal voltage above 30, 150 or 300 volts, as applicable, by verifying that:
1. The parameters in Table 4.8.2.1-1 meet the Category B limits,
  2. There is no visible corrosion at either terminals or connectors, or the connection resistance of these items is less than  $150 \times 10^{-6}$  ohm, and
  3. The average electrolyte temperature of 4, 10, or 20, as applicable, of connected cells for the 24, 125, and 250 volt batteries is above 60°F.

Insert B

- 10
- <sup>e</sup> f. With the above required diesel generator E 125 volt DC load group battery bank inoperable and diesel generator E not aligned to the Class 1E distribution system, restore the battery bank to OPERABLE status within 2 hours or verify that all ESW valves associated with diesel generator E are closed and diesel generator E is not running within 2 hours. The provisions of Specification 3.0.4 are not applicable.
- <sup>f</sup> g. With the above required diesel generator E 125 volt DC load group battery bank inoperable and diesel generator E aligned to the Class 1E distribution system, restore the battery bank to OPERABLE status within 2 hours or declare diesel generator E inoperable and take the ACTION required by specification 3.8.1.1.
- <sup>g</sup> h. With the above required diesel generator E 125 volt DC charger inoperable and diesel generator E aligned to the Class 1E distribution system, demonstrate the OPERABILITY of the associated battery bank by performing Surveillance Requirement 4.8.2.1.a.1 within one hour and at least once per 8 hours thereafter. If any Category A limit in Table 4.8.2.1-1 is not met, declare diesel generator E inoperable and take the ACTION required by specification 3.8.1.1.
- <sup>h</sup> i. With the above required diesel generator E charger inoperable and diesel generator E not aligned to the Class 1E distribution system, demonstrate the OPERABILITY of its associated battery bank by performing Surveillance Requirement 4.8.2.1.a.1 within 1 hour and at least once per 8 hours thereafter. If any Category A limit in Table 4.8.2.1-1 is not met, declare the battery inoperable, and take the ACTION required by specification 3.8.2.1.e. The provisions of Specification 3.0.4 are not applicable.
- 10



1. The first part of the document discusses the importance of maintaining accurate records of all transactions and the role of the accounting department in ensuring the integrity of the financial data. It emphasizes the need for transparency and accountability in all financial reporting.

2. The second part of the document outlines the various methods used to collect and analyze financial data, including the use of spreadsheets, databases, and specialized accounting software. It also discusses the importance of regular audits and the role of external auditors in verifying the accuracy of the financial statements.

3. The third part of the document focuses on the importance of budgeting and financial planning. It discusses the process of setting financial goals and the role of the accounting department in monitoring progress and making adjustments as needed. It also emphasizes the importance of communicating financial information to management and other stakeholders.

4. The fourth part of the document discusses the importance of maintaining accurate records of all transactions and the role of the accounting department in ensuring the integrity of the financial data. It emphasizes the need for transparency and accountability in all financial reporting.

5. The fifth part of the document outlines the various methods used to collect and analyze financial data, including the use of spreadsheets, databases, and specialized accounting software. It also discusses the importance of regular audits and the role of external auditors in verifying the accuracy of the financial statements.

6. The sixth part of the document focuses on the importance of budgeting and financial planning. It discusses the process of setting financial goals and the role of the accounting department in monitoring progress and making adjustments as needed. It also emphasizes the importance of communicating financial information to management and other stakeholders.

7. The seventh part of the document discusses the importance of maintaining accurate records of all transactions and the role of the accounting department in ensuring the integrity of the financial data. It emphasizes the need for transparency and accountability in all financial reporting.

8. The eighth part of the document outlines the various methods used to collect and analyze financial data, including the use of spreadsheets, databases, and specialized accounting software. It also discusses the importance of regular audits and the role of external auditors in verifying the accuracy of the financial statements.

9. The ninth part of the document focuses on the importance of budgeting and financial planning. It discusses the process of setting financial goals and the role of the accounting department in monitoring progress and making adjustments as needed. It also emphasizes the importance of communicating financial information to management and other stakeholders.

10. The tenth part of the document discusses the importance of maintaining accurate records of all transactions and the role of the accounting department in ensuring the integrity of the financial data. It emphasizes the need for transparency and accountability in all financial reporting.

## ELECTRICAL POWER SYSTEMS

### SURVEILLANCE REQUIREMENTS (Continued)

- c. At least once per 18 months by verifying that:
1. The cells, cell plates, and battery racks show no visual indication of physical damage or abnormal deterioration,
  2. The cell-to-cell and terminal connections are clean, tight, free of corrosion, and coated with anticorrosion material,
  3. The resistance of each cell-to-cell and terminal connection of each 125-volt and 250-volt battery is less than or equal to  $150 \times 10^{-6}$  ohm, and
  4. The battery charger, for at least 4 hours, will supply at least:
    - a) For the + 24-volt batteries, 25 amperes at a minimum of 25.7 volts.
    - b) For the 125-volt batteries, 100 amperes at a minimum of 127.8 volts.
    - c) For the 250-volt batteries, 300 amperes at a minimum of 255.6 volts.
    - d)
- d. At least once per 18 months by verifying that either:

1. The battery capacity is adequate to supply and maintain in OPERABLE status all of the actual emergency loads for the design duty cycle when the battery is subjected to a battery service test, or
2. The battery capacity is adequate to supply a dummy load of the following profile, which is verified to be greater than the actual emergency loads, while maintaining the battery terminal voltage greater than or equal to  $\pm 21, 105$  or 210 volts, as applicable.
  - a) For + 24-volt battery banks 2D670, 2D670-1, 2D680, and 2D680-1, 9.37 amperes for the entire 4-hour test.
  - b) For 125-volt batteries:
    - 1) Channel "A" battery 1D612: 325 amperes for 60 seconds  
107 amperes for the remainder of the 4 hour test
    - 2) Channel "B" battery 1D622: 323 amperes for 60 seconds  
105 amperes for the remainder of the 4 hour test
    - 3) Channel "C" battery 1D632: 340 amperes for 60 seconds  
121 amperes for the remainder of the 4 hour test
    - 4) Channel "D" battery 1D642: 323 amperes for 60 seconds  
104 amperes for the remainder of the 4 hour test.
    - 5) Channel "A" battery 2D612: 328 amperes for 60 seconds  
112 amperes for the remainder of the 4 hour test
    - 6) Channel "B" battery 2D622: 326 amperes for 60 seconds  
110 amperes for the remainder of the 4 hour test
    - 7) Channel "C" battery 2D632: 343 amperes for 60 seconds  
128 amperes for the remainder of the 4 hour test
    - 8) Channel "D" battery 2D642: 326 amperes for 60 seconds  
111 amperes for the remainder of the 4 hour test

9) Channel "H" battery OD595:  
286 amperes for the first 60 seconds  
95 amperes for the next 238 minutes  
155 amperes for the last minute of  
the 4 hour test.



## ELECTRICAL POWER SYSTEMS

### SURVEILLANCE REQUIREMENTS (Continued)

---

- c) For 250-volt batteries:
  - 1) Battery bank 2D650:  
458 amperes for 60 seconds  
251 amperes for 239 minutes
  - 2) Battery bank 2D660:  
1119 amperes for 60 seconds  
244 amperes for 239 minutes
- e. At least once per 60 months by verifying that the battery capacity is at least 80% of the manufacturer's rating when subjected to a performance discharge test. Once per 60-month interval, this performance discharge test may be performed in lieu of the battery service test.
- f. Annual performance discharge tests of battery capacity shall be given to any battery that shows signs of degradation or has reached 85% of the service life expected for the application. Degradation is indicated when the battery capacity drops more than 10% of rated capacity from its average on previous performance tests, or is below 90% of the manufacturer's rating.

TABLE 4.8.2.1-1

BATTERY SURVEILLANCE REQUIREMENTS

Parameter	CATEGORY A <sup>(1)</sup>	CATEGORY B <sup>(2)</sup>	
	Limits for each designated pilot cell	Limits for each connected cell	Allowable <sup>(3)</sup> value for each connected cell
Electrolyte Level	>Minimum level indication mark, and $\leq \frac{1}{4}$ " above maximum level indication mark	>Minimum level indication mark, and $\leq \frac{1}{4}$ " above maximum level indication mark	Above top of plates, and not overflowing
Float Voltage	$\geq 2.13$ volts	$\geq 2.13$ volts <sup>(c)</sup>	$> 2.07$ volts
Specific Gravity <sup>(a)</sup>	$\geq 1.200$ <sup>(b)</sup>	$\geq 1.195$ <sup>(b)</sup>  Average of all connected cells $> 1.205$ <sup>(b)</sup>	Not more than 0.020 below the average of all connected cells  Average of all connected cells $\geq 1.195$ <sup>(b)</sup>

(a) Corrected for electrolyte temperature and level.

(b) Or battery charging current is less than 0.01, 0.1 and 0.25 amperes for the  $\pm 24$ , 125 and 250 volt batteries respectively, when on float charge.

(c) May be corrected for average electrolyte temperature.

(1) For any Category A parameter(s) outside the limit(s) shown, the battery may be considered OPERABLE provided that within 24 hours all the Category B measurements are taken and found to be within their allowable values, and provided all Category A and B parameter(s) are restored to within limits within the next 6 days.

(2) For any Category B parameter(s) outside the limit(s) shown, the battery may be considered OPERABLE provided that the Category B parameters are within their allowable values and provided the Category B parameter(s) are restored to within limits within 7 days.

(3) Any Category B parameter not within its allowable value indicates an inoperable battery.



## ELECTRICAL POWER SYSTEMS

### D.C. SOURCES - SHUTDOWN

#### LIMITING CONDITION FOR OPERATION

3.8.2.2 As a minimum, Division I or Division II of the D.C. electrical power sources shall be OPERABLE with:

a. Division I consisting of:

1. Load group Channel "A" power source, consisting of:
  - a) 125-volt D.C. battery bank 1D610\*\*, 2D610
  - b) Full capacity charger 1D613\*\*, 2D613
2. Load group Channel "C" power source, consisting of:
  - a) 125-volt D.C. battery bank 1D630\*\*, 2D630
  - b) Full capacity charger 1D633\*\*, 2D633
3. Load group "I" power source, consisting of:
  - a) 250-volt D.C. battery bank 2D650
  - b) Half-capacity chargers 2D653A, 2D653B
4. Load group "I" power source, consisting of:
  - a)  $\pm$  24-volt D.C. battery bank 2D670
  - b) Two half-capacity chargers 2D673, 2D674

b. Division II consisting of:

1. Load group Channel "B" power source, consisting of:
  - a) 125-volt D.C. battery bank 1D620\*\*, 2D620
  - b) Full capacity charger 1D623\*\*, 2D623
2. Load group Channel "D" power source, consisting of:
  - a) 125-volt D.C. battery bank 1D640\*\*, 2D640
  - b) Full capacity charger 1D643\*\*, 2D643
3. Load group "II" power source, consisting of:
  - a) 250-volt D.C. battery bank 2D660
  - b) Full capacity charger 2D663
4. Load group "II" power source, consisting of:
  - a)  $\pm$  24-volt D.C. battery bank 2D680
  - b) Two half-capacity chargers 2D683, 2D684

SEE  
INSERT A - C.

APPLICABILITY: OPERATIONAL CONDITIONS 4, 5, and \*.

ACTION:

Division I (~~3.8.2.2.a~~) or Division II (~~3.8.2.2.b~~)

- a. With less than the above required Unit 2 125-volt and/or 250-volt D.C. load group battery banks OPERABLE, suspend CORE ALTERATIONS, handling of irradiated fuel in the secondary containment and operations with a potential for draining the reactor vessel.

\*When handling irradiated fuel in the secondary containment.

\*\*Not required to be OPERABLE when the requirements of ACTION b have been satisfied.

Insert A

c. Diesel Generator E

1. Load group power source, consisting of:

- a) 125 volt DC battery bank      OD595
- b) Full capacity charger      OD596





## ELECTRICAL POWER SYSTEMS

### LIMITING CONDITION FOR OPERATION (Continued)

#### ACTION: (Continued)

- b. With less than the above required Unit 1 125-volt D.C. load group battery banks OPERABLE, either:
1. Suspend CORE ALTERATIONS, handling of irradiated fuel in the secondary containment and operations with a potential for draining the reactor vessel, or
  2. Transfer the common loads aligned to the inoperable Unit 1 battery bank(s) to the corresponding Unit 2 battery bank(s).

Otherwise, declare the common loads aligned to the inoperable Unit 1 battery bank(s) inoperable and take the ACTION required by the applicable Specification(s).

- c. With the above required  $\pm$  24-volt D.C. load group battery banks inoperable, declare the associated equipment inoperable and take the ACTION required by the applicable Specification(s).
- d. With the above required charger(s) inoperable, demonstrate the OPERABILITY of the associated battery by performing Surveillance Requirement 4.8.2.1.a.1 within one hour and at least once per 8 hours thereafter. If any Category A limit in Table 4.8.2.1-1 is not met, declare the battery inoperable.
- e. The provisions of Specification 3.0.3 are not applicable.

Division I (3.0.3.a) or  
Division II (3.0.3.b)

SEE  
INSERT B ←

f.  
g.  
h.  
i.

### SURVEILLANCE REQUIREMENTS

4.8.2.2 At least the above required battery and charger shall be demonstrated OPERABLE per Surveillance Requirement 4.8.2.1.

Insert B

- f. With the above required diesel generator E 125 volt DC load group battery bank inoperable and diesel generator E not aligned to the Class 1E distribution system, restore the battery bank to OPERABLE status within 2 hours or verify that all ESW valves associated with diesel generator E are closed and diesel generator E is not running within 2 hours. The provisions of Specification 3.0.4 are not applicable.
- g. With the above required diesel generator E 125 volt DC load group battery bank inoperable and diesel generator E aligned to the Class 1E distribution system, restore the battery bank to OPERABLE status within 2 hours or declare diesel generator E inoperable and take the ACTION required by specification 3.8.1.1.
- h. With the above required diesel generator E 125 volt DC charger inoperable and diesel generator E aligned to the Class 1E distribution system, demonstrate the OPERABILITY of the associated battery bank by performing Surveillance Requirement 4.8.2.1.a.1 within one hour and at least once per 8 hours thereafter. If any Category A limit in Table 4.8.2.1-1 is not met, declare diesel generator E inoperable and take the ACTION required by specification 3.8.1.1.
- i. With the above required diesel generator E charger inoperable and diesel generator E not aligned to the Class 1E distribution system, demonstrate the OPERABILITY of its associated battery bank by performing Surveillance Requirement 4.8.2.1.a.1 within 1 hour and at least once per 8 hours thereafter. If any Category A limit in Table 4.8.2.1-1 is not met, declare the battery inoperable, and take the ACTION required by specification 3.8.2.1.f. The provisions of Specification 3.0.4 are not applicable.



## ELECTRICAL POWER SYSTEMS

### 3/4.8.3 ONSITE POWER DISTRIBUTION SYSTEMS

#### DISTRIBUTION - OPERATING

#### LIMITING CONDITION FOR OPERATION

3.8.3.1 The following power distribution system divisions shall be energized with tie breakers open both between redundant buses within the unit and between units at the same station:

- a. A.C. power distribution:
1. Division I, consisting of:
    - a) Load group Channel "A", consisting of:

1) 4160-volt A.C. switchgear bus	1A201, 2A201
2) 480-volt A.C. load center	1B210, 2B210
3) 480-volt A.C. motor control center	0B516
    - b) Load group Channel "C", consisting of:

1) 4160-volt A.C. switchgear bus	1A203, 2A203
2) 480-volt A.C. load center	1B230, 2B230
3) 480-volt A.C. motor control center	0B536
    - ~~c) Load group 480 volt A.C. motor control~~  
~~centers~~

	<del>0B517, 0B136</del>
	<del>1B216, 1B236,</del>
	<del>2B216, 2B236</del>
	<del>1B217, 2B237,</del>
	<del>2B217</del>
    - ~~d) Load group 208/120-volt A.C. instrument~~  
~~panels~~

	<del>1Y216, 1Y236,</del>
	<del>2Y216, 2Y236</del>
    - e) Isolated 480 volt A.C. swing bus, including: 2B219
      - 1) Preferred power source
      - 2) Preferred power source MG set
      - 3) Alternate power source
      - 4) Automatic transfer switch
  2. Division II, consisting of:
    - a) Load group Channel "B", consisting of:

1) 4160-volt A.C. switchgear bus	1A202, 2A202
2) 480-volt A.C. load center	1B220, 2B220
3) 480-volt A.C. motor control center	0B526
    - b) Load group Channel "D", consisting of:

1) 4160-volt A.C. switchgear bus	1A204, 2A204
2) 480-volt A.C. load center	1B240, 2B240
3) 480-volt A.C. motor control center	0B546
    - ~~c) Load group 480-volt A.C. motor control~~  
~~centers~~

	<del>0B527, 0B146</del>
	<del>1B226, 1B246,</del>
	<del>2B226, 2B246</del>
	<del>1B227, 2B227,</del>
	<del>2B247</del>
    - ~~d) Load group 208/120-volt A.C. instrument~~  
~~panels~~

	<del>1Y226, 1Y246</del>
	<del>2Y226, 2Y246</del>
    - e) Isolated 480 volt A.C. swing bus, including: 2B229
      - 1) Preferred power source
      - 2) Preferred power source MG set
      - 3) Alternate power source
      - 4) Automatic transfer switch

Previous change: Submitted  
Under PLA-2562 as proposed  
Amendment #74

SEE  
INSERT  
'A'

SEE  
INSERT C ← 3.



# INSERT A

## a. A.C. power distribution:

### 1. Division I, consisting of:

#### a) Load group Channel "A", consisting of:

- 1) 4160-volt A.C. switchgear bus
- 2) 480-volt A.C. load center
- 3) 480-volt A.C. motor control centers

1A201, 2A201,  
1B210, 2B210  
0B516, 0B517,  
1B216, 2B216  
1B217, 2B217  
1Y216, 2Y216

NEW CHANGE

OAS10A

#### b) Load group Channel "C", consisting of:

- 1) 4160-volt A.C. switchgear bus
- 2) 480-volt A.C. load center
- 3) 480-volt A.C. motor control centers

1A203, 2A203,  
1B230, 2B230  
0B536, 0B136  
1B236, 2B236  
2B237  
1Y236, 2Y236

NEW CHANGE

OAS10C

#### c) Isolated 480 volt A.C. swing bus, including:

- 1) Preferred power source
- 2) Preferred power source MG set
- 3) Alternate power source
- 4) Automatic transfer switch

2B219

### 2. Division II, consisting of:

#### a) Load group Channel "B", consisting of:

- 1) 4160-volt A.C. switchgear bus
- 2) 480-volt A.C. load center
- 3) 480-volt A.C. motor control centers

1A202, 2A202,  
1B220, 2B220  
0B526, 0B527  
1B226, 2B226  
1B227, 2B227  
1Y226, 2Y226

NEW CHANGE

OAS10B

#### b) Load group Channel "D", consisting of:

- 1) 4160-volt A.C. switchgear bus
- 2) 480-volt A.C. load center
- 3) 480-volt A.C. motor control centers
- 4) 208/120-volt A.C. instrument panels

1A204, 2A204,  
1B240, 2B240  
0B546, 0B146  
1Y246, 2Y246  
2B229

NEW CHANGE

OAS10D

#### e) Isolated 480 volt A.C. swing bus, including:

- 1) Preferred power source
- 2) Preferred power source MG set
- 3) Alternate power source
- 4) Automatic transfer switch





Insert C

3. Diesel Generator E, when aligned to the Class 1E system

a) Load group consisting of:

- |    |                                    |        |
|----|------------------------------------|--------|
| 1) | 4160 volt A.C. switchgear bus      | 0A510E |
| 2) | 480 volt A.C. motor control center | 0B565  |

1. The first part of the document is a list of names and addresses of the members of the committee.

2. The second part of the document is a list of names and addresses of the members of the committee.

3. The third part of the document is a list of names and addresses of the members of the committee.

4. The fourth part of the document is a list of names and addresses of the members of the committee.

## ELECTRICAL POWER SYSTEMS

### LIMITING CONDITION FOR OPERATION (Continued)

#### b. D.C. power distribution:

##### 1. Division I, consisting of:

##### a) Load group Channel "A", consisting of:

- 1) 125-volt D.C. buses

1D612\*\*, 1D614\*\*

2D612, 2D614

1D611\*\*, 2D611

- 2) Fuse box

##### b) Load group Channel "C", consisting of:

- 1) 125-volt D.C. buses

1D632\*\*, 1D634\*\*,

2D632, 2D634

1D631\*\*, 2D631

- 2) Fuse box

##### c) Load group "I", consisting of:

- 1) 250-volt D.C. buses

2D652, 2D254

- 2) Fuse box

2D651,

##### d) Load group "I", consisting of:

- 1)  $\pm$  24-volt D.C. buses

2D672

- 2) Fuse box

2D671

##### 2. Division II, consisting of:

##### a) Load group Channel "B" consisting of:

- 1) 125-volt D.C. buses

1D622\*\*, 1D624\*\*,

2D622, 2D624

1D621\*\*, 2D621

- 2) Fuse box

##### b) Load group Channel "D" consisting of:

- 1) 125-volt D.C. buses

1D642\*\*, 1D644\*\*,

2D642, 2D644

1D641\*\*, 2D641

- 2) Fuse box

##### c) Load group "II" consisting of:

- 1) 250-volt D.C. buses

2D662, 2D264, 2D274

- 2) Fuse box

2D661

##### d) Load group "II" consisting of:

- 1)  $\pm$  24-volt D.C. buses

2D682

- 2) Fuse box

2D681

SEE  
INSERT D ← 3.

APPLICABILITY: OPERATIONAL CONDITIONS 1, 2, and 3.

#### ACTION:

- a. With one of the above required <sup>Unit 2</sup> A.C. distribution system load groups not energized, reenergize the load group within 8 hours or be in at least HOT SHUTDOWN within the next 12 hours and in COLD SHUTDOWN within the following 24 hours.

Unit 2 Division I or Division II <sup>NEW CHANGE</sup>

- b. With one of the above required Unit 2 D.C. distribution system load groups not energized, reenergize the load group within 2 hours or be in at least HOT SHUTDOWN within the next 12 hours and in COLD SHUTDOWN within the following 24 hours.

Division I or Division II <sup>NON CHANGE</sup>

Previous change

SEE  
INSERT B

\*\*Not required to be OPERABLE when the requirements of ACTION <sup>d</sup> have been satisfied.

Insert D

3. Diesel Generator E

a) Load group, consisting of:

1) 125 volt DC bus OD597

10

INSERT B

- b. With one of the above required Unit 1 and common A.C. distribution system load groups not energized, re-energize the load group within 72 hours or be in at least HOT SHUTDOWN within the next 12 hours and in COLD SHUTDOWN within the following 24 hours.
- 10



## ELECTRICAL POWER SYSTEMS

### LIMITING CONDITION FOR OPERATION (Continued)

#### ACTION (Continued)

d. With one or more of the above required Unit 1 D.C. distribution system load groups not energized, within 2 hours either:

1. Reenergize the load group(s), or
2. Transfer the common loads aligned to the deenergized Unit 1 load group(s) to the corresponding Unit 2 load group(s).

Otherwise, declare the common loads aligned to the deenergized Unit 1 load group(s) inoperable and take the ACTION required by the applicable Specification(s).

e. With one or both of the isolated 480-volt A.C. swing busses inoperable, declare the associated LPCI loop inoperable (see Specification 3.5.1).

SEE  
INSERT E

#### SURVEILLANCE REQUIREMENTS

4.8.3.1.1 Each of the above required power distribution system load groups shall be determined energized at least once per 7 days by verifying correct breaker alignment and voltage on the busses/MCCs/panels.

4.8.3.1.2 The isolated 480-volt A.C. swing bus automatic transfer switches shall be demonstrated OPERABLE at least once per 31 days by actuating the load test switch or by disconnecting the preferred power source to the transfer switch and verifying that swing bus automatic transfer is accomplished.

Insert E

- f. With the above required diesel generator E A.C. distribution system load group not energized and diesel generator E aligned to the Class 1E distribution system, re-energize the load group within 24 hours or be in at least HOT SHUTDOWN within the next 12 hours and in COLD SHUTDOWN within the following 24 hours.
- g. With the above required diesel generator E 125 volt D.C. distribution system load group not energized and diesel generator E not aligned to the Class 1E distribution system, re-energize the load group within 2 hours or shutdown diesel generator E and close all ESW valves associated with diesel generator E within 2 hours. The provisions of Specification 3.0.4 are not applicable.
- h. With the above required diesel generator E 125 volt D.C. distribution system load group not energized and diesel generator E aligned to the Class 1E distribution system, re-energize the load group within 2 hours or declare diesel generator E inoperable and take the ACTION required by specification 3.8.1.1.



... ..  
... ..  
... ..

... ..  
... ..  
... ..  
... ..

... ..  
... ..  
... ..  
... ..

## ELECTRICAL POWER SYSTEMS

### DISTRIBUTION - SHUTDOWN

#### LIMITING CONDITION FOR OPERATION

3.8.3.2 As a minimum, the following power distribution system divisions shall be energized:

a. For A.C. power distribution; Division I or Division II with:

1. Division I consisting of:

a) Load group Channel "A", consisting of:

- |                                       |              |
|---------------------------------------|--------------|
| 1) 4160-volt A.C. switchgear bus      | 1A201, 2A201 |
| 2) 480-volt A.C. load center          | 1B210, 2B210 |
| 3) 480-volt A.C. motor control center | 0B516        |

b) Load group Channel "C", consisting of:

- |                                       |              |
|---------------------------------------|--------------|
| 1) 4160-volt A.C. switchgear bus      | 1A203, 2A203 |
| 2) 480-volt A.C. load center          | 1B230, 2B230 |
| 3) 480-volt A.C. motor control center | 0B536        |

~~c) Load group 480-volt A.C. motor control centers~~ ~~0B517, 0B136~~  
~~1B216, 1B236,~~  
~~2B216, 2B236,~~  
~~1B217, 2B217,~~  
~~2B237~~

~~d) Load group 208/120-volt A.C. instrument panels~~ ~~1Y216, 1Y236~~  
~~2Y216, 2Y236~~

e) Isolated 480 volt A.C. swing bus, including: 2B219\*

- 1) Preferred power source
- 2) Preferred power source MG set
- 3) Alternate power source
- 4) Automatic transfer switch

2. Division II consisting of:

a) Load group Channel "B", consisting of:

- |                                       |              |
|---------------------------------------|--------------|
| 1) 4160-volt A.C. switchgear bus      | 1A202, 2A202 |
| 2) 480-volt A.C. load center          | 1B220, 2B220 |
| 3) 480-volt A.C. motor control center | 0B526        |

b) Load group Channel "D", consisting of:

- |                                       |              |
|---------------------------------------|--------------|
| 1) 4160-volt A.C. switchgear bus      | 1A204, 2A204 |
| 2) 480-volt A.C. load center          | 1B240, 2B240 |
| 3) 480-volt A.C. motor control center | 0B546        |

~~c) Load group 480-volt A.C. motor control centers~~ ~~0B527, 0B146~~  
~~1B226, 1B246,~~  
~~2B226, 2B246,~~  
~~1B227, 2B227,~~  
~~2B247~~

~~d) Load group 208/120-volt A.C. instrument panels~~ ~~1Y226, 1Y246~~  
~~2Y226, 2Y246~~

\*The swing bus shall be OPERABLE if the Division I LPCI subsystem alone is fulfilling the requirements of Specification 3.5.2.

Previous Change: Submitted  
under PLA-2562 as  
proposed Amendment #74

FREE  
INSERT  
A



INSERT A

a. For A.C. power distribution, Division I or Division II, with:

NEW CHANGE  
and diesel generator E

1. Division I consisting of:

a) Load group Channel "A", consisting of:

- 1) 4160-volt A.C. switchgear bus
- 2) 480-volt A.C. load center
- 3) 480-volt A.C. motor control centers

1A201, 2A201  
1B210, 2B210  
0B516, 0B517  
1B216, 2B216  
1B217, 2B217  
1Y216, 2Y216

NEW CHANGE  
OAS10A

b) Load group Channel "C", consisting of:

- 1) 4160-volt A.C. switchgear bus
- 2) 480-volt A.C. load center
- 3) 480-volt A.C. motor control centers

1A203, 2A203  
1B230, 2B230  
0B536, 0B136  
1B236, 2B236  
2B237  
1Y236, 2Y236  
2B219\*

NEW CHANGE  
OAS10C

c) Isolated 480 volt A.C. swing bus, including:

- 1) Preferred power source
- 2) Preferred power source MG set
- 3) Alternate power source
- 4) Automatic transfer switch

2. Division II consisting of:

a) Load group Channel "B", consisting of:

- 1) 4160-volt A.C. switchgear bus
- 2) 480-volt A.C. load center
- 3) 480-volt A.C. motor control center

1A202, 2A202  
1B220, 2B220  
0B526, 0B527  
1B226, 2B226  
1B227, 2B227  
1Y226, 2Y226

NEW CHANGE  
OAS10B

b) Load group Channel "D", consisting of:

- 1) 4160-volt A.C. switchgear bus
- 2) 480-volt A.C. load center
- 3) 480-volt A.C. motor control center

1A204, 2A204  
1B240, 2B240  
0B546, 0B146  
1B246, 2B246  
2B247  
1Y246, 2Y246

NEW CHANGE  
OAS10D

4) 208/120-volt A.C. instrument panels



## ELECTRICAL POWER SYSTEMS

### LIMITING CONDITION FOR OPERATION (Continued)

- e) Isolated 480 volt A.C. swing bus; including: 28229\*
- 1) Preferred power source
  - 2) Preferred power source MG set
  - 3) Alternate power source
  - 4) Automatic transfer switch

SEE  
INSERT B

b. For D.C. power distribution, Division I or Division II, with:

1. Division I consisting of:

- a) Load group Channel "A", consisting of:

1) 125-volt D.C. buses

1D612\*\*\*, 1D614\*\*\*,  
2D612, 2D614  
1D611\*\*\*, 2D611

2) Fuse box

- b) Load group Channel "C", consisting of:

1) 125-volt D.C. buses

1D632\*\*\*, 1D634\*\*\*,  
2D632, 2D634  
1D631\*\*\*, 2D631

2) Fuse box

- c) Load group "I", consisting of:

1) 250-volt D.C. buses

2D652, 2D254  
2D651

2) Fuse box

- d) Load group "I", consisting of:

1)  $\pm$  24-volt D.C. buses

2D672  
2D671

2) Fuse box

2. Division II consisting of:

- a) Load group Channel "B", consisting of:

1) 125-volt D.C. buses

1D622\*\*\*, 1D624\*\*\*,  
2D622, 2D624  
1D621\*\*\*, 2D621

2) Fuse box

- b) Load group Channel "D", consisting of:

1) 125-volt D.C. buses

1D642\*\*\*, 1D644\*\*\*,  
2D642, 2D644  
1D641\*\*\*, 2D641

2) Fuse box

- c) Load group "II", consisting of:

1) 250-volt D.C. buses

2D662, 2D264, 2D274  
2D661

2) Fuse box

- d) Load group "II", consisting of:

1)  $\pm$  24-volt D.C. buses

2D682  
2D681

2) Fuse box

SEE  
INSERT C

APPLICABILITY: OPERATIONAL CONDITIONS 4, 5, and \*\*.

\*The swing bus shall be OPERABLE if the Division II LPCI subsystem alone is fulfilling the requirements of Specification 3.5.2.

\*\*When handling irradiated fuel in the secondary containment.

\*\*\*Not required to be OPERABLE when the requirements of ACTION c have been satisfied.



Insert B

3. Diesel Generator E

a) Load Group, consisting of:

- 1) 4160 volt A.C. switchgear bus 0A510E
- 2) 480 volt A.C. motor control center 0B565



Insert C

3. Diesel Generator E

a) Load group, consisting of:

1) 125 volt DC bus                      OD597

## ELECTRICAL POWER SYSTEMS

### LIMITING CONDITION FOR OPERATION (Continued)

#### ACTION:

- a. With less than the Division I or Division II load groups of the above required A.C. distribution system energized, suspend CORE ALTERATIONS, handling of irradiated fuel in the secondary containment and operations with a potential for draining the reactor vessel.
- b. With less than the Division I or Division II load groups of the above required Unit 2 D.C. distribution system energized, suspend CORE ALTERATIONS, handling of irradiated fuel in the secondary containment and operations with a potential for draining the reactor vessel.
- c. With less than Division I or Division II of the above required Unit 1 D.C. distribution system energized, either:
  1. Suspend CORE ALTERATIONS, handling of irradiated fuel in the secondary containment and operations with a potential for draining the reactor vessel; or
  2. Transfer the common loads aligned to the deenergized Unit 1 load group(s) to the corresponding Unit 2 load group(s).

Otherwise, declare the common loads aligned to the deenergized Unit 1 load group(s) inoperable and take the ACTION required by the applicable Specification(s).

- d. With one or both of the isolated 480 volt A.C. Swing busses inoperable, declare the associated LPCI loop inoperable (see Specification 3.5.2).
- e. The provisions of Specification 3.0.3 are not applicable.

#### SURVEILLANCE REQUIREMENTS

4.8.3.2.1 At least the above required power distribution system divisions shall be determined energized at least once per 7 days by verifying correct breaker alignment and voltage on the busses/MCCs/panels.

4.8.3.2.2 The isolated A.C. swing bus automatic transfer switches shall be demonstrated OPERABLE at least once per 31 days by actuating the load test switch or by disconnecting the preferred power source to the transfer switch and verifying that swing bus automatic transfer is accomplished.

Insert D

- f. With the above required diesel generator E A.C. distribution system load group not energized and diesel generator E aligned to the Class 1E distribution system, re-energize the load group within 24 hours or be in at least HOT SHUTDOWN within the next 12 hours and in COLD SHUTDOWN within the following 24 hours.
- g. With the above required diesel generator E 125 volt D.C. distribution system load group not energized and diesel generator E not aligned to the Class 1E distribution system, re-energize the load group within 2 hours or shutdown diesel generator E and close all ESW valves associated with diesel generator E within 2 hours. The provisions of Specification 3.0.4 are not applicable.
- h. With the above required diesel generator E 125 volt D.C. distribution system load group not energized and diesel generator E aligned to the Class 1E distribution system, re-energize the load group within 2 hours or declare diesel generator E inoperable and take the ACTION required by specification 3.8.1.2.

1. The first part of the document is a letter from the President of the United States to the Congress, dated January 3, 1862. It is a very important document, as it contains the President's annual message to Congress. The letter is written in a formal, dignified style, and it is one of the most important documents in the history of the United States.

2. The second part of the document is a letter from the Secretary of the Treasury to the President, dated January 3, 1862. It is a very important document, as it contains the Secretary's report to the President on the state of the Treasury. The letter is written in a formal, dignified style, and it is one of the most important documents in the history of the United States.

3. The third part of the document is a letter from the Secretary of the Navy to the President, dated January 3, 1862. It is a very important document, as it contains the Secretary's report to the President on the state of the Navy. The letter is written in a formal, dignified style, and it is one of the most important documents in the history of the United States.

## ELECTRICAL POWER SYSTEMS

### MOTOR OPERATED VALVES THERMAL OVERLOAD PROTECTION - CONTINUOUS

#### LIMITING CONDITION FOR OPERATION

3.8.4.2.4

3.8.4.2.1-1

~~3.8.4.2~~ The thermal overload protection of each valve shown in Table ~~3.8.4.2-1~~ shall be bypassed continuously by an OPERABLE bypass device integral with the motor starter.

APPLICABILITY: Whenever the motor-operated valve is required to be OPERABLE unless

ACTION:

otherwise specified.

- a. With thermal overload protection for one or more of the above required valves not bypassed continuously by an OPERABLE integral bypass device, take administrative action to continuously bypass the thermal overload within 8 hours or declare the affected valve(s) inoperable and apply the appropriate ACTION statement(s) for the affected system(s).
- b. The provisions of Specification 3.0.4 are not applicable.

#### SURVEILLANCE REQUIREMENTS

4.8.4.2.1.1

~~4.8.4.2.1~~ The thermal overload protection for the above required valves shall be verified to be bypassed continuously by an OPERABLE integral bypass device by verifying that the thermal overload protection is bypassed:

- a. At least once per 18 months, and
- b. Following maintenance on the motor starter.

4.8.4.2.1.2

~~4.8.4.2.2~~ The thermal overload protection shall be verified to be bypassed following activities during which the thermal overload protection was temporarily placed in force.



3.8.4.2.1-1

TABLE 3.8.4.2-1

MOTOR-OPERATED VALVES THERMAL OVERLOAD PROTECTION - CONTINUOUS

<u>VALVE NUMBER</u>	<u>SYSTEM(S) AFFECTED</u>
HV-01222A	RHRSW
HV-01222B	RHRSW
HV-01224A1	RHRSW
HV-01224B1	RHRSW
HV-01224A2	RHRSW
HV-01224B2	RHRSW
* HV-01112A	ESW
* HV-01112B	ESW
* HV-01122A	ESW
* HV-01122B	ESW
* HV-01112C	ESW
* HV-01112D	ESW
* HV-01122C	ESW
* HV-01122D	ESW
* HV-01110A	ESW
* HV-01110B	ESW
* HV-01120A	ESW
* HV-01120B	ESW
* HV-01110C	ESW
* HV-01110D	ESW
* HV-01120C	ESW
* HV-01120D	ESW
* HV-21144A	ESW
* HV-21144B	ESW
HV-08693A	ESW
HV-08693B	ESW
HV-01201A1	RHRSW
HV-01201A2	RHRSW
HV-01201B1	RHRSW
HV-01201B2	RHRSW
HV-21210A	RHRSW
HV-21210B	RHRSW
HV-21215A	RHRSW
HV-21215B	RHRSW
HV-25766	Cont. Isol.
HV-25768	Cont. Isol.
HV-22603	Cont. Isol.
HV-21345	Cont. Isol.
HV-21313	Cont. Isol.
HV-21346	Cont. Isol.
HV-21314	Cont. Isol.
HV-E11-2F009	RHR
HV-E11-2F040	RHR
HV-G33-2F001	RWCU

\* HV-01110E  
\* HV-01120E  
\* HV-01112E  
\* HV-01122E

ESW  
ESW  
ESW  
ESW

\* Continuous bypass not required when corresponding diesel generator is not aligned to the Class 1E distribution system.





TABLE 3.8.4.2-1 (Continued)

MOTOR-OPERATED VALVES THERMAL OVERLOAD PROTECTION

<u>VALVE NUMBER</u>	<u>SYSTEM(S) AFFECTED</u>
HV-E11-2F103A	RHR
HV-E11-2F075A	RHRSW
HV-E11-2F048A	RHR
HV-E11-2F006C	RHR
HV-E11-2F004C	RHR
HV-E11-2F015A	RHR
HV-E11-2F024A	RHR
HV-E21-2F015A	CS
HV-E41-2F002	HPCI
HV-B21-2F016	NSSS
HV-E11-2F022	RHR
HV-E11-2F010A	RHR
HV-E11-2F011A	RHR
HV-E11-2F004A	RHR
HV-E11-2F006A	RHR
HV-E11-2F027A	RHR
HV-E11-2F007A	RHR
HV-E11-2F104A	RHR
HV-E11-2F026A	RHR
HV-E11-2F028A	RHR
HV-E11-2F047A	RHR
HV-E11-2F073A	RHRSW
HV-E11-2F003A	RHR
HV-E11-2F017A	RHR
HV-E21-2F001A	CS
HV-E21-2F031A	CS
HV-E21-2F004A	CS
HV-E21-2F005A	CS
HV-E11-2F021A	RHR
HV-E11-2F016A	RHR
HV-25112	RHR
HV-E51-2F007	RCIC
HV-E51-2F084	RCIC
HV-E11-2F027B	RHR
HV-E11-2F048B	RHR
HV-E11-2F015B	RHR
HV-E11-2F006B	RHR
HV-E11-2F021B	RHR
HV-E11-2F010B	RHR
HV-E11-2F011B	RHR
HV-E11-2F004B	RHR
HV-E11-2F007B	RHR
HV-E11-2F104B	RHR
HV-E11-2F026B	RHR

TABLE 3.8.4.2-1 (Continued)

MOTOR-OPERATED VALVES THERMAL OVERLOAD PROTECTION

<u>VALVE NUMBER</u>	<u>SYSTEM(S) AFFECTED</u>
HV-E11-2F028B	RHR
HV-E11-2F047B	RHR
HV-E11-2F016B	RHR
HV-E11-2F003B	RHR
HV-E11-2F017B	RHR
HV-E21-2F031B	CS
HV-E21-2F001B	CS
HV-E11-2F103B	RHR
HV-E11-2F075B	RHR
HV-E11-2F073B	RHR
HV-E11-2F006D	RHR
HV-E11-2F004D	RHR
HV-E11-2F024B	RHR
HV-E21-2F015B	CS
HV-E21-2F004B	CS
HV-E21-2F005B	CS
HV-E32-2F001K	MSIV
HV-E32-2F002K	MSIV
HV-E32-2F003K	MSIV
HV-E32-2F001P	MSIV
HV-E32-2F002P	MSIV
HV-E32-2F003P	MSIV
HV-E32-2F001B	MSIV
HV-E32-2F002B	MSIV
HV-E32-2F003B	MSIV
HV-E32-2F001F	MSIV
HV-E32-2F002F	MSIV
HV-E32-2F003F	MSIV
HV-E32-2F006	MSIV
HV-E32-2F007	MSIV
HV-E32-2F008	MSIV
HV-E32-2F009	MSIV
HV-E51-2F045	RCIC
HV-E51-2F012	RCIC
HV-E51-2F013	RCIC
HV-25012	RCIC
HV-E51-2F046	RCIC
HV-E51-2F008	RCIC
HV-E51-2F031	RCIC
HV-E51-2F010	RCIC



TABLE 3.8.4.2-1 (Continued)

MOTOR-OPERATED VALVES THERMAL OVERLOAD PROTECTION

<u>VALVE NUMBER</u>	<u>SYSTEM(S) AFFECTED</u>
HV-E51-2F019	RCIC
HV-E51-2F060	RCIC
HV-E51-2F059	RCIC
HV-E51-2F022	RCIC
HV-E51-2F062	RCIC
HV-E41-2F012	HPCI
HV-E41-2F001	HPCI
HV-E41-2F011	HPCI
HV-E41-2F006	HPCI
HV-E41-2F079	HPCI
HV-E41-2F059	HPCI
HV-E41-2F004	HPCI
HV-E41-2F003	HPCI
HV-E41-2F042	HPCI
HV-E41-2F075	HPCI
HV-E41-2F008	HPCI
HV-E41-2F007	HPCI
HV-E41-2F066	HPCI
HV-G33-2F004	RWCU
HV-B21-2F019	NSSS
HV-E11-2F008	RHR
HV-E11-2F023	RHR
HV-E11-2F049	RHR
HV-B31-2F032A	Rx Recirc
HV-B31-2F032B	Rx Recirc
HV-B31-2F031A	Rx Recirc
HV-B31-2F031B	Rx Recirc

## ELECTRICAL POWER SYSTEMS

### MOTOR OPERATED VALVES THERMAL OVERLOAD PROTECTION - AUTOMATIC

#### LIMITING CONDITION FOR OPERATION

---

3.8.4.2.2 The thermal overload protection of each valve shown in Table 3.8.4.2.2-1 shall be bypassed automatically by an OPERABLE bypass device integral with the motor starter.

APPLICABILITY: When diesel generator E is not aligned to the Class 1E distribution system.

#### ACTION:

- a. With thermal overload protection automatic bypass inoperable for one or more valves listed above, take administrative action to continuously bypass the thermal overload within 8 hours, or verify that all diesel generator E ESW valves are closed and diesel generator E is not running within 8 hours.
- b. The provision of Specification 3.0.4 are not applicable.

#### SURVEILLANCE REQUIREMENTS

---

4.8.4.2.2.1 The automatic bypass of thermal overload protection for those valves listed above shall be demonstrated OPERABLE at least once per 18 months.

TABLE 3.8.4.2.2-1

MOTOR OPERATED VALVES THERMAL OVERLOAD PROTECTION - AUTOMATIC

<u>Valve Number</u>	<u>System(s) Affected</u>
HV-01110E	ESW
HV-01120E	ESW
HV-01112E	ESW
HV-01122E	ESW



### 3/4.8 ELECTRICAL POWER SYSTEMS

#### BASES

#### 3/4.8.1, 3/4.8.2 and 3/4.8.3 A.C. SOURCES, D.C. SOURCES and ONSITE POWER DISTRIBUTION SYSTEMS

The OPERABILITY of the A.C. and D.C. power sources and associated distribution systems during operation ensures that sufficient power will be available to supply the safety related equipment required for (1) the safe shutdown of the facility and (2) the mitigation and control of accident conditions within the facility. The minimum specified independent and redundant A.C. and D.C. power sources and distribution systems satisfy the requirements of General Design Criteria 17 of Appendix "A" to 10 CFR 50.

The ACTION requirements specified for the levels of degradation of the power sources provide restriction upon continued facility operation commensurate with the level of degradation. The OPERABILITY of the power sources are consistent with the initial condition assumptions of the accident analyses and are based upon maintaining at least three of the onsite A.C. and the corresponding D.C. power sources and associated distribution systems OPERABLE during accident conditions coincident with an assumed loss of offsite power and single failure of one other onsite A.C. source. *Insert A*

The A.C. and D.C. source allowable out-of-service times are based on Regulatory Guide 1.93, "Availability of Electrical Power Sources," December 1974. When one diesel generator is inoperable, there is an additional ACTION requirement to verify that all required systems, subsystems, trains, components and devices, that depend on the remaining OPERABLE diesel generator as a source of emergency power, are also OPERABLE. This requirement is intended to provide assurance that a loss of offsite power event will not result in a complete loss of safety function of critical systems during the period one of the diesel generators is inoperable. The term verify as used in this context means to administratively check by examining logs or other information to determine if certain components are out-of-service for maintenance or other reasons. It does not mean to perform the surveillance requirements needed to demonstrate the OPERABILITY of the component.

The OPERABILITY of the minimum specified A.C. and D.C. power sources and associated distribution systems during shutdown and refueling ensures that (1) the facility can be maintained in the shutdown or refueling condition for extended time periods and (2) sufficient instrumentation and control capability is available for monitoring and maintaining the unit status.

The surveillance requirements for demonstrating the OPERABILITY of the diesel generators are in accordance with the recommendations of Regulatory Guide 1.9, "Selection of Diesel Generator Set Capacity for Standby Power Supplies", March 10, 1971, Regulatory Guide 1.108, "Periodic Testing of Diesel Generator Units Used as Onsite Electric Power Systems at Nuclear Power Plants", Revision 1, August 1977 and Regulatory Guide 1.137 "Fuel-Oil Systems for Standby Diesel Generators", Revision 1, October 1979.

SUSQUEHANNA - UNIT 2

B 3/4 8-1

*Insert A: The Plant configuration consists of four diesel generators - A, B, C, & D - and a spare fifth diesel generator - E - which can be substituted for any one of the four diesel generators.*





## ELECTRICAL POWER SYSTEMS

### BASES

#### A.C. SOURCES, D.C. SOURCES, and ONSITE POWER DISTRIBUTION SYSTEMS (Continued)

The surveillance requirements for demonstrating the OPERABILITY of the unit batteries are in accordance with the recommendations of Regulatory Guide 1.129, "Maintenance Testing and Replacement of Large Lead Storage Batteries for Nuclear Power Plants", February 1978, and IEEE Std 450-1980, "IEEE Recommended Practice for Maintenance, Testing, and Replacement of Large Lead Storage Batteries for Generating Stations and Substations."

Verifying average electrolyte temperature above the minimum for which the battery was sized, total battery terminal voltage onfloat charge, connection resistance values and the performance of battery service and discharge tests ensures the effectiveness of the charging system, the ability to handle high discharge rates and compares the battery capacity at that time with the rated capacity.

Table 4.8.2.1-1 specifies the normal limits for each designated pilot cell and each connected cell for electrolyte level, float voltage and specific gravity. The limits for the designated pilot cells float voltage and specific gravity, greater than 2.13 volts and .015 below the manufacturer's full charge specific gravity or a battery charger current that had stabilized at a low value, is characteristic of a charged cell with adequate capacity. The normal limits for each connected cell for float voltage and specific gravity, greater than 2.13 volts and not more than .020 below the manufacturer's full charge specific gravity with an average specific gravity of all the connected cells not more than .010 below the manufacturer's full charge specific gravity, ensures the OPERABILITY and capability of the battery.

Operation with a battery cell's parameter outside the normal limit but within the allowable value specified in Table 4.8.2.1-1 is permitted for up to 7 days. During this 7 day period: (1) the allowable values for electrolyte level ensures no physical damage to the plates with an adequate electron transfer capability; (2) the allowable value for the average specific gravity of all the cells, not more than .020 below the manufacturer's recommended full charge specific gravity, ensures that the decrease in rating will be less than the safety margin provided in sizing; (3) the allowable value for an individual cell's specific gravity ensures that an individual cell's specific gravity will not be more than .040 below the manufacturer's full charge specific gravity and that the overall capability of the battery will be maintained within an acceptable limit; and (4) the allowable value for an individual cell's float voltage, greater than 2.07 volts, ensures the battery's capability to perform its design function.



## ELECTRICAL POWER-SYSTEMS

### BASES

---

#### 3/4.8.4 ELECTRICAL EQUIPMENT PROTECTIVE DEVICES

Primary containment electrical penetrations and penetration conductors are protected by either de-energizing circuits not required during reactor operation or demonstrating the OPERABILITY of primary and backup overcurrent protection circuit breakers by periodic surveillance.

The surveillance requirements applicable to lower voltage circuit breakers and fuses provides assurance of breaker and fuse reliability by testing at least one representative sample of each manufacturers brand of circuit breaker and/or fuse. Each manufacturer's molded case and metal case circuit breakers and/or fuses are grouped into representative samples which are then tested on a rotating basis to ensure that all breakers and/or fuses are tested. If a wide variety exists within any manufacturer's brand of circuit breakers and/or fuses, it is necessary to divide that manufacturer's breakers and/or fuses into groups and treat each group as a separate type of breaker or fuses for surveillance purposes.

The bypassing of the motor operated valve thermal overload protection continuously by integral bypass devices ensures that the thermal overload protection will not prevent safety related valves from performing their function. The surveillance requirements for demonstrating the bypassing of the thermal overload protection continuously are in accordance with Regulatory Guide 1.106 "Thermal Overload Protection for Electric Motors on Motor Operated Valves", Revision 1, March 1977.

ATTACHMENT 3

Tech SpecChangeJustification

3.3.7.9	Table 3.3.7.9-1 - Incorporate fire detection instrumentation for the fifth diesel generator building.	Requiring the E diesel generator building spray and sprinkler system, fire hose stations, and fire detection instrumentation to be OPERABLE does not impact safety but merely ensures adequate fire suppression capability is available to confine and extinguish fires occurring in the facility.
3.7.6.2	Incorporate item 'O' entitled "Diesel Generator E Building (Fire Zone 0-41E)"	
3.7.6.5	Table 3.7.6.5-1 - Incorporate fire hose station location for the fifth diesel generator building	<p>The fire protection system in the E building meets the criteria delineated in FSAR Chapter 9.5.1; 10CFR50, Appendix R and; NFPA National Fire Codes.</p> <p>The system gets its water from the Plant yard loop and is designed for a water supply from one 500 GPM at 125 PSI fire pump with the shortest route assumed to be unavailable. The fire standpipe system and hoses are located so that all interior sections can be reached per NFPA Class III requirements. The fire detection system is compatible and interfaces with the existing fire protection multiplexing system.</p>
3.8.1.1	3.8.1.1.b - Incorporate the phrase 'of the five' after the word 'Four'.	<p>Tech Spec 3.8.1.1 delineates the minimum number of A.C. power sources which must be OPERABLE during operation to ensure sufficient power will be available to supply the safety related equipment required for (1) Safe-Shutdown of the facility and (2) control and mitigation of accident conditions within the facility. Additionally, separate and independent diesel generators satisfy the requirements of General Design Criteria 17 to 10CFR50, Appendix A. The incorporation of a fifth diesel generator does not impact safety since FSAR analyses assume three diesel generators are required for safe-shutdown of the Plant. This section of Tech Specs is</p>



Tech Spec

Change

Justification

3.8.1.1.b.2 - Incorporate reference to the diesel generator E fuel storage system.

being revised to reflect the fact that an additional diesel generator has been installed as part of the Plant configuration and can be utilized as a replacement for any one of the existing diesel generators.

Diesel generator E is a higher rated machine than the existing diesel's, primarily because it carries its own house loads. The 60,480 gallons is a calculated number-per the guidelines of Reg. Guide 1.137-which represents the amount of fuel necessary to run the diesel generator at full load for seven continuous days. Similarly, the fuel oil tank for diesel generator E has an 80,000 gallon capacity as compared to 50,000 gallons for the existing diesel generators.

3.8.1.1 Action a - Incorporated phrase  
Action c "for any reason other than aligning diesel generator E to the to the Class 1E distribution system" after the word 'inoperable'.

Action statements a & c assume the loss of one diesel generator or offsite circuit cause by a failure therein. When substituting diesel generator E it is necessary to remove an existing diesel from service for a short period of time (~2 hrs.) Incorporation of the proposed phrase would waive the requirement to enter into an LCO when substituting diesel generator E which is appropriate given the reason for removing the diesel from service and eliminate unnecessary testing of the other diesels.

4.8.1.1.2      4.8.1.1.2.d.3      Inserted new generator  
                 4.8.1.1.2.d.4.b      voltages and frequencies.  
                 4.8.1.1.2.d.5

Administrative change to correct typographical error made when NRC issued this page under Amendment 36 to NPF-14. (Unit 1 change only)

4.8.1.1.2.d.8 - Surveillance modified to reflect the E diesel generator 2000 hour

Diesel generator E has a higher 2000 hour rating because it carries its own house loads when operating. These loads are auto-



[illegible]

Age Group	Percentage of Respondents
18-29	85%
30-49	80%
50-69	75%
70+	70%

[illegible]

Figure 1. The effect of the concentration of the *Agrobacterium* suspension on the transformation efficiency of *Agrobacterium* strains. The concentration of the *Agrobacterium* suspension was 10<sup>6</sup> cells/ml (○), 10<sup>7</sup> cells/ml (□), 10<sup>8</sup> cells/ml (△), 10<sup>9</sup> cells/ml (◇), and 10<sup>10</sup> cells/ml (●). The error bars represent the standard deviation of three independent experiments.

10  
 11  
 12  
 13  
 14  
 15  
 16  
 17  
 18  
 19  
 20  
 21  
 22  
 23  
 24  
 25  
 26  
 27  
 28  
 29  
 30  
 31  
 32  
 33  
 34  
 35  
 36  
 37  
 38  
 39  
 40  
 41  
 42  
 43  
 44  
 45  
 46  
 47  
 48  
 49  
 50  
 51  
 52  
 53  
 54  
 55  
 56  
 57  
 58  
 59  
 60  
 61  
 62  
 63  
 64  
 65  
 66  
 67  
 68  
 69  
 70  
 71  
 72  
 73  
 74  
 75  
 76  
 77  
 78  
 79  
 80  
 81  
 82  
 83  
 84  
 85  
 86  
 87  
 88  
 89  
 90  
 91  
 92  
 93  
 94  
 95  
 96  
 97  
 98  
 99  
 100  
 101  
 102  
 103  
 104  
 105  
 106  
 107  
 108  
 109  
 110  
 111  
 112  
 113  
 114  
 115  
 116  
 117  
 118  
 119  
 120  
 121  
 122  
 123  
 124  
 125  
 126  
 127  
 128  
 129  
 130  
 131  
 132  
 133  
 134  
 135  
 136  
 137  
 138  
 139  
 140  
 141  
 142  
 143  
 144  
 145  
 146  
 147  
 148  
 149  
 150  
 151  
 152  
 153  
 154  
 155  
 156  
 157  
 158  
 159  
 160  
 161  
 162  
 163  
 164  
 165  
 166  
 167  
 168  
 169  
 170  
 171  
 172  
 173  
 174  
 175  
 176  
 177  
 178  
 179  
 180  
 181  
 182  
 183  
 184  
 185  
 186  
 187  
 188  
 189  
 190  
 191  
 192  
 193  
 194  
 195  
 196  
 197  
 198  
 199  
 200  
 201  
 202  
 203  
 204  
 205  
 206  
 207  
 208  
 209  
 210  
 211  
 212  
 213  
 214  
 215  
 216  
 217  
 218  
 219  
 220  
 221  
 222  
 223  
 224  
 225  
 226  
 227  
 228  
 229  
 230  
 231  
 232  
 233  
 234  
 235  
 236  
 237  
 238  
 239  
 240  
 241  
 242  
 243  
 244  
 245  
 246  
 247  
 248  
 249  
 250  
 251  
 252  
 253  
 254  
 255  
 256  
 257  
 258  
 259  
 260  
 261  
 262  
 263  
 264  
 265  
 266  
 267  
 268  
 269  
 270  
 271  
 272  
 273  
 274  
 275  
 276  
 277  
 278  
 279  
 280  
 281  
 282  
 283  
 284  
 285  
 286  
 287  
 288  
 289  
 290  
 291  
 292  
 293  
 294  
 295  
 296  
 297  
 298  
 299  
 300  
 301  
 302  
 303  
 304  
 305  
 306  
 307  
 308  
 309  
 310  
 311  
 312  
 313  
 314  
 315  
 316  
 317  
 318  
 319  
 320  
 321  
 322  
 323  
 324  
 325  
 326  
 327  
 328  
 329  
 330  
 331  
 332  
 333  
 334  
 335  
 336  
 337  
 338  
 339  
 340  
 341  
 342  
 343  
 344  
 345  
 346  
 347  
 348  
 349  
 350  
 351  
 352  
 353  
 354  
 355  
 356  
 357  
 358  
 359  
 360  
 361  
 362  
 363  
 364  
 365  
 366  
 367  
 368  
 369  
 370  
 371  
 372  
 373  
 374  
 375  
 376  
 377  
 378  
 379  
 380  
 381  
 382  
 383  
 384  
 385  
 386  
 387  
 388  
 389  
 390  
 391  
 392  
 393  
 394  
 395  
 396  
 397  
 398  
 399  
 400  
 401  
 402  
 403  
 404  
 405  
 406  
 407  
 408  
 409  
 410  
 411  
 412  
 413  
 414  
 415  
 416  
 417  
 418  
 419  
 420  
 421  
 422  
 423  
 424  
 425  
 426  
 427  
 428  
 429  
 430  
 431  
 432  
 433  
 434  
 435  
 436  
 437  
 438  
 439  
 440  
 441  
 442  
 443  
 444  
 445  
 446  
 447  
 448  
 449  
 450  
 451  
 452  
 453  
 454  
 455  
 456  
 457  
 458  
 459  
 460  
 461  
 462  
 463  
 464  
 465  
 466  
 467  
 468  
 469  
 470  
 471  
 472  
 473  
 474  
 475  
 476  
 477  
 478  
 479  
 480  
 481  
 482  
 483  
 484  
 485  
 486  
 487  
 488  
 489  
 490  
 491  
 492  
 493  
 494  
 495  
 496  
 497  
 498  
 499  
 500  
 501  
 502  
 503  
 504  
 505  
 506  
 507  
 508  
 509  
 510  
 511  
 512  
 513  
 514  
 515  
 516  
 517  
 518  
 519  
 520  
 521  
 522  
 523  
 524  
 525  
 526  
 527  
 528  
 529  
 530  
 531  
 532

[illegible][illegible][illegible][illegible]

The  $\alpha$ - $\beta$  transition temperature  $T_{\alpha\beta}$  is a function of the molecular weight  $M$  and the concentration  $c$  of the polymer. The  $\alpha$ - $\beta$  transition temperature  $T_{\alpha\beta}$  is a function of the molecular weight  $M$  and the concentration  $c$  of the polymer.

Tech Spec

Change

Justification

rating of 5000KW

connected and must be considered when performing the 18 month surveillance. This verification is in accordance with the recommendations of Reg. Guide 1.108.

4.8.1.1.2.d.11 - Delete requirement to verify the fuel transfer pump transfers fuel from each tank to the engine mounted day tank of each diesel generator.

Reg. Guide 1.108 recommends this surveillance if the practice is part of the normal operating procedures. At Susquehanna this transferring is not part of normal operating procedures and should not be verified in Tech Specs. Fuel transfer from the fuel oil tank to the corresponding diesel generator day tank is tested for each diesel every 31 days. There is no impact to safety since credit is not taken for this capability in any safety analyses.

4.8.1.1.3  
(NEW)

The purpose of establishing section 4.8.1.1.3 is to delineate the testing requirements which will demonstrate the E diesel generator OPERABLE when it is substituted for diesel generator A, B, C or D. The requirements of this new section 4.8.1.1.3 are equivalent to existing surveillance testing except for those which would necessitate the E diesel be aligned to the Class 1E system. This alternate testing of the E diesel does not impact current testing programs.

4.8.1.1.3.a

Equivalent to 4.8.1.1.2.a.6

4.8.1.1.3.b - Modified to indicate testing will be done once per 31 days.

The first series of testing will be performed once every 31 days. Under the existing Tech Specs 31 days is the maximum duration between tests and is appropriate when the E diesel generator is not aligned to the Class 1E system. Further, there is no need to test on a more frequent basis since there is no impact



Tech Spec

Change

Justification

4.8.1.1.3.b.1

4.8.1.1.3.b.2

4.8.1.1.3.b.3

4.8.1.1.3.b.4 - Modified to reflect the fact that this verification can only be performed by manually starting the diesel

4.8.1.1.3.b.5

4.8.1.1.3.b.6

4.8.1.1.3.c

4.8.1.1.3.d

4.8.1.1.3.e. - Statement reworded to take credit for any surveillances which may have been performed while diesel generator E was aligned to the Class 1E distribution system.

4.8.1.1.3.e.1

4.8.1.1.3.e.2

4.8.1.1.3.e.3

4.8.1.1.3.e.4

4.8.1.1.3.e.5

4.8.1.1.3.e.6 - Modified to incorporate the testing required under existing Tech Specs 4.8.1.1.2.d.4, 4.8.1.1.2.d.5, and 4.8.1.1.2.d.6.

to safety if the E diesel fails the testing required under this surveillance.

Equivalent to 4.8.1.1.2.a.1

Equivalent to 4.8.1.1.2.a.2

Equivalent to 4.8.1.1.2.a.3

When diesel generator E is not aligned to the Class 1E system, starting from ambient condition can only be accomplished with a manual start signal.

Equivalent to 4.8.1.1.2.a.5

Equivalent to 4.8.1.1.2.a.7

Equivalent to 4.8.1.1.2.b

Equivalent to 4.8.1.1.2.c

Equivalent to 4.8.1.1.2.d.1

Equivalent to 4.8.1.1.2.d.2

Equivalent to 4.8.1.1.2.d.3

Equivalent to 4.8.1.1.2.d.7

Equivalent to 4.8.1.1.2.d.12 (4.8.1.1.2.d.11 per this change)

This surveillance is equivalent to existing tech specs 4.8.1.1.2.d.4, 4.8.1.1.2.d.5 and 4.8.1.1.2.d.6. The surveillance is comprised of two tests - however only one is required to be performed.

Existing tech specs require the diesel be tested under a simulated loss of offsite



Tech Spec

Change

Justification

power, an ECCS actuation test signal, and a loss of offsite power in conjunction with an ECCS actuation test signal. The purpose of these tests is to demonstrate that the associated test signals cause a diesel start. The first part of this surveillance 14.8.1.1.3.4.6 combines these three tests into one on the basis that once the diesel has started via one of the test signals, it is only necessary to verify that the relays associated with the other test signals are working.

The second part of this surveillance provides the option of performing the three tests utilizing a load. Existing surveillance 4.8.1.1.2.d.4 performs a diesel generator auto start on a simulated loss of offsite power. This requires a dead bus which is only available during outages. Technically, this surveillance checks bus undervoltage sensing devices and diesel generator capability. The bus undervoltage relays are part of the existing Plant and have not been affected by installation of a fifth diesel generator. Diesel generator E's ability to auto start and load is independent of where the load originates therefore a load bank is acceptable.

Existing surveillance 4.8.1.1.2.d.6 performs a diesel generator auto start on a simulated LOCA/LOOP signal followed by diesel generator loading according to design sequencing. This surveillance is intended to check the automatic load sequence timers and diesel generator capability. The sequence timers are not part of the bus or diesel logic but are part of the individual load control schemes. They function independent of whether diesel

[illegible]

The following are the names of the persons who have been  
 named as witnesses in the case of the State vs. John Doe,  
 charged with the crime of murder.  
 The first witness is John Smith, who was present at the scene  
 of the crime and saw the defendant shoot the victim.  
 The second witness is Jane Doe, who was also present at the scene  
 and saw the defendant flee the area after the shooting.  
 The third witness is Mr. James Wilson, who is a police officer  
 and was called to the scene shortly after the crime occurred.  
 He testified that he found the victim lying on the ground near  
 the entrance of the building where the crime took place.  
 The fourth witness is Dr. Robert Brown, who treated the victim  
 at the hospital and testified that he died from gunshot wounds.  
 The fifth witness is Mrs. Mary White, who lives next door to  
 the building where the crime occurred and heard several shots  
 fired around midnight on the night of the crime.  
 These are the names of the witnesses who will be called by  
 the prosecution during the trial.

一、政治  
 二、經濟  
 三、文化  
 四、教育  
 五、社會  
 六、宗教  
 七、藝術  
 八、科學  
 九、法律  
 十、道德  
 十一、哲學  
 十二、歷史  
 十三、地理  
 十四、生物  
 十五、醫學  
 十六、農業  
 十七、工業  
 十八、交通  
 十九、通信  
 二十、能源  
 二十一、環境  
 二十二、人口  
 二十三、民族  
 二十四、語言  
 二十五、文字  
 二十六、圖畫  
 二十七、音樂  
 二十八、戲劇  
 二十九、電影  
 三十、電視  
 三十一、廣播  
 三十二、報紙  
 三十三、雜誌  
 三十四、圖書  
 三十五、期刊  
 三十六、叢書  
 三十七、傳記  
 三十八、小說  
 三十九、詩歌  
 四十、散文  
 四十一、雜文  
 四十二、評論  
 四十三、報告  
 四十四、演講  
 四十五、會議  
 四十六、展覽  
 四十七、比賽  
 四十八、節日  
 四十九、慶典  
 五十、紀念  
 五十一、追悼  
 五十二、安葬  
 五十三、火化  
 五十四、遷葬  
 五十五、改葬  
 五十六、合葬  
 五十七、分葬  
 五十八、移葬  
 五十九、回葬  
 六十、外葬  
 六十一、內葬  
 六十二、土葬  
 六十三、火葬  
 六十四、水葬  
 六十五、風葬  
 六十六、天葬  
 六十七、海葬  
 六十八、空葬  
 六十九、地葬  
 七十、山葬  
 七十一、河葬  
 七十二、湖葬  
 七十三、江葬  
 七十四、海葬  
 七十五、空葬  
 七十六、地葬  
 七十七、山葬  
 七十八、河葬  
 七十九、湖葬  
 八十、江葬  
 八十一、海葬  
 八十二、空葬  
 八十三、地葬  
 八十四、山葬  
 八十五、河葬  
 八十六、湖葬  
 八十七、江葬  
 八十八、海葬  
 八十九、空葬  
 九十、地葬  
 九十一、山葬  
 九十二、河葬  
 九十三、湖葬  
 九十四、江葬  
 九十五、海葬  
 九十六、空葬  
 九十七、地葬  
 九十八、山葬  
 九十九、河葬  
 一百、湖葬  
 一百零一、江葬  
 一百零二、海葬  
 一百零三、空葬  
 一百零四、地葬  
 一百零五、山葬  
 一百零六、河葬  
 一百零七、湖葬  
 一百零八、江葬  
 一百零九、海葬  
 一百一十、空葬  
 一百一十一、地葬  
 一百一十二、山葬  
 一百一十三、河葬  
 一百一十四、湖葬  
 一百一十五、江葬  
 一百一十六、海葬  
 一百一十七、空葬  
 一百一十八、地葬  
 一百一十九、山葬  
 一百二十、河葬  
 一百二十一、湖葬  
 一百二十二、江葬  
 一百二十三、海葬  
 一百二十四、空葬  
 一百二十五、地葬  
 一百二十六、山葬  
 一百二十七、河葬  
 一百二十八、湖葬  
 一百二十九、江葬  
 一百三十、海葬  
 一百三十一、空葬  
 一百三十二、地葬  
 一百三十三、山葬  
 一百三十四、河葬  
 一百三十五、湖葬  
 一百三十六、江葬  
 一百三十七、海葬  
 一百三十八、空葬  
 一百三十九、地葬  
 一百四十、山葬  
 一百四十一、河葬  
 一百四十二、湖葬  
 一百四十三、江葬  
 一百四十四、海葬  
 一百四十五、空葬  
 一百四十六、地葬  
 一百四十七、山葬  
 一百四十八、河葬  
 一百四十九、湖葬  
 一百五十、江葬  
 一百五十一、海葬  
 一百五十二、空葬  
 一百五十三、地葬  
 一百五十四、山葬  
 一百五十五、河葬  
 一百五十六、湖葬  
 一百五十七、江葬  
 一百五十八、海葬  
 一百五十九、空葬  
 一百六十、地葬  
 一百六十一、山葬  
 一百六十二、河葬  
 一百六十三、湖葬  
 一百六十四、江葬  
 一百六十五、海葬  
 一百六十六、空葬  
 一百六十七、地葬  
 一百六十八、山葬  
 一百六十九、河葬  
 一百七十、湖葬  
 一百七十一、江葬  
 一百七十二、海葬  
 一百七十三、空葬  
 一百七十四、地葬  
 一百七十五、山葬  
 一百七十六、河葬  
 一百七十七、湖葬  
 一百七十八、江葬  
 一百七十九、海葬  
 一百八十、空葬  
 一百八十一、地葬  
 一百八十二、山葬  
 一百八十三、河葬  
 一百八十四、湖葬  
 一百八十五、江葬  
 一百八十六、海葬  
 一百八十七、空葬  
 一百八十八、地葬  
 一百八十九、山葬  
 一百九十、河葬  
 一百九十一、湖葬  
 一百九十二、江葬  
 一百九十三、海葬  
 一百九十四、空葬  
 一百九十五、地葬  
 一百九十六、山葬  
 一百九十七、河葬  
 一百九十八、湖葬  
 一百九十九、江葬  
 二百、海葬  
 二百零一、空葬  
 二百零二、地葬  
 二百零三、山葬  
 二百零四、河葬  
 二百零五、湖葬  
 二百零六、江葬  
 二百零七、海葬  
 二百零八、空葬  
 二百零九、地葬  
 二百一十、山葬  
 二百一十一、河葬  
 二百一十二、湖葬  
 二百一十三、江葬  
 二百一十四、海葬  
 二百一十五、空葬  
 二百一十六、地葬  
 二百一十七、山葬  
 二百一十八、河葬  
 二百一十九、湖葬  
 二百二十、江葬  
 二百二十一、海葬  
 二百二十二、空葬  
 二百二十三、地葬  
 二百二十四、山葬  
 二百二十五、河葬  
 二百二十六、湖葬  
 二百二十七、江葬  
 二百二十八、海葬  
 二百二十九、空葬  
 二百三十、地葬  
 二百三十一、山葬  
 二百三十二、河葬  
 二百三十三、湖葬  
 二百三十四、江葬  
 二百三十五、海葬  
 二百三十六、空葬  
 二百三十七、地葬  
 二百三十八、山葬  
 二百三十九、河葬  
 二百四十、湖葬  
 二百四十一、江葬  
 二百四十二、海葬  
 二百四十三、空葬  
 二百四十四、地葬  
 二百四十五、山葬  
 二百四十六、河葬  
 二百四十七、湖葬  
 二百四十八、江葬  
 二百四十九、海葬  
 二百五十、空葬  
 二百五十一、地葬  
 二百五十二、山葬  
 二百五十三、河葬  
 二百五十四、湖

— 100 —

Tech Spec

Change

Justification

4.8.1.1.3.e

The following existing surveillances have not been incorporated into this new surveillance 4.8.1.1.3:

4.8.1.1.2.d.8

4.8.1.1.2.d.9

4.8.1.1.2.d.11

4.8.1.1.2.e

4.8.1.1.4 - Insert the phrase 'on the required diesel generators' in the last sentence after the word 'failures'.

generator A or E is powering the bus. The ability of diesel generator E to respond to load sequencing must be tested however the diesels ability to auto start and accept load sequencing is independent of the load source therefore a load bank can be utilized.

Equivalent to 4.8.1.1.2.f, reworded to take credit for performing 4.8.1.1.2.f when Diesel generator was aligned to the Class 1E system.

This verification is a calculation, performed on each diesel every 18 months. As stated previously, this section has been expanded to include the 5th diesel generator and is a verification which can be done regardless of the status of diesel generator E.

This verification cannot be performed when diesel generator E is not aligned to the Class 1E distribution system.

This surveillance will be performed once per 18 months regardless of the status of diesel generator E.

This testing cannot be accomplished because all 5 diesel generators cannot be operated at the same time.

All diesel generator failures, valid or non-valid, will continue to be reported to the Commission. This section of Tech Specs has been altered to reflect the fact that the





Tech Spec

Change

Justification

Table 4.8.1.1.2-1 - Incorporated a new footnote which states "When diesel generator E is not aligned to the Class 1E distribution system, any failures will not be credited to the total failures for determining the test frequency of the diesel generators required to be OPERABLE".

report is only applicable to those diesels required for safe shutdown - which could include diesel generator E if it is aligned to the Class 1E system. The basis for this change is to eliminate the potential of placing diesel generators A, B, C, or D in a precarious position as a result of a failure on diesel E when it is not aligned.

Table 4.8.1.1.2-2 - Expanded to include the diesel generator E loading timers. Also a footnote has been added to reflect current design.

Including diesel generator E's loading timers ensures the E Building supply and exhaust fans will be OPERABLE. The footnote has been added for clarity. There is no reason to verify - for example - the 'A' Diesel generator Room exhaust fan is operable if diesel generator A is out of service.

---

3.8.1.2      3.8.1.2.b - Incorporate the phrase 'of the five separate and independent' after the word 'Two', and the word 'each' after 'generators'.

Specification modified to reflect incorporation of a fifth diesel generator into the Plant configuration and the fact that any two of those five diesels will meet the Tech Spec requirement.

3.8.1.2.b.2 - Incorporated the fuel requirements for diesel generator E.

The fifth diesel is a higher rated machine primarily because it carries its own house loads and requires significantly more fuel to meet Reg. Guide 1.137 i.e. enough fuel to operate for 7 days continuous at full load. There is no impact to safety since this calculated number is per the guidance in the Reg. Guide and is consistent with existing tech specs.

THE  
FEDERAL  
BUREAU OF  
INVESTIGATION  
OF THE  
DEPARTMENT OF JUSTICE  
WASHINGTON, D. C.  
20535

TO : DIRECTOR, FBI  
FROM : SAC, NEW YORK  
SUBJECT: [Illegible]

RE: [Illegible]

Tech SpecChangeJustification

4.8.1.2 - Incorporated reference to  
4.8.1.1.4 - Reports, which was  
renumbered as a result of  
incorporation of a new surveillance  
4.8.1.1.3. Reference to 4.8.1.1.3  
has been deleted.

The reference to 4.8.1.1.3 has been deleted  
since it applies to diesel generator E,  
Diesel generator E will always be tested and  
demonstrated OPERABLE since it is not Unit  
related.

3.8.2.1  
3.8.2.2

3.8.2.1.C - Incorporates the D.C. electrical  
3.8.2.2.C power sources for diesel  
generator E.

The 125 volt D.C. system supplies d.c. power  
for diesel controls, field flashing, tripping  
the 4.16KV switchgear in the E diesel  
generator building and to the ECCS isolation  
valves. The system was installed in  
accordance with the recommendations in Reg.  
Guide 1.128 and will be surveilled per the  
guidelines in Reg. Guide 1.129 and IEEE  
Standard 450-1980.

3.8.2.1 Action e. - Incorporated the phrase  
3.8.2.2 Action a. 'Division I or  
3.8.2.2 Action e. Division II' after the  
word 'required'.

This change is necessary to clarify that  
Action e is only applicable to Division I or  
Division II - which is appropriate because  
the battery bank and charger for diesel  
generator E have their own action statements.

3.8.2.1.f New Action statements to address  
3.8.2.1.g the battery bank and charger for  
3.8.2.1.h diesel generator E.  
3.8.2.1.i

The new Action statements address all  
possible scenarios i.e. when diesel generator  
E is and is not aligned to the Class 1E  
distribution system. The ACTION requirements  
specified provide restriction upon continued  
facility operation commensurate with the level  
of degradation.

3.8.2.2.g  
3.8.2.2.h  
3.8.2.2.i  
3.8.2.2.j

These new action statements are equivalent to  
the existing statements applicable to diesel  
generators A, B, C and D.

4.8.2.1.c.4.d - Incorporated diesel  
E's battery charger.

Change is necessary to reflect unique changing  
requirements for the 125-volt diesel  
generator E batteries.

Figure 1. The effect of the concentration of the *Agrobacterium* suspension on the transformation efficiency of *Agrobacterium* strains. The *Agrobacterium* strains were cultured in YEA medium for 24 h at 28 °C. The cell concentration of the strains was adjusted to 10<sup>8</sup> cells/ml. The cell suspension was mixed with the plant tissue and the transformation efficiency was determined. The results were expressed as the mean ± SD of three independent experiments. The asterisks indicate significant differences between the strains at the same concentration of the cell suspension.

1. The first group of people who are interested in the study of the history of the United States are the people who are interested in the history of the United States.

[illegible]

10

1. 1940年10月，在“九一八”事变十周年之际，毛泽东在《论持久战》中，第一次提出“持久战”的概念。

1. 1990年12月25日，在《人民日报》发表署名文章《中国要实行“三民主主义”》，主张中国应实行“三民主主义”，并攻击中国共产党。

1

[illegible]

1  
 2  
 3  
 4  
 5  
 6  
 7  
 8  
 9  
 10  
 11  
 12  
 13  
 14  
 15  
 16  
 17  
 18  
 19  
 20  
 21  
 22  
 23  
 24  
 25  
 26  
 27  
 28  
 29  
 30  
 31  
 32  
 33  
 34  
 35  
 36  
 37  
 38  
 39  
 40  
 41  
 42  
 43  
 44  
 45  
 46  
 47  
 48  
 49  
 50  
 51  
 52  
 53  
 54  
 55  
 56  
 57  
 58  
 59  
 60  
 61  
 62  
 63  
 64  
 65  
 66  
 67  
 68  
 69  
 70  
 71  
 72  
 73  
 74  
 75  
 76  
 77  
 78  
 79  
 80  
 81  
 82  
 83  
 84  
 85  
 86  
 87  
 88  
 89  
 90  
 91  
 92  
 93  
 94  
 95  
 96  
 97  
 98  
 99  
 100

1  
2  
3  
4  
5

[illegible]

— 10 —

1. 2. 3. 4. 5. 6. 7. 8. 9. 10. 11. 12. 13. 14. 15. 16. 17. 18. 19. 20. 21. 22. 23. 24. 25. 26. 27. 28. 29. 30. 31. 32. 33. 34. 35. 36. 37. 38. 39. 40. 41. 42. 43. 44. 45. 46. 47. 48. 49. 50. 51. 52. 53. 54. 55. 56. 57. 58. 59. 60. 61. 62. 63. 64. 65. 66. 67. 68. 69. 70. 71. 72. 73. 74. 75. 76. 77. 78. 79. 80. 81. 82. 83. 84. 85. 86. 87. 88. 89. 90. 91. 92. 93. 94. 95. 96. 97. 98. 99. 100. 101. 102. 103. 104. 105. 106. 107. 108. 109. 110. 111. 112. 113. 114. 115. 116. 117. 118. 119. 120. 121. 122. 123. 124. 125. 126. 127. 128. 129. 130. 131. 132. 133. 134. 135. 136. 137. 138. 139. 140. 141. 142. 143. 144. 145. 146. 147. 148. 149. 150. 151. 152. 153. 154. 155. 156. 157. 158. 159. 160. 161. 162. 163. 164. 165. 166. 167. 168. 169. 170. 171. 172. 173. 174. 175. 176. 177. 178. 179. 180. 181. 182. 183. 184. 185. 186. 187. 188. 189. 190. 191. 192. 193. 194. 195. 196. 197. 198. 199. 200. 201. 202. 203. 204. 205. 206. 207. 208. 209. 210. 211. 212. 213. 214. 215. 216. 217. 218. 219. 220. 221. 222. 223. 224. 225. 226. 227. 228. 229. 230. 231. 232. 233. 234. 235. 236. 237. 238. 239. 240. 241. 242. 243. 244. 245. 246. 247. 248. 249. 250. 251. 252. 253. 254. 255. 256. 257. 258. 259. 260. 261. 262. 263. 264. 265. 266. 267. 268. 269. 270. 271. 272. 273. 274. 275. 276. 277. 278. 279. 280. 281. 282. 283. 284. 285. 286. 287. 288. 289. 290. 291. 292. 293. 294. 295. 296. 297. 298. 299. 300. 301. 302. 303. 304. 305. 306. 307. 308. 309. 310. 311. 312. 313. 314. 315. 316. 317. 318. 319. 320. 321. 322. 323. 324. 325. 326. 327. 328. 329. 330. 331. 332. 333. 334. 335. 336. 337. 338. 339. 340. 341. 342. 343. 344. 345. 346. 347. 348. 349. 350. 351. 352. 353. 354. 355. 356. 357. 358. 359. 360. 361. 362. 363. 364. 365. 366. 367. 368. 369. 370. 371. 372. 373. 374. 375. 376. 377. 378. 379. 380. 381. 382. 383. 384. 385. 386. 387. 388. 389. 390. 391. 392. 393. 394. 395. 396. 397. 398. 399. 400. 401. 402. 403. 404. 405. 406. 407. 408. 409. 410. 411. 412. 413. 414. 415. 416. 417. 418. 419. 420. 421. 422. 423. 424. 425. 426. 427. 428. 429. 430. 431. 432. 433. 434. 435. 436. 437. 438. 439. 440. 441. 442. 443. 444. 445. 446. 447. 448. 449. 450. 451. 452. 453. 454. 455. 456. 457. 458. 459. 460. 461. 462. 463. 464. 465. 466. 467. 468. 469. 470. 471. 472. 473. 474. 475. 476. 477. 478. 479. 480. 481. 482. 483. 484. 485. 486. 487. 488. 489. 490. 491. 492. 493. 494. 495. 496. 497. 498. 499. 500. 501. 502. 503. 504. 505. 506. 507. 508. 509. 510. 511. 512. 513. 514. 515. 516. 517. 518. 519. 520. 521. 522. 523. 524. 525. 526. 527. 528. 529. 530. 531. 532. 533. 534. 535. 536. 537. 538. 539. 540. 541. 542. 543. 544. 545. 546. 547. 548. 549. 550. 551. 552. 553. 554. 555. 556. 557. 558. 559. 560. 561. 562. 563. 564. 565. 566. 567. 568. 569. 570. 571. 572. 573. 574. 575. 576. 577. 578. 579. 580. 581. 582. 583. 584. 585. 586. 587. 588. 589. 590. 591. 592. 593. 594. 595. 596. 597. 598. 599. 600. 601. 602. 603. 604. 605. 606. 607. 608. 609. 610. 611. 612. 613. 614. 615. 616. 617. 618. 619. 620. 621. 622. 623. 624. 625. 626. 627. 628. 629. 630. 631. 632. 633. 634. 635. 636. 637. 638. 639. 640. 641. 642. 643. 644. 645. 646. 647. 648. 649. 650. 651. 652. 653. 654. 655. 656. 657. 658. 659. 660. 661. 662. 663. 664. 665. 666. 667. 668. 669. 670. 671. 672. 673. 674. 675. 676. 677. 678. 679. 680. 681. 682. 683. 684. 685. 686. 687. 688. 689. 690. 691. 692. 693. 694. 695. 696. 697. 698. 699. 700. 701. 702. 703. 704. 705. 706. 707. 708. 709. 710. 711. 712. 713. 714. 715. 716. 717. 718. 719. 720. 721. 722. 723. 724. 725. 726. 727. 728. 729. 730. 731. 732. 733. 734. 735. 736. 737. 738. 739. 740. 741. 742. 743. 744. 745. 746. 747. 748. 749. 750. 751. 752. 753. 754. 755. 756. 757. 758. 759. 760. 761. 762. 763. 764. 765. 766. 767. 768. 769. 770. 771. 772. 773. 774. 775. 776. 777. 778. 779. 780. 781. 782. 783. 784. 785. 786. 787. 788. 789. 790. 791. 792. 793. 794. 795. 796. 797. 798. 799. 800. 801. 802. 803. 804. 805. 806. 807. 808. 809. 810. 811. 812. 813. 814. 815. 816. 817. 818. 819. 820. 821. 822. 823. 824. 825. 826. 827. 828. 829. 830. 831. 832. 833. 834. 835. 836. 837. 838. 839. 840. 84

Figure 1 illustrates the stages of chick development from fertilization to hatching. The sequence begins with a fertilized egg (1), followed by cleavage stages (2-4), the formation of the blastoderm (5), and the development of the yolk sac (6-8). The embryo is shown in various positions (9-11) as it prepares to hatch. The final stage (12) shows the hatched chick in the nest, with the yolk sac still attached.

11

[illegible]

1. 2. 3. 4. 5. 6. 7. 8. 9. 10. 11. 12. 13. 14. 15. 16. 17. 18. 19. 20. 21. 22. 23. 24. 25. 26. 27. 28. 29. 30. 31. 32. 33. 34. 35. 36. 37. 38. 39. 40. 41. 42. 43. 44. 45. 46. 47. 48. 49. 50. 51. 52. 53. 54. 55. 56. 57. 58. 59. 60. 61. 62. 63. 64. 65. 66. 67. 68. 69. 70. 71. 72. 73. 74. 75. 76. 77. 78. 79. 80. 81. 82. 83. 84. 85. 86. 87. 88. 89. 90. 91. 92. 93. 94. 95. 96. 97. 98. 99. 100. 101. 102. 103. 104. 105. 106. 107. 108. 109. 110. 111. 112. 113. 114. 115. 116. 117. 118. 119. 120. 121. 122. 123. 124. 125. 126. 127. 128. 129. 130. 131. 132. 133. 134. 135. 136. 137. 138. 139. 140. 141. 142. 143. 144. 145. 146. 147. 148. 149. 150. 151. 152. 153. 154. 155. 156. 157. 158. 159. 160. 161. 162. 163. 164. 165. 166. 167. 168. 169. 170. 171. 172. 173. 174. 175. 176. 177. 178. 179. 180. 181. 182. 183. 184. 185. 186. 187. 188. 189. 190. 191. 192. 193. 194. 195. 196. 197. 198. 199. 200. 201. 202. 203. 204. 205. 206. 207. 208. 209. 210. 211. 212. 213. 214. 215. 216. 217. 218. 219. 220. 221. 222. 223. 224. 225. 226. 227. 228. 229. 230. 231. 232. 233. 234. 235. 236. 237. 238. 239. 240. 241. 242. 243. 244. 245. 246. 247. 248. 249. 250. 251. 252. 253. 254. 255. 256. 257. 258. 259. 260. 261. 262. 263. 264. 265. 266. 267. 268. 269. 270. 271. 272. 273. 274. 275. 276. 277. 278. 279. 280. 281. 282. 283. 284. 285. 286. 287. 288. 289. 290. 291. 292. 293. 294. 295. 296. 297. 298. 299. 300. 301. 302. 303. 304. 305. 306. 307. 308. 309. 310. 311. 312. 313. 314. 315. 316. 317. 318. 319. 320. 321. 322. 323. 324. 325. 326. 327. 328. 329. 330. 331. 332. 333. 334. 335. 336. 337. 338. 339. 340. 341. 342. 343. 344. 345. 346. 347. 348. 349. 350. 351. 352. 353. 354. 355. 356. 357. 358. 359. 360. 361. 362. 363. 364. 365. 366. 367. 368. 369. 370. 371. 372. 373. 374. 375. 376. 377. 378. 379. 380. 381. 382. 383. 384. 385. 386. 387. 388. 389. 390. 391. 392. 393. 394. 395. 396. 397. 398. 399. 400. 401. 402. 403. 404. 405. 406. 407. 408. 409. 410. 411. 412. 413. 414. 415. 416. 417. 418. 419. 420. 421. 422. 423. 424. 425. 426. 427. 428. 429. 430. 431. 432. 433. 434. 435. 436. 437. 438. 439. 440. 441. 442. 443. 444. 445. 446. 447. 448. 449. 450. 451. 452. 453. 454. 455. 456. 457. 458. 459. 460. 461. 462. 463. 464. 465. 466. 467. 468. 469. 470. 471. 472. 473. 474. 475. 476. 477. 478. 479. 480. 481. 482. 483. 484. 485. 486. 487. 488. 489. 490. 491. 492. 493. 494. 495. 496. 497. 498. 499. 500. 501. 502. 503. 504. 505. 506. 507. 508. 509. 510. 511. 512. 513. 514. 515. 516. 517. 518. 519. 520. 521. 522. 523. 524. 525. 526. 527. 528. 529. 530. 531. 532. 533. 534. 535. 536. 537. 538. 539. 540. 541. 542. 543. 544. 545. 546. 547. 548. 549. 550. 551. 552. 553. 554. 555. 556. 557. 558. 559. 560. 561. 562. 563. 564. 565. 566. 567. 568. 569. 570. 571. 572. 573. 574. 575. 576. 577. 578. 579. 580. 581. 582. 583. 584. 585. 586. 587. 588. 589. 590. 591. 592. 593. 594. 595. 596. 597. 598. 599. 600. 601. 602. 603. 604. 605. 606. 607. 608. 609. 610. 611. 612. 613. 614. 615. 616. 617. 618. 619. 620. 621. 622. 623. 624. 625. 626. 627. 628. 629. 630. 631. 632. 633. 634. 635. 636. 637. 638. 639. 640. 641. 642. 643. 644. 645. 646. 647. 648. 649. 650. 651. 652. 653. 654. 655. 656. 657. 658. 659. 660. 661. 662. 663. 664. 665. 666. 667. 668. 669. 670. 671. 672. 673. 674. 675. 676. 677. 678. 679. 680. 681. 682. 683. 684. 685. 686. 687. 688. 689. 690. 691. 692. 693. 694. 695. 696. 697. 698. 699. 700. 701. 702. 703. 704. 705. 706. 707. 708. 709. 710. 711. 712. 713. 714. 715. 716. 717. 718. 719. 720. 721. 722. 723. 724. 725. 726. 727. 728. 729. 730. 731. 732. 733. 734. 735. 736. 737. 738. 739. 740. 741. 742. 743. 744. 745. 746. 747. 748. 749. 750. 751. 752. 753. 754. 755. 756. 757. 758. 759. 760. 761. 762. 763. 764. 765. 766. 767. 768. 769. 770. 771. 772. 773. 774. 775. 776. 777. 778. 779. 780. 781. 782. 783. 784. 785. 786. 787. 788. 789. 790. 791. 792. 793. 794. 795. 796. 797. 798. 799. 800. 801. 802. 803. 804. 805. 806. 807. 808. 809. 810. 811. 812. 813. 814. 815. 816. 817. 818. 819. 820. 821. 822. 823. 824. 825. 826. 827. 828. 829. 830. 831. 832. 833. 834. 835. 836. 837. 838. 839. 840.

[illegible]

10

Tech SpecChangeJustification

4.8.2.1.d.2.b.(9 - Incorporated the diesel generator E batter load profile.

Surveilling the battery and charger for diesel generator E enhances safety since it provides assurance that the batteries can perform their intended function. This is equally important since these batteries provide power to the ESW valves.

3.8.3.1      3.8.3.1.a.1.a)1)      Incorporate OA510 busses  
3.8.3.2      3.8.3.1.a.1.b)1)  
              3.8.3.1.a.2.a)1)  
              3.8.3.1.a.2.b)1)  
  
              3.8.3.2.a.1.a)1)  
              3.8.3.2.a.1.b)1)  
              3.8.3.2.a.2.a)1)  
              3.8.3.2.a.2.b)1)  
  
3.8.3.1.a.3      Incorporate the power  
3.8.3.2.a.3      distribution system associated  
3.8.3.1.b.3      with diesel generator E.  
3.8.3.2.b.3

These busses provide a double break on the 4 kv system and serve as the transfer points for aligning the existing diesel generators or diesel generator E to the Unit 1 or Unit 2 ESS busses. The OA510 busses have been installed under DCP's 83-812A, 83-812B and 83-812C (see attached safety evaluations).

The OPERABILITY of the power distribution system during operation ensures sufficient power will be available to supply the safety related equipment required for (1) the safe shutdown of the Plant and (2) the mitigation and control of accident conditions within the facility. The minimum specified distribution systems satisfies the requirement of GDC 17 to 10CFR50, Appendix A.

The OPERABILITY of the power distribution system during shutdown and refueling ensures that (1) the facility can be maintained in the shutdown or refueling condition for extended time periods and (2) sufficient instrumentation and control capability is available for monitoring and maintaining the Unit status.

3.8.3.1 Actions    a&b    Incorporated the phrase  
   'Division I or

This phrase has been incorporated to delineate the fact that ACTIONS a & b do not apply to

1. The first of these is the fact that the

the second of these is the fact that the

the third of these is the fact that the

the fourth of these is the fact that the

the fifth of these is the fact that the

the sixth of these is the fact that the

the seventh of these is the fact that the

the eighth of these is the fact that the

the ninth of these is the fact that the

the tenth of these is the fact that the

the eleventh of these is the fact that the

the twelfth of these is the fact that the

the thirteenth of these is the fact that the

the fourteenth of these is the fact that the

the fifteenth of these is the fact that the

the sixteenth of these is the fact that the

the seventeenth of these is the fact that the

the eighteenth of these is the fact that the

the nineteenth of these is the fact that the

the twentieth of these is the fact that the

the twenty-first of these is the fact that the

Tech Spec

Change

Justification

Division II'.

those power distribution systems associated with diesel generator E. Diesel generator E's power distribution system has its own specific ACTION statements.

3.8.3.1 Actions f, g and h

3.8.3.2 Actions g, h and i

These new action statements provide restriction upon continued operation of the facility commensurate with the level of degradation. They are consistent with the existing ACTIONS for diesel generators A, B, C, and D.

3.8.4.2

Specification retitled to read "Motor Operated Valves Thermal Overload Protection-Continuous" and renumbered as 3.8.4.2.1. Reference to Table 3.8.4.2-1 renumbered. Surveillances 4.8.4.2.1 & 4.8.4.2.2 renumber consistent with renumbering of specification.

The diesel generator E, ESW valves thermal overload protection is in some instances bypassed continuously and in other instances automatically. This specification details the requirements for continuous bypass and a new specification 3.8.4.2.2 addresses automatic bypass.

Applicability Statement - incorporated the phrase 'unless otherwise specified'.

This phrase has been added to clarify changes to Table 3.8.4.2.1-1.

Table 3.8.4.2.1-1 - Renumbered, Incorporated ESW valves associated with diesel generator E and added an asterisk footnote which states "Continuous bypass not required when corresponding diesel generator is not aligned to the Class 1E distribution system".

Table renumbered for consistency.

When an existing diesel generator is not connected to the Class 1E distribution system there is no reason to require thermal overload protection bypass of it's associated ESW valves. Since under the condition, the valves do not provide a safety function. Bypass would be initiated prior to returning the corresponding diesel generator to service.





Tech SpecChangeJustification

3.8.4.2.2  
(NEW)

3.8.4.2.2 - Actions A & B

The ESW system cannot provide cooling to 5 diesel generators. Therefore when diesel generator E is not aligned to the Class 1E distribution system - in which case it can be operated for testing thus requiring ESW - it is essential that adequate ESW be available to diesels A, B, C or D in the event one or all of them receive an actuation signal. To provide this margin of safety, thermal overload protection of the ESW valves associated with diesel generator E is automatically bypassed thus ensuring those valves will close should the existing diesel receive a start signal.

4.8.4.2.2.1

Consistent with existing technical specification.

---

B 3/4.8

Added wording for clarity.

Incorporated the current plant configuration i.e. five diesel generators.

