



UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555-0001

COMMONWEALTH EDISON COMPANY

DOCKET NO. 50-237

DRESDEN NUCLEAR POWER STATION, UNIT 2

AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. 138
License No. DPR-19

1. The Nuclear Regulatory Commission (the Commission) has found that:
 - A. The application for amendment by the Commonwealth Edison Company (the licensee) dated March 26, 1993, as supplemented May 15, 1995, complies with the standards and requirements of the Atomic Energy Act of 1954, as amended (the Act), and the Commission's rules and regulations set forth in 10 CFR Chapter I;
 - B. The facility will operate in conformity with the application, the provisions of the Act and the rules and regulations of the Commission;
 - C. There is reasonable assurance (i) that the activities authorized by this amendment can be conducted without endangering the health and safety of the public, and (ii) that such activities will be conducted in compliance with the Commission's regulations;
 - D. The issuance of this amendment will not be inimical to the common defense and security or to the health and safety of the public; and
 - E. The issuance of this amendment is in accordance with 10 CFR Part 51 of the Commission's regulations and all applicable requirements have been satisfied.
2. Accordingly, the license is amended by changes to the Technical Specifications as indicated in the attachment to this license amendment and paragraph 2.C.(2) of Facility Operating License No. DPR-19 is hereby amended to read as follows:

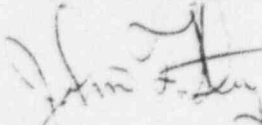
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(2) Technical Specifications

The Technical Specifications contained in Appendix A, as revised through Amendment No. 138, are hereby incorporated in the license. The licensee shall operate the facility in accordance with the Technical Specifications.

3. This license amendment is effective as of the date of its issuance and shall be implemented no later than December 31, 1995.

FOR THE NUCLEAR REGULATORY COMMISSION



John F. Stang, Senior Project Manager
Project Directorate III-2
Division of Reactor Projects - III/IV
Office of Nuclear Reactor Regulation

Attachment:
Changes to the Technical
Specifications

Date of Issuance: September 18, 1995



UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555-0001

COMMONWEALTH EDISON COMPANY

DOCKET NO. 50-249

DRESDEN NUCLEAR POWER STATION, UNIT 3

AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. 132
License No. DPR-25

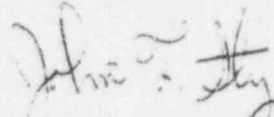
1. The Nuclear Regulatory Commission (the Commission) has found that:
 - A. The application for amendment by the Commonwealth Edison Company (the licensee) dated March 26, 1993, as supplemented May 15, 1995, complies with the standards and requirements of the Atomic Energy Act of 1954, as amended (the Act), and the Commission's rules and regulations set forth in 10 CFR Chapter I;
 - B. The facility will operate in conformity with the application, the provisions of the Act and the rules and regulations of the Commission;
 - C. There is reasonable assurance (i) that the activities authorized by this amendment can be conducted without endangering the health and safety of the public, and (ii) that such activities will be conducted in compliance with the Commission's regulations;
 - D. The issuance of this amendment will not be inimical to the common defense and security or to the health and safety of the public; and
 - E. The issuance of this amendment is in accordance with 10 CFR Part 51 of the Commission's regulations and all applicable requirements have been satisfied.
2. Accordingly, the license is amended by changes to the Technical Specifications as indicated in the attachment to this license amendment and paragraph 3.B. of Facility Operating License No. DPR-25 is hereby amended to read as follows:

B. Technical Specifications

The Technical Specifications contained in Appendix A, as revised through Amendment No. 132, are hereby incorporated in the license. The licensee shall operate the facility in accordance with the Technical Specifications.

3. This license amendment is effective as of the date of its issuance and shall be implemented no later than December 31, 1995.

FOR THE NUCLEAR REGULATORY COMMISSION



John F. Stang, Senior Project Manager
Project Directorate III-2
Division of Reactor Projects - III/IV
Office of Nuclear Reactor Regulation

Attachment:
Changes to the Technical
Specifications

Date of Issuance: September 18, 1995

ATTACHMENT TO LICENSE AMENDMENT NO. 138 AND 132

FACILITY OPERATING LICENSE NOS. DPR-19 AND DPR-25

DOCKET NOS. 50-237 AND 50-249

Revise the Appendix A Technical Specifications by removing the pages identified below and inserting the attached pages. The revised pages are identified by the captioned amendment number.

<u>UNIT 2</u> <u>REMOVE</u>	<u>UNIT 3</u> <u>REMOVE</u>	<u>INSERT</u>
3/4.9-1	3/4.9-1	3/4.9-1
3/4.9-1a	3/4.9-1a	3/4.9-2
3/4.9-2	3/4.9-2	3/4.9-3
3/4.9-3	3/4.9-3	3/4.9-4
3/4.9-3a	3/4.9-3a	3/4.9-5
3/4.9-4	3/4.9-4	3/4.9-6
3/4.9-5	3/4.9-5	3/4.9-7
3/4.9-5a	3/4.9-5a	3/4.9-8
3/4.9-6	3/4.9-6	3/4.9-9
3/4.9-6a	3/4.9-6a	3/4.9-10
-	-	3/4.9-11
-	-	3/4.9-12
-	-	3/4.9-13
-	-	3/4.9-14
-	-	3/4.9-15
-	-	3/4.9-16
-	-	3/4.9-17
-	-	3/4.9-18
-	-	3/4.9-19
-	-	3/4.9-20
-	-	3/4.9-21
B 3/4.9-7	B 3/4.9-7	B 3/4.9-1
B 3/4.9-7a	B 3/4.9-7a	B 3/4.9-2
B 3/4.9-8	B 3/4.9-8	B 3/4.9-3
B 3/4.9-9	B 3/4.9-9	B 3/4.9-4
----		B 3/4.9-5
----		B 3/4.9-6
----		B 3/4.9-7
----		B 3/4.9-8

3.9 - LIMITING CONDITIONS FOR OPERATION

A. A.C. Sources - Operating

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

1. Two physically independent circuits between the offsite transmission network and the onsite Class 1E distribution system, and
2. Two separate and independent diesel generators, each with:
 - a. A separate fuel oil day tank containing ≥ 205 gallons of available fuel,
 - b. A separate bulk fuel storage system containing $\geq 10,000$ gallons of available fuel, and
 - c. A separate fuel oil transfer pump.

APPLICABILITY:

OPERATIONAL MODE(s) 1, 2, and 3.

ACTION:

1. With one of the above required offsite circuit power sources inoperable:
 - a. Demonstrate the OPERABILITY of the remaining offsite circuit by performing Surveillance Requirement 4.9.A.1.a within 1 hour and at least once per 8 hours thereafter.

4.9 - SURVEILLANCE REQUIREMENTS

A. A.C Sources - Operating

1. Each of the required independent circuits between the offsite transmission network and the onsite Class 1E distribution system shall be determined OPERABLE:
 - a. At least once per 7 days by verifying correct breaker alignments and indicated power availability, and
 - b. [INTENTIONALLY BLANK]
This requirement is an open item to be addressed in the TSUP clean-up amendment
2. Each of the required diesel generators shall be demonstrated OPERABLE^(a) in accordance with the frequency specified in Table 4.9.A-1 by:
 - a. Verifying the fuel levels in both the fuel oil day tank and the bulk fuel storage tank.
 - b. Verifying the fuel transfer pump starts and transfers fuel from the bulk fuel storage system to the fuel oil day tank.

a All planned diesel generator tests shall be conducted in accordance with the manufacturer's recommendations regarding engine prelube, leak detection and warmup procedures, and as applicable regarding loading and shutdown recommendations.

3.9 - LIMITING CONDITIONS FOR OPERATION

- b. Demonstrate the OPERABILITY of each diesel generator by performing Surveillance Requirement 4.9.A.2.c for each diesel generator separately within 24 hours (if it has not been successfully tested within the past 24 hours) and within the subsequent 72 hours, and
 - c. Restore the inoperable offsite circuit to OPERABLE status within 7 days or be in at least HOT SHUTDOWN within the next 12 hours and in COLD SHUTDOWN within the following 24 hours.
2. With one of the above required diesel generator power sources inoperable:
- a. Demonstrate the OPERABILITY of the offsite circuit power sources by performing Surveillance Requirement 4.9.A.1.a within 1 hour and at least once per 8 hours thereafter.
 - b. If the diesel generator is inoperable due to any cause other than preplanned preventive maintenance or testing, demonstrate the OPERABILITY of the remaining OPERABLE diesel generator by performing Surveillance Requirement 4.9.A.2.c within 24 hours^(b) (if it has not been successfully tested within the past 24 hours) and within the subsequent 72 hours, and

4.9 - SURVEILLANCE REQUIREMENTS

- c. Verifying^(c) the diesel starts and accelerates to synchronous speed with generator voltage and frequency at 4160 ± 420 volts and 60 ± 1.2 Hz, respectively.
 - d. Verifying^(c) the diesel generator is synchronized, loaded to between 2470 and 2600 kW^(d), and operated with this load for ≥ 60 minutes.
 - e. Verifying the diesel generator is aligned to provide standby power to the associated emergency busses.
 - f. Verifying the pressure in required starting air receiver tanks to be ≥ 220 psig.
3. Each of the required diesel generators shall be demonstrated OPERABLE at least once per 31 days and after each operation of the diesel where the period of operation was ≥ 1 hour by removing any accumulated water from the day tank.
4. Each of the required diesel generators shall be demonstrated OPERABLE at least once per 92 days by checking for and removing accumulated water from the fuel oil bulk storage tanks.

- b Contrary to the provisions of Specification 3.0.B, this test is required to be completed regardless of when the inoperable diesel generator is restored to OPERABILITY for failures that are potentially generic to the remaining diesel generator and for which appropriate alternative testing cannot be designed.
- c Surveillance Requirements 4.9.A.7.a and b may be substituted for Surveillance Requirements 4.9.A.2.c and d.
- d This band is meant as guidance to avoid routine overloading of the engine. Loads in excess of this band for special testing under direct monitoring by the manufacturer or momentary variations due to changing bus loads shall not invalidate the test.

3.9 - LIMITING CONDITIONS FOR OPERATION

- c. Restore the diesel generator to OPERABLE status within 7 days or be in at least HOT SHUTDOWN within the next 12 hours and in COLD SHUTDOWN within the following 24 hours.
3. With one of the above offsite circuit power sources and one of the above required diesel generator power sources inoperable:
- a. Demonstrate the OPERABILITY of the remaining offsite circuit power source by performing Surveillance Requirement 4.9.A.1.a within 1 hour and at least once per 8 hours thereafter.
 - b. If the diesel generator is inoperable due to any cause other than preplanned preventive maintenance or testing, demonstrate the OPERABILITY^(e) of the remaining OPERABLE diesel generator by performing Surveillance Requirement 4.9.A.2.c^(b) within 8 hours (if it has not been successfully tested within the past 24 hours) and within the subsequent 72 hours for each OPERABLE diesel generator.
 - c. Restore at least one of the inoperable A.C. power sources to OPERABLE status within 12 hours or be in at least HOT SHUTDOWN

4.9 - SURVEILLANCE REQUIREMENTS

5. Each of the required diesel generators shall be demonstrated OPERABLE by:
- a. Sampling new fuel oil prior to addition to the storage tanks in accordance with applicable ASTM standards, and
 - b. Verifying prior to addition to the storage tanks that the sample meets the applicable ASTM standards for API gravity, water and sediment, and the visual test for free water and particulate contamination, and
 - c. Verifying within 31 days of obtaining the sample that the kinematic viscosity is within applicable ASTM limits.
6. Each of the required diesel generators shall be demonstrated OPERABLE by:
- a. Sampling and analyzing the bulk fuel storage tanks at least once per 31 days in accordance with applicable ASTM standards, and
 - b. Verifying that the sample meets the applicable ASTM standards for water and sediment, kinematic viscosity, and ASTM particulate contaminant is < 10 mg/liter.

e A successful test of OPERABILITY per Surveillance Requirement 4.9.A.2.c under this ACTION statement satisfies the diesel generator test requirements of ACTION(s) 1 or 2 above.

b Contrary to the provisions of Specification 3.0.B, this test is required to be completed regardless of when the inoperable diesel generator is restored to OPERABILITY for failures that are potentially generic to the remaining diesel generator and for which appropriate alternative testing cannot be designed.

3.9 - LIMITING CONDITIONS FOR OPERATION

- within the next 12 hours and in COLD SHUTDOWN within the following 24 hours, and
- d. Restore both offsite circuits and both diesel generators to OPERABLE status within 7 days from the time of the initial loss or be in at least HOT SHUTDOWN within the next 12 hours and in COLD SHUTDOWN within the following 24 hours.
4. With one of the above required diesel generator power sources inoperable, in addition to ACTION 2 or 3, as applicable:
- a. Verify within 2 hours that at least one of the required two systems, subsystems, trains, components and devices in two train systems is OPERABLE including its emergency power supply.
- b. Otherwise, take the applicable ACTIONS for both systems, subsystems, trains, components or devices inoperable, or be in at least HOT SHUTDOWN within the next 12 hours and in COLD SHUTDOWN within the following 24 hours.

4.9 - SURVEILLANCE REQUIREMENTS

7. Each of the required diesel generators shall be demonstrated OPERABLE^(a) at least once per 184 days by:
- a. Verifying^(c) the diesel starts and accelerates to synchronous speed in ≤ 13 seconds. The generator voltage and frequency shall be verified to reach 4160 ± 420 volts and 60 ± 1.2 Hz, respectively, in ≤ 13 seconds after the start signal.
- b. Verifying^(c) the diesel generator is synchronized, loaded to between 2470 and 2600 kW^(d) in ≤ 200 seconds, and operates with this load for ≥ 60 minutes.
8. Each of the required diesel generators shall be demonstrated OPERABLE^(a) at least once per 18 months by:
- a. Subjecting the diesel to an inspection in accordance with instructions prepared in conjunction with its manufacturer's recommendations for this class of standby service.

-
- a All planned diesel generator tests shall be conducted in accordance with the manufacturer's recommendations regarding engine pre-lube, leak detection and warmup procedures, and as applicable regarding loading and shutdown recommendations.
- c Surveillance Requirements 4.9.A.7.a and b may be substituted for Surveillance Requirements 4.9.A.2.c and d.
- d This band is meant as guidance to avoid routine overloading of the engine. Loads in excess of this band for special testing under direct monitoring by the manufacturer or momentary variations due to changing bus loads shall not invalidate the test.

3.9 - LIMITING CONDITIONS FOR OPERATION

5. With two of the above required offsite circuit power sources inoperable:
- Demonstrate the OPERABILITY^(e) of both of the above required diesel generators separately by performing Surveillance Requirement 4.9.A.2.c within 8 hours (if it has not been successfully tested within the past 24 hours), unless the diesel generators are already operating, and within the subsequent 72 hours.
 - 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 and within COLD SHUTDOWN within the following 24 hours, and
 - Restore at least two offsite circuits to OPERABLE status within 7 days from the 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.
6. With both of the above required diesel generator power sources inoperable:
- Demonstrate the OPERABILITY of the offsite circuit power sources by performing Surveillance Requirement 4.9.A.1.a within 1 hour and at least once per 8 hours thereafter.

4.9 - SURVEILLANCE REQUIREMENTS

b. [INTENTIONALLY BLANK]

This requirement is an open item to be addressed in the TSUP clean-up amendment

- Verifying the diesel generator capability to reject a full emergency load without tripping. The generator voltage shall not exceed 5000 volts during or following the load rejection.
- Simulating a loss of offsite power by itself, and:
 - Verifying de-energization of the emergency buses, and load shedding from the emergency buses.
 - Verifying the diesel starts on the auto-start signal, energizes the emergency buses with permanently connected loads in ≤ 13 seconds, energizes the auto-connected shutdown loads, and operates with this load for ≥ 5 minutes. After energization, the steady-state voltage and frequency of the emergency busses shall be maintained at 4160 ± 420 volts and 60 ± 1.2 Hz, respectively, during this test.

^e A successful test of OPERABILITY per Surveillance Requirement 4.9.A.2.c under this ACTION statement satisfies the diesel generator test requirements of ACTION(s) 1 or 2 above.

3.9 - LIMITING CONDITIONS FOR OPERATION

- b. Within 2 hours, restore at least one of the above required diesel generators to OPERABLE^(e) status and verify that at least one of the required two systems, subsystems, trains, components and devices in two train systems is OPERABLE including its emergency power supply. Otherwise, take the applicable ACTIONS for both systems, subsystems, trains, components or devices inoperable, or be in at least HOT SHUTDOWN within the next 12 hours and in COLD SHUTDOWN within the following 24 hours.
 - c. Demonstrate the continued OPERABILITY of the restored diesel generator by performing Surveillance Requirement 4.9.A.2.c within the subsequent 72 hours, and
 - d. Restore at least two required diesel generators to OPERABLE status within 7 days from the 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.
7. With the fuel oil contained in the bulk fuel storage tank(s) not meeting the properties specified in Surveillance Requirements 4.9.A.5 and 4.9.A.6, restore the fuel oil properties to within the specified limits within 7 days. Otherwise, declare the associated diesel generator(s) inoperable.

4.9 - SURVEILLANCE REQUIREMENTS

- e. 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 ≥ 5 minutes. The generator voltage and frequency shall be 4160 ± 420 volts and 60 ± 1.2 Hz, respectively, in ≤ 13 seconds after the auto-start signal; the steady state generator voltage and frequency shall be maintained within these limits during this test.
- f. Simulating a loss of offsite power in conjunction with an ECCS actuation test signal, and
 - 1) Verifying de-energization of the emergency buses, and load shedding from the emergency buses.
 - 2) Verifying the diesel starts on the auto-start signal, energizes the emergency buses with permanently connected loads in ≤ 13 seconds, energizes the auto-connected emergency loads through the load sequencer, and operates with this load for ≥ 5 minutes. After energization, the steady-state voltage and frequency of the emergency busses shall be maintained at 4160 ± 420 volts and 60 ± 1.2 Hz, respectively, during this test.

e A successful test of OPERABILITY per Surveillance Requirement 4.9.A.2.c under this ACTION statement satisfies the diesel generator test requirements of ACTION(s) 1 or 2 above.

3.9 - LIMITING CONDITIONS FOR OPERATION

8. [INTENTIONALLY BLANK]
This requirement is an open item to be addressed in the TSUP clean-up amendment

4.9 - SURVEILLANCE REQUIREMENTS

- g. Verifying that all automatic diesel generator trips, except engine overspeed and generator differential current are automatically bypassed upon an emergency actuation signal.
- h. Verifying the diesel generator operates for ≥ 24 hours. During the first 2 hours of this test, the diesel generator shall be loaded to between 2730 and 2860 kW^(d) and during the remaining 22 hours of this test, the diesel generator shall be loaded to between 2470 and 2600 kW^(d). The generator voltage and frequency shall be 4160 ± 420 volts and 60 ± 1.2 Hz, respectively, in ≤ 13 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 4.9.A.8.f.2^(f).
- i. Verifying that the auto-connected loads to each diesel generator do not exceed the 2000 hour rating of 2860 kW.

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- f Criteria for determining the number of valid failures and number of valid tests shall be in accordance with draft Revision 3 of Regulatory Guide 1.9, January 1991, but determined on a per diesel generator basis. With the exception of the semi-annual fast start, no starting time requirements are required to meet the valid test requirements.
- d This band is meant as guidance to avoid routine overloading of the engine. Loads in excess of this band for special testing under direct monitoring by the manufacturer or momentary variations due to changing bus loads shall not invalidate the test.
- g If Surveillance Requirement 4.9.A.8.f.2 is not satisfactorily completed, it is not necessary to repeat the preceding 24 hour test. Instead, the diesel generator may be operated at approximately full load for 1 hour or until the operating temperature has stabilized.

3.9 - LIMITING CONDITIONS FOR OPERATION4.9 - SURVEILLANCE REQUIREMENTS

- j. Verifying the diesel generator's capability to:
 - 1) synchronize with the offsite power source while the generator is loaded with its emergency loads upon a simulated restoration of offsite power,
 - 2) transfer its loads to the offsite power source, and
 - 3) be restored to its standby status.
- k. Verifying that the automatic load sequence timer is OPERABLE with the interval between each load block within $\pm 10\%$ of its design interval.
- 9. Each of the required diesel generators shall be demonstrated OPERABLE^(a) at least once per 10 years or after any modifications which could affect diesel generator interdependence by starting both diesel generators simultaneously, and verifying that both diesel generators accelerate to ≥ 900 rpm in ≤ 13 seconds.
- 10. Each of the required diesel generators shall be demonstrated OPERABLE at least once per 10 years by draining each fuel oil storage tank, removing the accumulated sediment and cleaning the tank.

a All planned diesel generator tests shall be conducted in accordance with the manufacturer's recommendations regarding engine prelube, leak detection and warmup procedures, and as applicable regarding loading and shutdown recommendations.

TABLE 4.9.A-1

DIESEL GENERATOR TEST SCHEDULE

<u>NUMBER OF FAILURES IN LAST 20 VALID TESTS^(a)</u>	<u>TEST FREQUENCY</u>
≤ 1	At least once per 31 days
$\leq 2^{(b)}$	At least once per 7 days

a Criteria for determining the number of valid failures and number of valid tests shall be in accordance with draft Revision 3 of Regulatory Guide 1.9, January 1991, but determined on a per diesel generator basis. With the exception of the semi-annual fast start, no starting time requirements are required to meet the valid test requirements.

b The associated test frequency shall be maintained until 7 consecutive failure free demands have been performed AND the number of failures in the last 20 valid demands has been reduced to one.

3.9 - LIMITING CONDITIONS FOR OPERATION

4.9 - SURVEILLANCE REQUIREMENTS

B. A.C. Sources - Shutdown

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

1. One circuit between the offsite transmission network and the onsite Class 1E distribution system, and
2. One diesel generator with:
 - a. A fuel oil day tank containing ≥ 205 gallons of available fuel,
 - b. A bulk fuel storage system containing $\geq 10,000$ gallons of available fuel, and
 - c. A fuel oil transfer pump.

APPLICABILITY:

OPERATIONAL MJDE(s) 4 and 5, and when handling irradiated fuel in the secondary containment.

ACTION:

1. With less than the above required A.C. electrical power sources OPERABLE:
 - a. Suspend CORE ALTERATIONS,
 - b. Suspend handling of irradiated fuel in the secondary containment,
 - c. Suspend operations with a potential for draining the reactor vessel, and

B. A.C Sources - Shutdown

Each of the required A.C. electrical power sources shall be demonstrated OPERABLE per the surveillance requirements in Specification 4.9.A, except for 4.9.A.2.d.

3.9 - LIMITING CONDITIONS FOR OPERATION

4.9 - SURVEILLANCE REQUIREMENTS

- d. Suspend crane operations over the spent fuel storage pool if fuel assemblies are stored therein.

- 2 In addition, when in OPERATIONAL MODE 5 with the water level < 23 feet above the reactor pressure vessel flange, immediately initiate corrective action to restore the required power sources to OPERABLE status as soon as practical.

- 3. The provisions of Specification 3.0.C are not applicable.

3.9 - LIMITING CONDITIONS FOR OPERATIONC. D.C. Sources - Operating

As a minimum, the following D.C. electrical power sources shall be OPERABLE with the identified parameters within the limits specified in Table 4.9.C-1:

1. Two station 250 volt batteries, each with a full capacity charger.
2. Two station 125 volt batteries, each with a full capacity charger.
3. One unit 24/48 volt battery, with a full capacity charger.

APPLICABILITY:

OPERATIONAL MODE(s) 1, 2, and 3.

ACTION:

1. [INTENTIONALLY BLANK]

This requirement is an open item to be addressed in the TSUP clean-up amendment

2. [INTENTIONALLY BLANK]

This requirement is an open item to be addressed in the TSUP clean-up amendment

4.9 - SURVEILLANCE REQUIREMENTSC. D.C. Sources - Operating

Each of the required 24/48 volt, 125 volt and 250 volt batteries and chargers shall be demonstrated OPERABLE^(a):

1. At least once per 7 days by verifying that:
 - a. The parameters in Table 4.9.C-1 meet Category A limits, and
 - b. There is correct breaker alignment to the battery chargers and total battery terminal voltage is ≥ 26.0 , ≥ 125.9 , or ≥ 260.4 volts, as applicable, on float charge.
2. At least once per 92 days and within 7 days after a battery discharge with a battery terminal voltage below 21.7, 105 or 210 volts, as applicable, or battery overcharge with battery terminal voltage above 30, 150 or 300 volts, as applicable, by verifying that:
 - a. The parameters in Table 4.9.C-1 meet the Category B limits,
 - b. There is no visible corrosion at either terminals or connectors, or the connection resistance of these items is $\leq 150 \times 10^{-6}$ ohms or $\leq 20\%$ above baseline connection resistance, whichever is higher, and
 - c. [INTENTIONALLY BLANK]

^a An alternate 125 volt battery shall adhere to these same Surveillance Requirements to be considered OPERABLE, except the Unit 2 total battery terminal voltage on float charge shall be verified weekly as ≥ 130.2 volts.

3.9 - LIMITING CONDITIONS FOR OPERATION

3. With the provisions of either ACTION 1 or 2 above not met, be in at least HOT SHUTDOWN within the next 12 hours and in COLD SHUTDOWN within the following 24 hours.
4. With any Category A parameter(s) outside the limit(s) shown in Table 4.9.C-1, the battery may be considered OPERABLE provided that its associated charger is OPERABLE, and 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.
5. With any Category B parameter(s) outside the limit(s) shown in Table 4.9.C-1, 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 the limit(s) within 7 days.
6. With any Category B parameter not within its allowable value(s), immediately declare the battery inoperable.

4.9 - SURVEILLANCE REQUIREMENTS

3. At least every 18 months by verifying that:
 - a. The cells, cell plates and battery racks show no visual indication of physical damage or abnormal deterioration.
 - b. The cell-to-cell and terminal connections are clean, tight, free of corrosion and coated with anti-corrosion material.
 - c. The resistance of each cell-to-cell and terminal connection is $\leq 150 \times 10^{-6}$ ohms or $\leq 20\%$ above baseline connection resistance, whichever is higher.
 - d. The battery chargers will supply a load equal to the manufacturer's rating for at least 4 hours.
4. At least every 18 months, by verifying that the battery capacity is adequate to supply and maintain in OPERABLE status all of the actual or simulated emergency loads for design duty cycle when the battery is subjected to a battery service test.
5. [INTENTIONALLY BLANK]

This requirement is an open item to be addressed in the TSUP clean-up amendment

3.9 - LIMITING CONDITIONS FOR OPERATION

4.9 - SURVEILLANCE REQUIREMENTS

6. [INTENTIONALLY BLANK]
This requirement is an open item to be addressed in the TSUP clean-up amendment

TABLE 4.9.C-1

BATTERY SURVEILLANCE REQUIREMENTS

PARAMETER	CATEGORY A	CATEGORY B	
	LIMITS FOR EACH DESIGNATED PILOT CELL	LIMITS FOR EACH CONNECTED CELL	ALLOWABLE 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	≥ 2.13 volts	≥ 2.13 volts ^(c)	≥ 2.07 volts
Specific Gravity ^(a)	≥ 1.200 ^(b)	≥ 1.195 ^(b) , and Average of all connected cells > 1.205 ^(b)	Not more than 0.020 below the average of all connected cells, and Average of all connected cells ≥ 1.195 ^(b)

TABLE NOTATIONS

- (a) Corrected for electrolyte temperature and level.
- (b) Or battery charging current is less than 2 amperes when on float charge.
- (c) May be corrected for average electrolyte temperature.

3.9 - LIMITING CONDITIONS FOR OPERATION

D. D.C. Sources - Shutdown

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

1. One station 250 volt battery with a full capacity charger.
2. One station 125 volt battery with a full capacity charger.
3. One unit 24/48 volt battery with a full capacity charger.

APPLICABILITY:

OPERATIONAL MODE(s) 4 and 5, and when handling irradiated fuel in the secondary containment.

ACTION:

With any of the above required station batteries and/or associated charger(s) inoperable, suspend CORE ALTERATIONS, suspend handling of irradiated fuel in the secondary containment, and suspend operations with a potential for draining the reactor vessel.

4.9 - SURVEILLANCE REQUIREMENTS

D. D.C. Sources - Shutdown

The required batteries and chargers shall be demonstrated OPERABLE^(a) per the surveillance requirements in Specification 4.9.C.

a An alternate 125 volt battery shall adhere to these same Surveillance Requirements to be considered OPERABLE, except the Unit 2 total battery terminal voltage on float charge shall be verified weekly as ≥ 130.2 volts.

3.9 - LIMITING CONDITIONS FOR OPERATION

E. Distribution - Operating

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

1. A.C. power distribution, consisting of:
 - a. Both Unit engineered safety features 4160 volt buses:
 - 1) For Unit 2, Nos. 23-1 and 24-1,
 - 2) For Unit 3, Nos. 33-1 and 34-1.
 - b. Both Unit engineered safety features 480 volt buses:
 - 1) For Unit 2, Nos. 28 and 29,
 - 2) For Unit 3, Nos. 38 and 39.
 - c. The Unit 120 volt Essential Service Bus and Instrument Bus.
2. 250 volt D.C. power distribution, consisting of:
 - a. RB MCC Nos. 2 and 3, and
 - b. TB MCC Nos. 2 and 3.
3. For Unit 2, 125 volt D.C. power distribution, consisting of:
 - a. TB Main Bus Nos. 2A-1 and 3A,
 - b. TB Res. Bus Nos. 2B and 2B-1,
 - c. Reserve Bus No. 2, and
 - d. RB Distribution Panel No. 2.

4.9 - SURVEILLANCE REQUIREMENTS

E. Distribution - Operating

Each of the 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.

3.9 - LIMITING CONDITIONS FOR OPERATION

4.9 - SURVEILLANCE REQUIREMENTS

4. For Unit 3, 125 volt D.C. power distribution, consisting of:
 - a. TB Main Bus Nos. 2A-1, 3A and 3A-1,
 - b. TB Res. Bus Nos. 3B and 3B-1, and
 - c. RB Distribution Panel No. 3.
5. 24/48 volt D.C. power distribution, consisting of:
 - a. For Unit 2, Bus Nos. 2A and 2B.
 - b. For Unit 3, Bus Nos. 3A and 3B.

APPLICABILITY:

OPERATIONAL MODE(s) 1, 2, and 3.

ACTIONS:

1. With one of the above required A.C. distribution systems not energized, re-energize the system within 8 hours or be in at least Hot Shutdown within the next 12 hours and in Cold Shutdown within the following 24 hours.
2. With one of the above required D.C. distribution systems not energized, re-energize the system within 2 hours or be in at least Hot Shutdown within the next 12 hours and in Cold Shutdown within the following 24 hours.

3.9 - LIMITING CONDITIONS FOR OPERATION

F. Distribution - Shutdown

The following power distribution systems shall be energized with:

1. A.C. power distribution consisting of:
 - a. One Unit engineered safety features 4160 volt bus:
 - 1) For Unit 2, No. 23-1 or 24-1,
 - 2) For Unit 3, No. 33-1 or 34-1.
 - b. One associated Unit engineered safety features 480 volt bus:
 - 1) For Unit 2, No. 28 or 29,
 - 2) For Unit 3, No. 38 or 39.
2. For Unit 2, 125 volt D.C. power distribution, consisting of either:
 - a. TB Main Bus No. 2A-1, and RB Distribution Panel No. 2, or
 - b. TB Main Bus No. 3A, Reserve Bus No. 2, and TB Res. Bus Nos. 2B and 2B-1.
3. For Unit 3, 125 volt D.C. power distribution, consisting of either:
 - a. TB Main Bus Nos. 3A and 3A-1, and RB Distribution Panel No. 3, or
 - b. TB Main Bus No. 2A-1 and TB Res. Bus Nos. 3B and 3B-1.

4.9 - SURVEILLANCE REQUIREMENTS

F. Distribution - Shutdown

Each of the 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.

3.9 - LIMITING CONDITIONS FOR OPERATION

4.9 - SURVEILLANCE REQUIREMENTS

4. For 24/48 volt D.C. distribution, either:
 - a. Bus Nos. 2A and 2B, or
 - b. Bus Nos. 3A and 3B.

APPLICABILITY:

OPERATIONAL MODE(s) 4, 5, and when handling irradiated fuel in the secondary containment.

ACTIONS:

With less than the above required A.C. or D.C. distribution systems energized, suspend CORE ALTERATIONS, suspend handling of irradiated fuel in the secondary containment, and suspend operations with a potential for draining the reactor vessel.

3.9 - LIMITING CONDITIONS FOR OPERATION

G. RPS Power Monitoring

Two Reactor Protection System (RPS) electric power monitoring CHANNEL(s) for each inservice RPS Motor Generator (MG) set or alternate power supply shall be OPERABLE.

APPLICABILITY:

OPERATIONAL MODE(s) 1, 2, 3, 4^(a) and 5.

ACTION:

1. With one RPS electric power monitoring CHANNEL for an inservice RPS MG set or alternate power supply inoperable, restore the inoperable power monitoring CHANNEL to OPERABLE status within 72 hours or remove the associated RPS MG set or alternate power supply from service.
2. With both RPS electric power monitoring CHANNEL(s) for an inservice RPS MG set or alternate power supply inoperable, restore at least one electric power monitoring CHANNEL to OPERABLE status within 30 minutes or remove the associated RPS MG set or alternate power supply from service.

4.9 - SURVEILLANCE REQUIREMENTS

G. RPS Power Monitoring

The specified RPS electric power monitoring CHANNEL(s) shall be determined OPERABLE:

1. By performance of a CHANNEL FUNCTIONAL TEST each time the plant is in COLD SHUTDOWN for a period of more than 24 hours, unless performed in the previous 6 months.
2. At least once per 18 months by demonstrating the OPERABILITY of overvoltage, undervoltage, and underfrequency protective instrumentation by performance of a CHANNEL CALIBRATION including simulated automatic actuation of the protective relays, tripping logic, and output circuit breakers, and verifying the following setpoints:
 - a. Overvoltage ≤ 129.6 volts AC
 - b. Undervoltage ≥ 105.3 volts AC
 - c. Underfrequency ≥ 55.4 Hz

a With any control rod withdrawn.

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The initial conditions of design basis transient and accident analyses assume Engineering Safety Features (ESF) systems are OPERABLE. The A.C. and D.C. electrical power sources are designed to provide sufficient capacity, capability, redundancy, and reliability to ensure the availability of necessary power to ESF systems so that the fuel, reactor coolant system and containment design limits are not exceeded.

The A.C. and D.C. sources are designed to permit inspection and testing of all important areas and features, especially those that have a standby function. Periodic component tests are supplemented by extensive functional testing during refueling outages under simulated accident conditions.

3/4.9.A A.C. Sources - Operating

The OPERABILITY of the A.C. electrical power sources is consistent with the initial assumptions of the accident analyses and is based upon meeting the design basis of the plant. This includes maintaining at least one of the onsite or offsite A.C. sources, D.C. power sources and associated distribution systems OPERABLE during accident conditions concurrent with an assumed loss of all offsite power and a worst-case single failure.

There are two sources of electrical energy available, i.e., the offsite transmission system and the onsite diesel generators. Two unit reserve auxiliary transformers are available to supply the Station class 1E distribution system. The reserve auxiliary transformer is sized to carry 100% of the auxiliary load. If this reserve auxiliary transformer (the normal circuit) is lost, auxiliary power from the other unit can be obtained for one division through the 4160 volt bus tie (the alternate circuit). Additionally, two diesel generators are available to handle an accident. The allowable outage time takes into account the capacity and capability of the remaining A.C. sources, reasonable time for repairs, and the low probability of a design basis accident occurring during this period. Surveillance is required to ensure a highly reliable power source and no common cause failure mode for the remaining required offsite A.C. source.

Upon failure of one diesel generator, performance of appropriate surveillance requirements ensures a highly reliable power supply by checking the availability of the required offsite circuits, and the remaining required diesel generator. The initial surveillance is required to be completed regardless of how long the diesel inoperability persists, since the intent is that all diesel generator inoperabilities must be investigated for common cause failures. After the initial surveillance, an additional start test is required approximately mid-way through the allowed outage time to demonstrate continued OPERABILITY of the available onsite power sources. The diesel generator surveillance is limited to the normal start testing, since for cases in which less than a full complement of A.C. sources may be available, paralleling of two of the remaining A.C. sources may compromise the A.C. source independence. Additionally, the action provisions ensure that continued plant operation is not allowed when a complete loss of a required safety function (i.e., certain required components) would occur upon a loss of offsite power. These certain components which are critical to accomplishment of the required safety functions may be identified in advance and administratively controlled and/or evaluated on a case-by-case basis. With suitable

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redundancy in components and features not available, the plant must be placed in a condition for which the Limiting Condition for Operation does not apply.

The term verify as used toward A.C. electrical power sources means to administratively check by examining logs or other information to determine if certain components are out-of-service for pre-planned preventative maintenance, testing, or other reasons. It does not mean to perform the surveillance requirements needed to demonstrate the OPERABILITY of the component.

With one offsite circuit and one diesel generator inoperable, individual redundancy is lost in both the offsite and onsite electrical power system. Therefore, the allowable outage time is more limited. The time limit takes into account the capacity and capability of the remaining sources, reasonable time for repairs, and the low probability of a design basis event occurring during this period.

With both of the required offsite circuits inoperable, sufficient onsite A.C. sources are available to maintain the unit in a safe shutdown condition in the event of a design basis transient or accident. In fact, a simultaneous loss of offsite A.C. sources, a loss-of-coolant accident, and a worst-case single failure were postulated as a part of the design basis in the safety analysis. Thus, the allowable outage time provides a period of time to effect restoration of all or all but one of the offsite circuits commensurate with the importance of maintaining an A.C. electrical power system capable of meeting its design intent.

With two diesel generators inoperable there are no remaining standby A.C. sources. Thus, with an assumed loss of offsite electrical power, insufficient standby A.C. sources are available to power the minimum required ESF functions. Since the offsite electrical power system is the only source of A.C. power for this level of degradation, the risk associated with continued operation for a very short time could be less than that associated with an immediate controlled shutdown, which could result in grid instability and possibly a loss of total A.C. power. The allowable time to repair is severely restricted during this condition. The intent here is to avoid the risk associated with an immediate controlled shutdown and to minimize the risk associated with this level of degradation.

Reporting requirements are included for a "problem emergency diesel generator," as recommended in Regulatory Guide 1.9, draft Revision 3. The required report should include a description of the failures, the underlying causes, and the corrective actions taken.

Surveillance Requirements are provided which assure proper circuit continuity for the offsite A.C. electrical power supply to the onsite distribution network and availability of offsite A.C. electrical power. The breaker alignment verifies that each breaker is in its correct position to ensure distribution buses and loads are connected to their preferred power source. The frequency is adequate since breaker position is not likely to change without the operator being aware of it and because status is displayed in the control room. Should the action provisions of this specification require an increase in frequency, this Surveillance Requirement assures proper circuit continuity for the available offsite A.C. sources during periods of degradation and potential information on common cause failures that would otherwise go undiscovered.

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Surveillance Requirements are also provided for demonstrating the OPERABILITY of the diesel generators. The specified testing is based on the guidance provided in Regulatory Guide 1.9, draft Revision 3 (1/91), Regulatory Guide 1.108, Revision 1, and Regulatory Guide 1.137, Revision 1, as modified by plant specific analysis, diesel generator manufacturer recommendations and responses to Generic Letter 84-15.

The diesel generators are equipped with a prelubrication system which maintains a continuous flow of oil to the diesel engine moving parts while the engine is shutdown. The purpose of this system is to increase long term diesel generator reliability by reducing the stress and wear caused by frequent dry starting of the diesel generator. The diesel generator prelube may be accomplished either through normal operation of the installed prelubrication system or by manual prelubrication of the diesel generator in accordance with the manufacturer's instructions. Performance of an idle start of the diesel generator is not considered to be a means of prelubrication.

A periodic "start test" of the diesel generators demonstrates proper startup from standby conditions, and verifies that the required generator voltage and frequency is attained. For this test, the diesel generator may be slow started and reach rated speed on a prescribed schedule that is selected to minimize stress and wear. In cases where this Surveillance Requirement is being used to identify a possible common cause failure modes in accordance with the action provisions, this test eliminates the risk of paralleling two of the remaining A.C. sources, which may compromise the A.C. source independence.

A "load-run test" normally follows the periodic "start test" of the diesel generator to demonstrate operation at or near the continuous rating. This surveillance should only be conducted on one diesel generator at a time in order to avoid common cause failures that might result from offsite circuit or grid perturbations. A minimum run time of 60 minutes is required to stabilize engine temperatures. Actual run time should be in accordance with vendor recommendations with regard to good operating practice and should be sufficient to ensure that cooling and lubrication are adequate for extended periods of operation, while minimizing the time that the diesel generator is connected to the offsite source. This Surveillance Requirement may include gradual loading, as recommended by the manufacturer, so that mechanical stress and wear on the diesel engine are minimized. A load band is provided to avoid routine overloading of the diesel generators. Momentary transients outside the load band because of changing bus loads do not impact the validity of this test.

A periodic surveillance requirement is provided to assure the diesel generator is aligned to provide standby power on demand. Periodic surveillance requirements also verify that, without the aid of the refill compressor, sufficient air start capacity for each diesel generator is available. With either pair of air receiver tanks at the minimum specified pressure, there is sufficient air in the tanks to start the associated diesel generator.

Surveillance requirements provide verification that there is an adequate inventory of fuel oil in the storage tanks that is sufficient to provide time to place the facility in a safe shutdown condition and to bring in replenishment fuel from an offsite location. Additional diesel fuel can normally be obtained and delivered to the site within an eight hour period; thus a two day supply provides for

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adequate margin. The operation of each required fuel oil transfer pump is demonstrated by transferring fuel oil from its associated storage tank to its associated day tank. This surveillance provides assurance that the fuel oil transfer pump is OPERABLE, the fuel oil piping system is intact, the fuel delivery piping is not obstructed, and the necessary fuel oil day tank instrumentation is OPERABLE.

A comprehensive surveillance program is provided to ensure the availability of high quality fuel oil for the diesel generators which is necessary to ensure proper operation. Water content should be minimized, because water in the fuel would contribute to excessive corrosion of the system, causing decreased reliability. The growth of micro-organisms results in slime formations, which are one of the chief causes of jellying in hydrocarbon fuels. Therefore, minimizing such slimes is also essential to assuring high reliability.

Sampling of both new diesel fuel oil and the bulk fuel oil storage tanks is in accordance with the American Society for Testing Materials (ASTM) standard D4057. Testing for API gravity is in accordance with ASTM D1298, water and sediment is in accordance with ASTM D1796, and the visual test for free water and particulate contamination (clear and bright) is in accordance with ASTM D4176. Testing for kinematic viscosity is in accordance with ASTM D445 and particulate contaminant testing is in accordance with ASTM D2276. Parameter limits are in accordance with ASTM D396 for API gravity, ASTM D975 for water and sediment and for kinematic viscosity, and ASTM D4176 for "clear and bright." The specific revision in use for each of these standards is controlled by procedure.

The diesel fuel oil day tanks are not equipped with the capability to obtain samples. Any accumulated water is removed by partially draining the day tank to the bulk fuel oil storage tank on a routine basis. Monthly sampling of the bulk fuel oil storage tank is then used to detect the presence of any water.

Fuel oil testing may indicate that such fuel oil is not within the required parameters. However, continued operation is acceptable while measures are taken to restore the properties of the fuel oil to within its limits since the properties of interest, even if they were not within the required limits, would not have an immediate effect on diesel generator operation. If the fuel oil properties cannot be returned to within their limits in the allowed time, the associated diesel generator(s) is (are) declared inoperable and the appropriate ACTION(s) taken.

A semi-annual surveillance is provided to verify the diesel generator can "fast start" from standby conditions and achieve the required voltage and frequency within the timing assumptions of the design basis loss of coolant accident safety analysis. Conducting this test on a semi-annual frequency is consistent with the intent of the reduction of cold testing identified in Generic Letter 84-15.

Additional surveillance requirements provide for periodic inspections and demonstration of the diesel generator capabilities, some are conducted in conjunction with a simulated loss of offsite power and/or a simulated ESF actuation signal. These tests of the diesel generator are expected to

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be conducted during an outage to functionally test the system. This testing is consistent with the intent of the diesel generator reliability programs recommended by Regulatory Guide 1.155.

3/4.9.B A.C. Sources - Shutdown

The A.C. sources required during Cold Shutdown, Refueling, when handling irradiated fuel and during operations with a potential for draining the reactor vessel provide assurance that:

1. Systems to provide adequate coolant inventory makeup are available for the irradiated fuel in the core in case of an inadvertent draindown of the reactor vessel;
2. Systems needed to mitigate a fuel handling accident are available;
3. Systems necessary to mitigate the effects of events that can lead to core damage during shutdown are OPERABLE; and
4. Instrumentation and control capability is available for monitoring and maintaining the unit in a cold shutdown condition and refueling condition.

With one or more of the required A.C. electrical power sources inoperable, the action provisions require a suspension of activities that will preclude the occurrence of actions that could potentially initiate the postulated events. However, timely suspension of these activities is not intended to preclude completion of actions necessary to establish a safe, conservative condition.

The Surveillance Requirements for A.C. Source Shutdown are the same as those for operation, with the exception of the periodic "load-run test" which is not required due to the limited redundancy of A.C. power sources.

3/4.9.C D.C. Sources - Operating

The station D.C. electrical power system provides the A.C. emergency power system with control power. It also provides both motive and control power to selected safety-related equipment. During normal operation, the D.C. electrical loads are powered from the battery chargers with batteries floating on the system. In case of loss of normal power to the battery charger, the D.C. load is automatically powered from the station batteries.

Each battery of the D.C. electrical power systems is sized to start and carry the normal D.C. loads plus all D.C. loads required for safe shutdown on one unit and operations required to limit the consequences of a design basis event on the other unit for a period of 4 hours following loss of all A.C. sources. The battery chargers are sized to restore the battery to full charge under normal (non-emergency) load conditions. A normally disconnected alternate 125 volt battery is also provided as a backup for each normal battery. If both units are operating, the normal 125 volt battery must be returned to service within the specified time frame since the design configuration

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of the alternate battery circuit is susceptible to single failure and, hence, is not as reliable as the normal station circuit. During times when the other unit is in a Cold Shutdown or Refuel condition, an alternate 125 volt battery is available to replace a normal station 125 volt battery on a continuous basis to provide a second available power source. With the alternate 125 volt battery in service, the normally open breaker on the DC Reserve Bus is placed in the open position and posted, i.e., "tagged out."

With one of the required D.C. electrical power subsystems inoperable the remaining system has the capacity to support a safe shutdown and to mitigate an accident condition. However, a subsequent worst-case single failure would result in complete loss of ESF functions. Therefore, an allowed outage time is provided based on a reasonable time to assess plant status as a function of the inoperable D.C. electrical power subsystem and, if the D.C. electrical power subsystem is not restored to OPERABLE status, prepare to effect an orderly and safe plant shutdown.

Inoperable chargers do not necessarily indicate that the D.C. systems are not capable of performing their post-accident functions as long as the batteries are within their specified parameter limits. With both the required charger inoperable and the battery degraded, prompt action is required to assure an adequate D.C. power supply.

ACTION(s) are provided to delineate the measurements and time frames needed to continue to assure OPERABILITY of the Station batteries when battery parameters are outside their identified limits.

Battery surveillance requirements are based on the defined battery cell parameter values. Category A defines the normal parameter limit for each designated pilot cell in each battery. The pilot cells are the average cells in the battery based on previous test results. These cells are monitored closely as an indication of battery performance. Category B defines the normal parameter limits for each connected cell. The term "connected cell" excludes any battery cell that may be jumpered out because of a degraded condition or for any other reason. Category B also defines allowable values for each connected cell. These values, although reduced, provide assurance that sufficient capacity exists to perform the intended function and maintain a margin of safety. When any battery parameter is outside the Category B allowable value, the assurance of sufficient capacity as described above no longer exists and the battery must be declared inoperable.

Verifying battery terminal voltage while on float charge for the batteries helps to ensure the effectiveness of the charging system and the ability of the batteries to perform their intended function. The voltage requirements are based on the nominal design voltage of the battery and are consistent with the initial voltages assumed in the battery sizing calculations.

Visual inspection to detect corrosion of the battery cells and connections, or measurement of the resistance of each connection provides an indication of physical damage or abnormal deterioration that could potentially degrade battery performance. The limits established for this Surveillance Requirement shall be no more than 20% above the resistance as measured during installation or not above the ceiling value established by the manufacturer.

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Verifying an acceptable average temperature of representative cells is consistent with the recommendations of IEEE-450 and ensures that lower than normal temperatures do not act to inhibit or reduce battery capacity.

Verifying that the chargers will provide the manufacturer's rated current and voltage for four hours ensures that charger deterioration has not occurred and that the charger will provide the necessary capacity to restore the battery to a fully charged state.

A battery service test is a special test of the battery's capability "as found" to satisfy the design requirements of the D.C. electrical power system. The discharge rate and test length should correspond to the design duty cycle requirements.

A battery performance test is a test of constant current capacity of the battery to detect any change in the capacity determined by the acceptance test. This test is intended to determine overall battery degradation due to age and usage. A battery capacity of 80% indicates that the battery rate of deterioration is increasing, even if there is ample capacity to meet the load requirements. However, if the design margins are more limiting, the acceptable limit is based on the latest load profile.

3/4.9.D D.C. Sources - Shutdown

The D.C. sources required to be OPERABLE during Cold Shutdown, Refueling, when handling irradiated fuel and during operations with a potential for draining the reactor vessel provide assurance that:

1. Systems to provide adequate coolant inventory makeup are available for the irradiated fuel in the core in case of an inadvertent drain down of the reactor vessel;
2. Systems needed to mitigate a fuel-handling accident are available;
3. Systems necessary to mitigate the effects of events that can lead to core damage during shutdown are OPERABLE;
4. Instrumentation and control capability is available for monitoring and maintaining the unit in a cold shutdown condition and refueling condition.

With one or more of the required D.C. electrical power sources inoperable, the action provisions require a suspension of activities that will preclude the occurrence of actions that could potentially initiate the postulated events. However, timely suspension of these activities is not intended to preclude completion of actions necessary to establish a safe, conservative condition.

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3/4.9.E Distribution - Operating

The OPERABILITY of the A.C. and D.C. onsite power distribution systems ensures that sufficient power will be available to 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 surveillance requirements verify that the A.C. and D.C. electrical power distribution systems are functioning properly, with all the required circuit breakers closed and the buses energized from normal power. The verification of proper voltage availability on the buses ensures that the required power is readily available for motive as well as control functions for critical system loads connected to these buses. The frequency takes into account the redundant capability of the A.C. and D.C. electrical power distribution subsystems, and other indications available in the control room that will alert the operator to subsystem malfunctions.

3/4.9.F Distribution - Shutdown

The OPERABILITY of the minimum specified A.C. and D.C. onsite power distribution systems, during Cold Shutdown and Refueling and when handling irradiated fuel in the secondary containment, ensures that the facility can be maintained in these conditions for extended time periods and sufficient instrumentation and control capability is available for monitoring and maintaining the unit status. Requiring OPERABILITY of the minimum specified onsite power distribution systems when handling irradiated fuel in the secondary containment helps to ensure that systems needed to mitigate a fuel handling accident are available.

3/4.9.G RPS Power Monitoring

Specifications are provided to ensure the OPERABILITY of the reactor protection system (RPS) bus electrical protection assemblies (EPAs). Each RPS motor generator (MG) set and the alternate power source has 2 EPA CHANNEL(s) wired in series. A trip of either CHANNEL from either overvoltage, undervoltage, or underfrequency will disconnect the associated MG set or alternate power source.

The associated surveillance requirements provide for demonstration of the OPERABILITY of the RPS EPA's. The setpoints for overvoltage, undervoltage, and underfrequency have been chosen based on analysis (ref. February 4, 1983 letter to H. Denton from T. Rausch).



UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555-0001

COMMONWEALTH EDISON COMPANY

AND

MIDAMERICAN ENERGY COMPANY

DOCKET NO. 50-254

QUAD CITIES NUCLEAR POWER STATION, UNIT 1

AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. 160
License No. DPR-29

1. The Nuclear Regulatory Commission (the Commission) has found that:
 - A. The application for amendment by the Commonwealth Edison Company (the licensee) dated March 26, 1993, as supplemented May 15, 1995, complies with the standards and requirements of the Atomic Energy Act of 1954, as amended (the Act) and the Commission's rules and regulations set forth in 10 CFR Chapter I;
 - B. The facility will operate in conformity with the application, the provisions of the Act, and the rules and regulations of the Commission;
 - C. There is reasonable assurance (i) that the activities authorized by this amendment can be conducted without endangering the health and safety of the public, and (ii) that such activities will be conducted in compliance with the Commission's regulations;
 - D. The issuance of this amendment will not be inimical to the common defense and security or to the health and safety of the public; and
 - E. The issuance of this amendment is in accordance with 10 CFR Part 51 of the Commission's regulations and all applicable requirements have been satisfied.
2. Accordingly, the license is amended by changes to the Technical Specifications as indicated in the attachment to this license amendment, and paragraph 3.B. of Facility Operating License No. DPR-29 is hereby amended to read as follows:

B. Technical Specifications

The Technical Specifications contained in Appendices A and B, as revised through Amendment No. 160, are hereby incorporated in the license. The licensee shall operate the facility in accordance with the Technical Specifications.

3. This license amendment is effective as of the date of its issuance and shall be implemented no later than June 30, 1996.

FOR THE NUCLEAR REGULATORY COMMISSION



Robert M. Pulsifer, Project Manager
Project Directorate III-2
Division of Reactor Projects - III/IV
Office of Nuclear Reactor Regulation

Attachment:
Changes to the Technical
Specifications

Date of Issuance: September 18, 1995



UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D. C. 20555-0001

COMMONWEALTH EDISON COMPANY

AND

MIDAMERICAN ENERGY COMPANY

DOCKET NO. 50-265

QUAD CITIES NUCLEAR POWER STATION, UNIT 2

AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. 156
License No. DPR-30

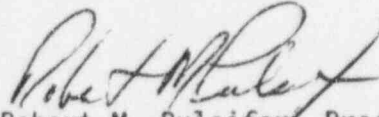
1. The Nuclear Regulatory Commission (the Commission) has found that:
 - A. The application for amendment by the Commonwealth Edison Company (the licensee) dated March 26, 1993, as supplemented May 15, 1995, complies with the standards and requirements of the Atomic Energy Act of 1954, as amended (the Act) and the Commission's rules and regulations set forth in 10 CFR Chapter I;
 - B. The facility will operate in conformity with the application, the provisions of the Act, and the rules and regulations of the Commission;
 - C. There is reasonable assurance (i) that the activities authorized by this amendment can be conducted without endangering the health and safety of the public, and (ii) that such activities will be conducted in compliance with the Commission's regulations;
 - D. The issuance of this amendment will not be inimical to the common defense and security or to the health and safety of the public; and
 - E. The issuance of this amendment is in accordance with 10 CFR Part 51 of the Commission's regulations and all applicable requirements have been satisfied.
2. Accordingly, the license is amended by changes to the Technical Specifications as indicated in the attachment to this license amendment, and paragraph 3.B. of Facility Operating License No. DPR-30 is hereby amended to read as follows:

B. Technical Specifications

The Technical Specifications contained in Appendices A and B, as revised through Amendment No. 156, are hereby incorporated in the license. The licensee shall operate the facility in accordance with the Technical Specifications.

3. This license amendment is effective as of the date of its issuance and shall be implemented no later than June 30, 1996.

FOR THE NUCLEAR REGULATORY COMMISSION



Robert M. Pulsifer, Project Manager
Project Directorate III-2
Division of Reactor Projects - III/IV
Office of Nuclear Reactor Regulation

Attachment:
Changes to the Technical
Specifications

Date of Issuance: September 18, 1995

ATTACHMENT TO LICENSE AMENDMENT NO. 160 AND 156
FACILITY OPERATING LICENSE NOS. DPR-29 AND DPR-30
DOCKET NOS. 50-254 AND 50-265

Revise the Appendix A Technical Specifications by removing the pages identified below and inserting the attached pages. The revised pages are identified by the captioned amendment number.

<u>UNIT 1</u> <u>REMOVE</u>	<u>UNIT 2</u> <u>REMOVE</u>	<u>INSERT</u>
3.9/4.9-1	3.9/4.9-1	3/4.9-1
3.9/4.9-2	3.9/4.9-2	3/4.9-2
3.9/4.9-3	3.9/4.9-3	3/4.9-3
3.9/4.9-3a	---	3/4.9-4
3.9/4.9-4	3.9/4.9-4	3/4.9-5
3.9/4.9-5	3.9/4.9-5	3/4.9-6
3.9/4.9-6	3.9/4.9-6	3/4.9-7
3.9/4.9-7	3.9/4.9-7	3/4.9-8
3.9/4.9-8	3.9/4.9-8	3/4.9-9
3.9/4.9-9	3.9/4.9-9	3/4.9-10
3.9/4.9-10	3.9/4.9-10	3/4.9-11
3.9/4.9-11	3.9/4.9-11	3/4.9-12
3.9/4.9-12	3.9/4.9-12	3/4.9-13
---	---	3/4.9-14
---	---	3/4.9-15
---	---	3/4.9-16
---	---	3/4.9-17
---	---	3/4.9-18
---	---	3/4.9-19
---	---	3/4.9-20
---	---	3/4.9-21
---	---	B 3/4.9-1
---	---	B 3/4.9-2
---	---	B 3/4.9-3
---	---	B 3/4.9-4
---	---	B 3/4.9-5
---	---	B 3/4.9-6
---	---	B 3/4.9-7
---	---	B 3/4.9-8

3.9 - LIMITING CONDITIONS FOR OPERATION

A. A.C. Sources - Operating

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

1. Two physically independent circuits between the offsite transmission network and the onsite Class 1E distribution system, and
2. Two separate and independent diesel generators, each with:
 - a. A separate fuel oil day tank containing ≥ 205 gallons of available fuel,
 - b. A separate bulk fuel storage system containing $\geq 10,000$ gallons of available fuel, and
 - c. A separate fuel oil transfer pump.

APPLICABILITY:

OPERATIONAL MODE(s) 1, 2, and 3.

ACTION:

1. With one of the above required offsite circuit power sources inoperable:
 - a. Demonstrate the OPERABILITY of the remaining offsite circuit by performing Surveillance Requirement 4.9.A.1.a within 1 hour and at least once per 8 hours thereafter.

4.9 - SURVEILLANCE REQUIREMENTS

A. A.C Sources - Operating

1. Each of the required independent circuits between the offsite transmission network and the onsite Class 1E distribution system shall be determined OPERABLE:
 - a. At least once per 7 days by verifying correct breaker alignments and indicated power availability, and
 - b. [INTENTIONALLY BLANK]
This requirement is an open item to be addressed in the TSUP clean-up amendment
2. Each of the required diesel generators shall be demonstrated OPERABLE^(a) in accordance with the frequency specified in Table 4.9.A-1 by:
 - a. Verifying the fuel levels in both the fuel oil day tank and the bulk fuel storage tank.
 - b. Verifying the fuel transfer pump starts and transfers fuel from the bulk fuel storage system to the fuel oil day tank.

a All planned diesel generator tests shall be conducted in accordance with the manufacturer's recommendations regarding engine prelubrication, detection and warmup procedures, and as applicable regarding loading and shutdown recommendations.

3.9 - LIMITING CONDITIONS FOR OPERATION

- b. Demonstrate the OPERABILITY of each diesel generator by performing Surveillance Requirement 4.9.A.2.c for each diesel generator separately within 24 hours (if it has not been successfully tested within the past 24 hours) and within the subsequent 72 hours, and
 - c. Restore the inoperable offsite circuit to OPERABLE status within 7 days or be in at least HOT SHUTDOWN within the next 12 hours and in COLD SHUTDOWN within the following 24 hours.
2. With one of the above required diesel generator power sources inoperable:
- a. Demonstrate the OPERABILITY of the offsite circuit power sources by performing Surveillance Requirement 4.9.A.1.a within 1 hour and at least once per 8 hours thereafter.
 - b. If the diesel generator is inoperable due to any cause other than preplanned preventive maintenance or testing, demonstrate the OPERABILITY of the remaining OPERABLE diesel generator by performing Surveillance Requirement 4.9.A.2.c within 24 hours^(b) (if it has not been successfully tested within the past 24 hours) and within the subsequent 72 hours, and

4.9 - SURVEILLANCE REQUIREMENTS

- c. Verifying^(c) the diesel starts and accelerates to synchronous speed with generator voltage and frequency at 4160 ± 420 volts and 60 ± 1.2 Hz, respectively.
 - d. Verifying^(c) the diesel generator is synchronized, loaded to between 2375 and 2500 kW^(d), and operates with this load for ≥ 60 minutes.
 - e. Verifying the diesel generator is aligned to provide standby power to the associated emergency busses.
 - f. Verifying the pressure in required starting air receiver tanks to be ≥ 230 psig.
3. Each of the required diesel generators shall be demonstrated OPERABLE at least once per 31 days and after each operation of the diesel where the period of operation was ≥ 1 hour by removing any accumulated water from the day tank.
4. Each of the required diesel generators shall be demonstrated OPERABLE at least once per 92 days by checking for and removing accumulated water from the fuel oil bulk storage tanks.

- b. Contrary to the provisions of Specification 3.0.B, this test is required to be completed regardless of when the inoperable diesel generator is restored to OPERABILITY for failures that are potentially generic to the remaining diesel generator and for which appropriate alternative testing cannot be designed.
- c. Surveillance Requirements 4.9.A.7.a and b may be substituted for Surveillance Requirements 4.9.A.2.c and d.
- d. This band is meant as guidance to avoid routine overloading of the engine. Loads in excess of this band for special testing under direct monitoring by the manufacturer or momentary variations due to changing bus loads shall not invalidate the test.

3.9 - LIMITING CONDITIONS FOR OPERATION

- c. Restore the diesel generator to OPERABLE status within 7 days or be in at least HOT SHUTDOWN within the next 12 hours and in COLD SHUTDOWN within the following 24 hours.
3. With one of the above offsite circuit power sources and one of the above required diesel generator power sources inoperable:
- a. Demonstrate the OPERABILITY of the remaining offsite circuit power source by performing Surveillance Requirement 4.9.A.1.a within 1 hour and at least once per 8 hours thereafter.
 - b. If the diesel generator is inoperable due to any cause other than preplanned preventive maintenance or testing, demonstrate the OPERABILITY^(e) of the remaining OPERABLE diesel generator by performing Surveillance Requirement 4.9.A.2.c^(b) within 8 hours (if it has not been successfully tested within the past 24 hours) and within the subsequent 72 hours for each OPERABLE diesel generator.
 - c. Restore at least one of the inoperable A.C. power sources to OPERABLE status within 12 hours or be in at least HOT SHUTDOWN

4.9 - SURVEILLANCE REQUIREMENTS

- 5. Each of the required diesel generators shall be demonstrated OPERABLE by:
 - a. Sampling new fuel oil prior to addition to the storage tanks in accordance with applicable ASTM standards, and
 - b. Verifying prior to addition to the storage tanks that the sample meets the applicable ASTM standards for API gravity, water and sediment, and the visual test for free water and particulate contamination⁽ⁱ⁾, and
 - c. Verifying within 31 days of obtaining the sample that the kinematic viscosity is within applicable ASTM limits.
- 6. Each of the required diesel generators shall be demonstrated OPERABLE by:
 - a. Sampling and analyzing the bulk fuel storage tanks at least once per 31 days in accordance with applicable ASTM standards, and
 - b. Verifying that the sample meets the applicable ASTM standards for water and sediment, kinematic viscosity, and ASTM particulate contaminant⁽ⁱ⁾ is < 10 mg/liter.

-
- e A successful test of OPERABILITY per Surveillance Requirement 4.9.A.2.c under this ACTION statement satisfies the diesel generator test requirements of ACTION(s) 1 or 2 above.
 - b Contrary to the provisions of Specification 3.0 B, this test is required to be completed regardless of when the inoperable diesel generator is restored to OPERABILITY for failures that are potentially generic to the remaining diesel generator and for which appropriate alternative testing cannot be designed.
 - i The particulate contamination surveillance is not required for No. 1 fuel oil. It is required for No. 2 fuel oil and for blends.

3.9 - LIMITING CONDITIONS FOR OPERATION

- within the next 12 hours and in COLD SHUTDOWN within the following 24 hours, and
- d. Restore both offsite circuits and both diesel generators to OPERABLE status within 7 days from the time of the initial loss or be in at least HOT SHUTDOWN within the next 12 hours and in COLD SHUTDOWN within the following 24 hours.
4. With one of the above required diesel generator power sources inoperable, in addition to ACTION 2 or 3, as applicable:
 - a. Verify within 2 hours that at least one of the required two systems, subsystems, trains, components and devices in two train systems is OPERABLE including its emergency power supply.
 - b. Otherwise, take the applicable ACTIONS for both systems, subsystems, trains, components or devices inoperable, or be in at least HOT SHUTDOWN within the next 12 hours and in COLD SHUTDOWN within the following 24 hours.

4.9 - SURVEILLANCE REQUIREMENTS

7. Each of the required diesel generators shall be demonstrated OPERABLE^(a) at least once per 184 days by:
 - a. Verifying^(c) the diesel starts and accelerates to synchronous speed in ≤ 13 seconds. The generator voltage and frequency shall be verified to reach 4160 ± 420 volts and 60 ± 1.2 Hz, respectively, in ≤ 13 seconds after the start signal.
 - b. Verifying^(c) the diesel generator is synchronized, loaded to between 2375 and 2500 kW^(d) in ≤ 200 seconds, and operates with this load for ≥ 60 minutes.
8. Each of the required diesel generators shall be demonstrated OPERABLE^(a) at least once per 18 months by:
 - a. Subjecting the diesel to an inspection in accordance with instructions prepared in conjunction with its manufacturer's recommendations for this class of standby service.

-
- a. All planned diesel generator tests shall be conducted in accordance with the manufacturer's recommendations regarding engine prelube, leak detection and warmup procedures, and as applicable regarding loading and shutdown recommendations.
 - c. Surveillance Requirements 4.9.A.7.a and b may be substituted for Surveillance Requirements 4.9.A.2.c and d.
 - d. This band is meant as guidance to avoid routine overloading of the engine. Loads in excess of this band for special testing under direct monitoring by the manufacturer or momentary variations due to changing bus loads shall not invalidate the test.

3.9 - LIMITING CONDITIONS FOR OPERATION

5. With two of the above required offsite circuit power sources inoperable:
- Demonstrate the OPERABILITY^(e) of both of the above required diesel generators separately by performing Surveillance Requirement 4.9.A.2.c within 8 hours (if it has not been successfully tested within the past 24 hours), unless the diesel generators are already operating, and within the subsequent 72 hours.
 - 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 and within COLD SHUTDOWN within the following 24 hours.
 - Restore at least two offsite circuits to OPERABLE status within 7 days from the 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.
6. With both of the above required diesel generator power sources inoperable:
- Demonstrate the OPERABILITY of the offsite circuit power sources by performing Surveillance Requirement 4.9.A.1.a within 1 hour and at least once per 8 hours thereafter.

4.9 - SURVEILLANCE REQUIREMENTS

- [INTENTIONALLY BLANK]

This requirement is an open item to be addressed in the TSUP clean-up amendment
- Verifying the diesel generator capability to reject a full emergency load without tripping. The generator voltage shall not exceed 5000 volts during or following the load rejection.
- Simulating a loss of offsite power by itself, and:
 - Verifying de-energization of the emergency buses, and load shedding from the emergency buses.
 - Verifying the diesel starts on the auto-start signal, energizes the emergency buses with permanently connected loads in ≤ 13 seconds, energizes the auto-connected shutdown loads, and operates with this load for ≥ 5 minutes. After energization, the steady-state voltage and frequency of the emergency buses shall be maintained at 4160 ± 420 volts and 60 ± 1.2 Hz, respectively, during this test.

e A successful test of OPERABILITY per Surveillance Requirement 4.9.A.2.c under this ACTION statement satisfies the diesel generator test requirements of ACTION(s) 1 or 2 above.

3.9 - LIMITING CONDITIONS FOR OPERATION

- b. Within 2 hours, restore at least one of the above required diesel generators to OPERABLE^(e) status and verify that at least one of the required two systems, subsystems, trains, components and devices in two train systems is OPERABLE including its emergency power supply. Otherwise, take the applicable ACTIONS for both systems, subsystems, trains, components or devices inoperable, or be in at least HOT SHUTDOWN within the next 12 hours and in COLD SHUTDOWN within the following 24 hours.
 - c. Demonstrate the continued OPERABILITY of the restored diesel generator by performing Surveillance Requirement 4.9.A.2.c within the subsequent 72 hours, and
 - d. Restore at least two required diesel generators to OPERABLE status within 7 days from the 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.
7. With the fuel oil contained in the bulk fuel storage tank(s) not meeting the properties specified in Surveillance Requirements 4.9.A.5 and 4.9.A.6, restore the fuel oil properties to within the specified limits within 7 days. Otherwise, declare the associated diesel generator(s) inoperable.

4.9 - SURVEILLANCE REQUIREMENTS

- e. 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 ≥ 5 minutes. The generator voltage and frequency shall be 4160 ± 420 volts and 60 ± 1.2 Hz, respectively, in ≤ 13 seconds after the auto-start signal; the steady state generator voltage and frequency shall be maintained within these limits during this test.
- f. Simulating a loss of offsite power in conjunction with an ECCS actuation test signal, and
 - 1) Verifying de-energization of the emergency buses, and load shedding from the emergency buses.
 - 2) Verifying the diesel starts on the auto-start signal, energizes the emergency buses with permanently connected loads in ≤ 13 seconds, energizes the auto-connected emergency loads through the load sequencer, and operates with this load for ≥ 5 minutes. After energization, the steady-state voltage and frequency of the emergency busses shall be maintained at 4160 ± 420 volts and 60 ± 1.2 Hz, respectively, during this test.

e A successful test of OPERABILITY per Surveillance Requirement 4.9.A.2.c under this ACTION statement satisfies the diesel generator test requirements of ACTION(s) 1 or 2 above.

3.9 - LIMITING CONDITIONS FOR OPERATION

8. [INTENTIONALLY BLANK]
This requirement is an open item to be addressed in the TSUP clean-up amendment

4.9 - SURVEILLANCE REQUIREMENTS

- g. Verifying that all automatic diesel generator trips, except engine overspeed and generator differential current are automatically bypassed upon an emergency actuation signal.
- h. Verifying the diesel generator operates for ≥ 24 hours. During the first 2 hours of this test, the diesel generator shall be loaded to between 2625 and 2750 kW^(d) and during the remaining 22 hours of this test, the diesel generator shall be loaded to between 2375 and 2500 kW^(d). The generator voltage and frequency shall be 4160 ± 420 volts and 60 ± 1.2 Hz, respectively, in ≤ 13 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 4.9.A.8.f.2^(g).
- i. Verifying that the auto-connected loads to each diesel generator do not exceed the 2000 hour rating of 2850 kW.

f Criteria for determining the number of valid failures and number of valid tests shall be in accordance with draft Revision 3 of Regulatory Guide 1.9, January 1991, but determined on a per diesel generator basis. With the exception of the semi-annual fast start, no starting time requirements are required to meet the valid test requirements.

d This band is meant as guidance to avoid routine overloading of the engine. Loads in excess of this band for special testing under direct monitoring by the manufacturer or momentary variations due to changing bus loads shall not invalidate the test.

g If Surveillance Requirement 4.9.A.8.f.2 is not satisfactorily completed, it is not necessary to repeat the preceding 24 hour test. Instead, the diesel generator may be operated at approximately full load for 1 hour or until the operating temperature has stabilized.

3.9 - LIMITING CONDITIONS FOR OPERATION

4.9 - SURVEILLANCE REQUIREMENTS

- j. Verifying the diesel generator's capability to:
 - 1) synchronize with the offsite power source while the generator is loaded with its emergency loads upon a simulated restoration of offsite power,
 - 2) transfer its loads to the offsite power source, and
 - 3) be restored to its standby status.
- k. Verifying that the automatic load sequence timer is OPERABLE with the interval between each load block within $\pm 10\%$ of its design interval.
- 9. Each of the required diesel generators shall be demonstrated OPERABLE^(a) at least once per 10 years or after any modifications which could affect diesel generator interdependence by starting both diesel generators simultaneously, and verifying that both diesel generators accelerate to ≥ 900 rpm in ≤ 13 seconds.
- 10. Each of the required diesel generators shall be demonstrated OPERABLE at least once per 10 years by draining each fuel oil storage tank, removing the accumulated sediment and cleaning the tank.

^a All planned diesel generator tests shall be conducted in accordance with the manufacturer's recommendations regarding engine prelube, leak detection and warmup procedures, and as applicable regarding loading and shutdown recommendations.

TABLE 4.9.A-1DIESEL GENERATOR TEST SCHEDULE

<u>NUMBER OF FAILURES IN LAST 20 VALID TESTS^(a)</u>	<u>TEST FREQUENCY</u>
≤ 1	At least once per 31 days
$\leq 2^{(b)}$	At least once per 7 days

-
- a Criteria for determining the number of valid failures and number of valid tests shall be in accordance with draft Revision 3 of Regulatory Guide 1.9, January 1991, but determined on a per diesel generator basis. With the exception of the semi-annual fast start, no starting time requirements are required to meet the valid test requirements.
- b The associated test frequency shall be maintained until 7 consecutive failure free demands have been performed AND the number of failures in the last 20 valid demands has been reduced to one.

3.9 - LIMITING CONDITIONS FOR OPERATION

B. A.C. Sources - Shutdown

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

1. One circuit between the offsite transmission network and the onsite Class 1E distribution system, and
2. One diesel generator with:
 - a. A fuel oil day tank containing ≥ 205 gallons of available fuel,
 - b. A bulk fuel storage system containing $\geq 10,000$ gallons of available fuel, and
 - c. A fuel oil transfer pump.

APPLICABILITY:

OPERATIONAL MODE(s) 4 and 5, and when handling irradiated fuel in the secondary containment.

ACTION:

1. With less than the above required A.C. electrical power sources OPERABLE:
 - a. Suspend CORE ALTERATIONS,
 - b. Suspend handling of irradiated fuel in the secondary containment,
 - c. Suspend operations with a potential for draining the reactor vessel, and

4.9 - SURVEILLANCE REQUIREMENTS

B. A.C Sources - Shutdown

Each of the required A.C. electrical power sources shall be demonstrated OPERABLE per the surveillance requirements in Specification 4.9.A, except for 4.9.A.2.d.

3.9 - LIMITING CONDITIONS FOR OPERATION

4.9 - SURVEILLANCE REQUIREMENTS

- d. Suspend crane operations over the spent fuel storage pool if fuel assemblies are stored therein.
2. In addition, when in OPERATIONAL MODE 5 with the water level < 23 feet above the reactor pressure vessel flange, immediately initiate corrective action to restore the required power sources to OPERABLE status as soon as practical.
3. The provisions of Specification 3.0.C are not applicable.

3.9 - LIMITING CONDITIONS FOR OPERATIONC. D.C. Sources - Operating

As a minimum, the following D.C. electrical power sources shall be OPERABLE with the identified parameters within the limits specified in Table 4.9.C-1:

1. Two station 250 volt batteries, each with a full capacity charger.
2. Two station 125 volt batteries, each with a full capacity charger.

APPLICABILITY:

OPERATIONAL MODE(s) 1, 2, and 3.

ACTION:

1. [INTENTIONALLY BLANK]

This requirement is an open item to be addressed in the TSUP clean-up amendment

2. [INTENTIONALLY BLANK]

This requirement is an open item to be addressed in the TSUP clean-up amendment

4.9 - SURVEILLANCE REQUIREMENTSC. D.C. Sources - Operating

Each of the required 125 volt and 250 volt batteries and chargers shall be demonstrated OPERABLE^(a):

1. At least once per 7 days by verifying that:
 - a. The parameters in Table 4.9.C-1 meet Category A limits, and
 - b. There is correct breaker alignment to the battery chargers and total battery terminal voltage is ≥ 125.9 or ≥ 260.4 volts, as applicable, on float charge.
2. At least once per 92 days and within 7 days after a battery discharge with a battery terminal voltage below 105 or 210 volts, as applicable, or battery overcharge with battery terminal voltage above 150 or 300 volts, as applicable, by verifying that:
 - a. The parameters in Table 4.9.C-1 meet the Category B limits,
 - b. There is no visible corrosion at either terminals or connectors, or the connection resistance of these items is $\leq 150 \times 10^{-6}$ ohms or $\leq 20\%$ above baseline connection resistance, whichever is higher, and
 - c. [INTENTIONALLY BLANK]

^a An alternate 125 volt battery shall adhere to these same Surveillance Requirements to be considered OPERABLE.

3.9 - LIMITING CONDITIONS FOR OPERATION

3. With the provisions of either ACTION 1 or 2 above not met, be in at least HOT SHUTDOWN within the next 12 hours and in COLD SHUTDOWN within the following 24 hours.
4. With any Category A parameter(s) outside the limit(s) shown in Table 4.9.C-1, the battery may be considered OPERABLE provided that its associated charger is OPERABLE, and 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.
5. With any Category B parameter(s) outside the limit(s) shown in Table 4.9.C-1, 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 the limit(s) within 7 days.
6. With any Category B parameter not within its allowable value(s), immediately declare the battery inoperable.

4.9 - SURVEILLANCE REQUIREMENTS

3. At least every 18 months by verifying that:
 - a. The cells, cell plates and battery racks show no visual indication of physical damage or abnormal deterioration.
 - b. The cell-to-cell and terminal connections are clean, tight, free of corrosion and coated with anti-corrosion material.
 - c. The resistance of each cell-to-cell and terminal connection is $\leq 150 \times 10^{-6}$ ohms or $\leq 20\%$ above baseline connection resistance, whichever is higher.
 - d. The battery chargers will supply a load equal to the manufacturer's rating for at least 4 hours.
4. At least every 18 months, by verifying that the battery capacity is adequate to supply and maintain in OPERABLE status all of the actual or simulated emergency loads for design duty cycle when the battery is subjected to a battery service test.
5. [INTENTIONALLY BLANK]

This requirement is an open item to be addressed in the TSUP clean-up amendment

3.9 - LIMITING CONDITIONS FOR OPERATION

4.9 - SURVEILLANCE REQUIREMENTS

6. [INTENTIONALLY BLANK]
This requirement is an open item to be addressed in the TSUP clean-up amendment

TABLE 4.9.C-1

BATTERY SURVEILLANCE REQUIREMENTS

PARAMETER	CATEGORY A	CATEGORY B	
	LIMITS FOR EACH DESIGNATED PILOT CELL	LIMITS FOR EACH CONNECTED CELL	ALLOWABLE 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	≥ 2.13 volts	≥ 2.13 volts ^(c)	≥ 2.07 volts
Specific Gravity ^(a)	≥ 1.200 ^(b)	≥ 1.195 ^(b) , and Average of all connected cells > 1.205 ^(c)	Not more than 0.020 below the average of all connected cells, and Average of all connected cells ≥ 1.195 ^(b)

TABLE NOTATIONS

- (a) Corrected for electrolyte temperature and level.
- (b) Or battery charging current is less than 2 amperes when on float charge.
- (c) May be corrected for average electrolyte temperature.

3.9 - LIMITING CONDITIONS FOR OPERATION

4.9 - SURVEILLANCE REQUIREMENTS

D. D.C. Sources - Shutdown

D. D.C. Sources - Shutdown

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

The required batteries and chargers shall be demonstrated OPERABLE^(a) per the surveillance requirements in Specification 4.9.C.

1. One station 250 volt battery with a full capacity charger.
2. One station 125 volt battery with a full capacity charger.

APPLICABILITY:

OPERATIONAL MODE(s) 4 and 5, and when handling irradiated fuel in the secondary containment.

ACTION:

With any of the above required station batteries and/or associated charger(s) inoperable, suspend CORE ALTERATIONS, suspend handling of irradiated fuel in the secondary containment, and suspend operations with a potential for draining the reactor vessel.

a An alternate 125 volt battery shall adhere to these same Surveillance Requirements to be considered OPERABLE.

3.9 - LIMITING CONDITIONS FOR OPERATION

E. Distribution - Operating

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

1. A.C. power distribution, consisting of:
 - a. Both Unit engineered safety features 4160 volt buses:
 - 1) For Unit 1, Nos. 13-1 and 14-1,
 - 2) For Unit 2, Nos. 23-1 and 24-1.
 - b. Both Unit engineered safety features 480 volt buses:
 - 1) For Unit 1, Nos. 18 and 19,
 - 2) For Unit 2, Nos. 28 and 29, and
 - c. The Unit 120 volt Essential Service Bus and Instrument Bus.
2. 250 volt D.C. power distribution, consisting of:
 - a. TB MCC Nos. 1 and 2, and
 - b.
 - 1) For Unit 1, RB MCC Nos. 1A and 1B,
 - 2) For Unit 2, RB MCC Nos. 2A and 2B.
3. For Unit 1, 125 volt D.C. power distribution, consisting of:
 - a. TB Main Bus Nos. 1A, 1A-1 and 2A,
 - b. TB Reserve Bus Nos. 1B and 1B-1, and
 - c. RB Distribution Panel No. 1.

4.9 - SURVEILLANCE REQUIREMENTS

E. Distribution - Operating

Each of the 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.

3.9 - LIMITING CONDITIONS FOR OPERATION

4.9 - SURVEILLANCE REQUIREMENTS

4. For Unit 2, 125 volt D.C. power distribution, consisting of:
 - a. TB Main Bus Nos. 1A, 2A and 2A-1,
 - b. TB Reserve Bus Nos. 2B and 2B-1, and
 - c. RB Distribution Panel No. 2.

APPLICABILITY:

OPERATIONAL MODE(s) 1, 2, and 3.

ACTIONS:

1. With one of the above required A.C. distribution systems not energized, re-energize the system within 8 hours or be in at least Hot Shutdown within the next 12 hours and in Cold Shutdown within the following 24 hours.
2. With one of the above required D.C. distribution systems not energized, re-energize the system within 2 hours or be in at least Hot Shutdown within the next 12 hours and in Cold Shutdown within the following 24 hours.

3.9 - LIMITING CONDITIONS FOR OPERATION

F. Distribution - Shutdown

The following power distribution systems shall be energized with:

1. A.C. power distribution consisting of:
 - a. One Unit engineered safety features 4160 volt bus:
 - 1) For Unit 1, No. 13-1 or 14-1,
 - 2) For Unit 2, No. 23-1 or 24-1,
 - b. One associated Unit engineered safety features 480 volt bus:
 - 1) For Unit 1, No. 18 or 19,
 - 2) For Unit 2, No. 28 or 29.
2. For Unit 1, 125 volt D.C. power distribution consisting of either:
 - a. TB Main Bus No. 1A and 1A-1, and RB Distribution Panel No. 1, or
 - b. TB Main Bus No. 2A, and TB Reserve Bus Nos. 1B and 1B-1.
3. For Unit 2, 125 volt D.C. power distribution consisting of either:
 - a. TB Main Bus Nos. 2A and 2A-1, and RB Distribution Panel No. 2, or
 - b. TB Main Bus No. 1A, and TB Reserve Bus Nos. 2B and 2B-1.

APPLICABILITY:

OPERATIONAL MODE(s) 4, 5, and when handling irradiated fuel in the secondary containment.

4.9 - SURVEILLANCE REQUIREMENTS

F. Distribution - Shutdown

Each of the 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.

3.9 - LIMITING CONDITIONS FOR OPERATION

4.9 - SURVEILLANCE REQUIREMENTS

ACTIONS:

With less than the above required A.C. or D.C. distribution systems energized, suspend CORE ALTERATIONS, suspend handling of irradiated fuel in the secondary containment, and suspend operations with a potential for draining the reactor vessel.

3.9 - LIMITING CONDITIONS FOR OPERATION

G. RPS Power Monitoring

Two Reactor Protection System (RPS) electric power monitoring CHANNEL(s) for each inservice RPS Motor Generator (MG) set or alternate power supply shall be OPERABLE.

APPLICABILITY:

OPERATIONAL MODE(s) 1, 2, 3, 4^(a) and 5.

ACTION:

1. With one RPS electric power monitoring CHANNEL for an inservice RPS MG set or alternate power supply inoperable, restore the inoperable power monitoring CHANNEL to OPERABLE status within 72 hours or remove the associated RPS MG set or alternate power supply from service.
2. With both RPS electric power monitoring CHANNEL(s) for an inservice RPS MG set or alternate power supply inoperable, restore at least one electric power monitoring CHANNEL to OPERABLE status within 30 minutes or remove the associated RPS MG set or alternate power supply from service.

4.9 - SURVEILLANCE REQUIREMENTS

G. RPS Power Monitoring

The specified RPS electric power monitoring CHANNEL(s) shall be determined OPERABLE:

1. By performance of a CHANNEL FUNCTIONAL TEST each time the plant is in COLD SHUTDOWN for a period of more than 24 hours, unless performed in the previous 6 months.
2. At least once per 18 months by demonstrating the OPERABILITY of overvoltage, undervoltage, and underfrequency protective instrumentation by performance of a CHANNEL CALIBRATION including simulated automatic actuation of the protective relays, tripping logic, and output circuit breakers, and verifying the following setpoints:
 - a. Overvoltage ≤ 129.6 volts AC
 - b. Undervoltage ≥ 105.3 volts AC
 - c. Underfrequency ≥ 55.4 Hz

a With any control rod withdrawn.

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The initial conditions of design basis transient and accident analyses assume Engineering Safety Features (ESF) systems are OPERABLE. The A.C. and D.C. electrical power sources are designed to provide sufficient capacity, capability, redundancy, and reliability to ensure the availability of necessary power to ESF systems so that the fuel, reactor coolant system and containment design limits are not exceeded.

The A.C. and D.C. sources are designed to permit inspection and testing of all important areas and features, especially those that have a standby function. Periodic component tests are supplemented by extensive functional testing during refueling outages under simulated accident conditions.

3/4.9.A A.C. Sources - Operating

The OPERABILITY of the A.C. electrical power sources is consistent with the initial assumptions of the accident analyses and is based upon meeting the design basis of the plant. This includes maintaining at least one of the onsite or offsite A.C. sources, D.C. power sources and associated distribution systems OPERABLE during accident conditions concurrent with an assumed loss of all offsite power and a worst-case single failure.

There are two sources of electrical energy available, i.e., the offsite transmission system and the onsite diesel generators. Two unit reserve auxiliary transformers are available to supply the Station class 1E distribution system. The reserve auxiliary transformer is sized to carry 100% of the auxiliary load. If this reserve auxiliary transformer (the normal circuit) is lost, auxiliary power from the other unit can be obtained for one division through the 4160 volt bus tie (the alternate circuit). Additionally, two diesel generators are available to handle an accident. The allowable outage time takes into account the capacity and capability of the remaining A.C. sources, reasonable time for repairs, and the low probability of a design basis accident occurring during this period. Surveillance is required to ensure a highly reliable power source and no common cause failure mode for the remaining required offsite A.C. source.

Upon failure of one diesel generator, performance of appropriate surveillance requirements ensures a highly reliable power supply by checking the availability of the required offsite circuits, and the remaining required diesel generator. The initial surveillance is required to be completed regardless of how long the diesel inoperability persists, since the intent is that all diesel generator inoperabilities must be investigated for common cause failures. After the initial surveillance, an additional start test is required approximately mid-way through the allowed outage time to demonstrate continued OPERABILITY of the available onsite power sources. The diesel generator surveillance is limited to the normal start testing, since for cases in which less than a full complement of A.C. sources may be available, paralleling of two of the remaining A.C. sources may compromise the A.C. source independence. Additionally, the action provisions ensure that continued plant operation is not allowed when a complete loss of a required safety function (i.e., certain required components) would occur upon a loss of offsite power. These certain components which are critical to accomplishment of the required safety functions may be identified in advance and administratively controlled and/or evaluated on a case-by-case basis.

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With suitable redundancy in components and features not available, the plant must be placed in a condition for which the Limiting Condition for Operation does not apply.

The term verify as used toward A.C. electrical power sources means to administratively check by examining logs or other information to determine if certain components are out-of-service for pre-planned preventative maintenance, testing, or other reasons. It does not mean to perform the surveillance requirements needed to demonstrate the OPERABILITY of the component.

With one offsite circuit and one diesel generator inoperable, individual redundancy is lost in both the offsite and onsite electrical power system. Therefore, the allowable outage time is more limited. The time limit takes into account the capacity and capability of the remaining sources, reasonable time for repairs, and the low probability of a design basis event occurring during this period.

With both of the required offsite circuits inoperable, sufficient onsite A.C. sources are available to maintain the unit in a safe shutdown condition in the event of a design basis transient or accident. In fact, a simultaneous loss of offsite A.C. sources, a loss-of-coolant accident, and a worst-case single failure were postulated as a part of the design basis in the safety analysis. Thus, the allowable outage time provides a period of time to effect restoration of all or all but one of the offsite circuits commensurate with the importance of maintaining an A.C. electrical power system capable of meeting its design intent.

With two diesel generators inoperable there are no remaining standby A.C. sources. Thus, with an assumed loss of offsite electrical power, insufficient standby A.C. sources are available to power the minimum required ESF functions. Since the offsite electrical power system is the only source of A.C. power for this level of degradation, the risk associated with continued operation for a very short time could be less than that associated with an immediate controlled shutdown, which could result in grid instability and possibly a loss of total A.C. power. The allowable time to repair is severely restricted during this condition. The intent here is to avoid the risk associated with an immediate controlled shutdown and to minimize the risk associated with this level of degradation.

Reporting requirements are included for a "problem emergency diesel generator," as recommended in Regulatory Guide 1.9, draft Revision 3. The required report should include a description of the failures, the underlying causes, and the corrective actions taken.

Surveillance Requirements are provided which assure proper circuit continuity for the offsite A.C. electrical power supply to the onsite distribution network and availability of offsite A.C. electrical power. The breaker alignment verifies that each breaker is in its correct position to ensure distribution buses and loads are connected to their preferred power source. The frequency is adequate since breaker position is not likely to change without the operator being aware of it and because status is displayed in the control room. Should the action provisions of this specification require an increase in frequency, this Surveillance Requirement assures proper circuit continuity for the available offsite A.C. sources during periods of degradation and potential information on common cause failures that would otherwise go undiscovered.

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Surveillance Requirements are also provided for demonstrating the OPERABILITY of the diesel generators. The specified testing is based on the guidance provided in Regulatory Guide 1.9, draft Revision 3 (1/91), Regulatory Guide 1.108, Revision 1, and Regulatory Guide 1.137, Revision 1, as modified by plant specific analysis, diesel generator manufacturer recommendations and responses to Generic Letter 84-15.

The diesel generators are equipped with a prelubrication system which maintains a continuous flow of oil to the diesel engine moving parts while the engine is shutdown. The purpose of this system is to increase long term diesel generator reliability by reducing the stress and wear caused by frequent dry starting of the diesel generator. The diesel generator prelude may be accomplished either through normal operation of the installed prelubrication system or by manual prelubrication of the diesel generator in accordance with the manufacturer's instructions. Performance of an idle start of the diesel generator is not considered to be a means of prelubrication.

A periodic "start test" of the diesel generators demonstrates proper startup from standby conditions, and verifies that the required generator voltage and frequency is attained. For this test, the diesel generator may be slow started and reach rated speed on a prescribed schedule that is selected to minimize stress and wear. In cases where this Surveillance Requirement is being used to identify a possible common cause failure modes in accordance with the action provisions, this test eliminates the risk of paralleling two of the remaining A.C. sources, which may compromise the A.C. source independence.

A "load-run test" normally follows the periodic "start test" of the diesel generator to demonstrate operation at or near the continuous rating. This surveillance should only be conducted on one diesel generator at a time in order to avoid common cause failures that might result from offsite circuit or grid perturbations. A minimum run time of 60 minutes is required to stabilize engine temperatures. Actual run time should be in accordance with vendor recommendations with regard to good operating practice and should be sufficient to ensure that cooling and lubrication are adequate for extended periods of operation, while minimizing the time that the diesel generator is connected to the offsite source. This Surveillance Requirement may include gradual loading, as recommended by the manufacturer, so that mechanical stress and wear on the diesel engine are minimized. A load band is provided to avoid routine overloading of the diesel generators. Momentary transients outside the load band because of changing bus loads do not impact the validity of this test.

A periodic surveillance requirement is provided to assure the diesel generator is aligned to provide standby power on demand. Periodic surveillance requirements also verify that, without the aid of the refill compressor, sufficient air start capacity for each diesel generator is available. With either pair of air receiver tanks at the minimum specified pressure, there is sufficient air in the tanks to start the associated diesel generator.

Surveillance requirements provide verification that there is an adequate inventory of fuel oil in the storage tanks that is sufficient to provide time to place the facility in a safe shutdown condition and to bring in replenishment fuel from an offsite location. Additional diesel fuel can normally be obtained and delivered to the site within an eight hour period; thus a two day supply provides for

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adequate margin. The operation of each required fuel oil transfer pump is demonstrated by transferring fuel oil from its associated storage tank to its associated day tank. This surveillance provides assurance that the fuel oil transfer pump is OPERABLE, the fuel oil piping system is intact, the fuel delivery piping is not obstructed, and the necessary fuel oil day tank instrumentation is OPERABLE.

A comprehensive surveillance program is provided to ensure the availability of high quality fuel oil for the diesel generators which is necessary to ensure proper operation. Water content should be minimized, because water in the fuel would contribute to excessive corrosion of the system, causing decreased reliability. The growth of micro-organisms results in slime formations, which are one of the chief causes of jelling in hydrocarbon fuels. Therefore, minimizing such slimes is also essential to assuring high reliability.

Sampling of both new diesel fuel oil and the bulk fuel oil storage tanks is in accordance with the American Society for Testing Materials (ASTM) standard D4057. Testing for API gravity is in accordance with ASTM D1298, water and sediment is in accordance with ASTM D1796, and the visual test for free water and particulate contamination (clear and bright) is in accordance with ASTM D4176. Testing for kinematic viscosity is in accordance with ASTM D445 and particulate contaminant testing is in accordance with ASTM D2276. Parameter limits are in accordance with ASTM D396 for API gravity, ASTM D975 for water and sediment and for kinematic viscosity, and ASTM D4176 for "clear and bright." The specific revision in use for each of these standards is controlled by procedure.

The diesel fuel oil day tanks are not equipped with the capability to obtain samples. Any accumulated water is removed by partially draining the day tank to the bulk fuel oil storage tank on a routine basis. Monthly sampling of the bulk fuel oil storage tank is then used to detect the presence of any water.

Fuel oil testing may indicate that such fuel oil is not within the required parameters. However, continued operation is acceptable while measures are taken to restore the properties of the fuel oil to within its limits since the properties of interest, even if they were not within the required limits, would not have an immediate effect on diesel generator operation. If the fuel oil properties cannot be returned to within their limits in the allowed time, the associated diesel generator(s) is (are) declared inoperable and the appropriate ACTION(s) taken.

A semi-annual surveillance is provided to verify the diesel generator can "fast start" from standby conditions and achieve the required voltage and frequency within the timing assumptions of the design basis loss of coolant accident safety analysis. Conducting this test on a semi-annual frequency is consistent with the intent of the reduction of cold testing identified in Generic Letter 84-15.

Additional surveillance requirements provide for periodic inspections and demonstration of the diesel generator capabilities, some are conducted in conjunction with a simulated loss of offsite power and/or a simulated ESF actuation signal. These tests of the diesel generator are expected to

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be conducted during an outage to functionally test the system. This testing is consistent with the intent of the diesel generator reliability programs recommended by Regulatory Guide 1.155.

3/4.9.B A.C. Sources - Shutdown

The A.C. sources required during Cold Shutdown, Refueling, when handling irradiated fuel and during operations with a potential for draining the reactor vessel provide assurance that:

1. Systems to provide adequate coolant inventory makeup are available for the irradiated fuel in the core in case of an inadvertent draindown of the reactor vessel;
2. Systems needed to mitigate a fuel handling accident are available;
3. Systems necessary to mitigate the effects of events that can lead to core damage during shutdown are OPERABLE; and
4. Instrumentation and control capability is available for monitoring and maintaining the unit in a cold shutdown condition and refueling condition.

With one or more of the required A.C. electrical power sources inoperable, the action provisions require a suspension of activities that will preclude the occurrence of actions that could potentially initiate the postulated events. However, timely suspension of these activities is not intended to preclude completion of actions necessary to establish a safe, conservative condition.

The Surveillance Requirements for A.C. Source Shutdown are the same as those for operation, with the exception of the periodic "load-run test" which is not required due to the limited redundancy of A.C. power sources.

3/4.9.C D.C. Sources - Operating

The station D.C. electrical power system provides the A.C. emergency power system with control power. It also provides both motive and control power to selected safety-related equipment. During normal operation, the D.C. electrical loads are powered from the battery chargers with batteries floating on the system. In case of loss of normal power to the battery charger, the D.C. load is automatically powered from the station batteries.

Each battery of the D.C. electrical power systems is sized to start and carry the normal D.C. loads plus all D.C. loads required for safe shutdown on one unit and operations required to limit the consequences of a design basis event on the other unit for a period of 4 hours following loss of all A.C. sources. The battery chargers are sized to restore the battery to full charge under normal (non-emergency) load conditions. A normally disconnected alternate 125 volt battery is also provided as a backup for each normal battery. If both units are operating, the normal 125 volt battery must be returned to service within the specified time frame since the design configuration

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of the alternate battery circuit is susceptible to single failure and, hence, is not as reliable as the normal station circuit. During times when the other unit is in a Cold Shutdown or Refuel condition, an alternate 125 volt battery is available to replace a normal station 125 volt battery on a continuous basis to provide a second available power source. With the alternate 125 volt battery in service, the normally open breaker on the DC Reserve Bus is placed in the open position and posted, i.e., "tagged out."

With one of the required D.C. electrical power subsystems inoperable the remaining system has the capacity to support a safe shutdown and to mitigate an accident condition. However, a subsequent worst-case single failure would result in complete loss of ESF functions. Therefore, an allowed outage time is provided based on a reasonable time to assess plant status as a function of the inoperable D.C. electrical power subsystem and, if the D.C. electrical power subsystem is not restored to OPERABLE status, prepare to effect an orderly and safe plant shutdown.

Inoperable chargers do not necessarily indicate that the D.C. systems are not capable of performing their post-accident functions as long as the batteries are within their specified parameter limits. With both the required charger inoperable and the battery degraded, prompt action is required to assure an adequate D.C. power supply.

ACTION(s) are provided to delineate the measurements and time frames needed to continue to assure OPERABILITY of the Station batteries when battery parameters are outside their identified limits.

Battery surveillance requirements are based on the defined battery cell parameter values. Category A defines the normal parameter limit for each designated pilot cell in each battery. The pilot cells are the average cells in the battery based on previous test results. These cells are monitored closely as an indication of battery performance. Category B defines the normal parameter limits for each connected cell. The term "connected cell" excludes any battery cell that may be jumpered out because of a degraded condition or for any other reason. Category B also defines allowable values for each connected cell. These values, although reduced, provide assurance that sufficient capacity exists to perform the intended function and maintain a margin of safety. When any battery parameter is outside the Category B allowable value, the assurance of sufficient capacity as described above no longer exists and the battery must be declared inoperable.

Verifying battery terminal voltage while on float charge for the batteries helps to ensure the effectiveness of the charging system and the ability of the batteries to perform their intended function. The voltage requirements are based on the nominal design voltage of the battery and are consistent with the initial voltages assumed in the battery sizing calculations.

Visual inspection to detect corrosion of the battery cells and connections, or measurement of the resistance of each connection provides an indication of physical damage or abnormal deterioration that could potentially degrade battery performance. The limits established for this Surveillance Requirement shall be no more than 20% above the resistance as measured during installation or not above the ceiling value established by the manufacturer.

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Verifying an acceptable average temperature of representative cells is consistent with the recommendations of IEEE-450 and ensures that lower than normal temperatures do not act to inhibit or reduce battery capacity.

Verifying that the chargers will provide the manufacturer's rated current and voltage for four hours ensures that charger deterioration has not occurred and that the charger will provide the necessary capacity to restore the battery to a fully charged state.

A battery service test is a special test of the battery's capability "as found" to satisfy the design requirements of the D.C. electrical power system. The discharge rate and test length should correspond to the design duty cycle requirements.

A battery performance test is a test of constant current capacity of the battery to detect any change in the capacity determined by the acceptance test. This test is intended to determine overall battery degradation due to age and usage. A battery capacity of 80% indicates that the battery rate of deterioration is increasing, even if there is ample capacity to meet the load requirements. However, if the design margins are more limiting, the acceptable limit is based on the latest load profile.

3/4.9.D D.C. Sources - Shutdown

The D.C. sources required to be OPERABLE during Cold Shutdown, Refueling, when handling irradiated fuel and during operations with a potential for draining the reactor vessel provide assurance that:

1. Systems to provide adequate coolant inventory makeup are available for the irradiated fuel in the core in case of an inadvertent drain down of the reactor vessel;
2. Systems needed to mitigate a fuel-handling accident are available;
3. Systems necessary to mitigate the effects of events that can lead to core damage during shutdown are OPERABLE;
4. Instrumentation and control capability is available for monitoring and maintaining the unit in a cold shutdown condition and refueling condition.

With one or more of the required D.C. electrical power sources inoperable, the action provisions require a suspension of activities that will preclude the occurrence of actions that could potentially initiate the postulated events. However, timely suspension of these activities is not intended to preclude completion of actions necessary to establish a safe, conservative condition.

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3/4.9.E Distribution - Operating

The OPERABILITY of the A.C. and D.C. onsite power distribution systems ensures that sufficient power will be available to 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 surveillance requirements verify that the A.C. and D.C. electrical power distribution systems are functioning properly, with all the required circuit breakers closed and the buses energized from normal power. The verification of proper voltage availability on the buses ensures that the required power is readily available for motive as well as control functions for critical system loads connected to these buses. The frequency takes into account the redundant capability of the A.C. and D.C. electrical power distribution subsystems, and other indications available in the control room that will alert the operator to subsystem malfunctions.

3/4.9.F Distribution - Shutdown

The OPERABILITY of the minimum specified A.C. and D.C. onsite power distribution systems, during Cold Shutdown and Refueling and when handling irradiated fuel in the secondary containment, ensures that the facility can be maintained in these conditions for extended time periods and sufficient instrumentation and control capability is available for monitoring and maintaining the unit status. Requiring OPERABILITY of the minimum specified onsite power distribution systems when handling irradiated fuel in the secondary containment helps to ensure that systems needed to mitigate a fuel handling accident are available.

3/4.9.G RPS Power Monitoring

Specifications are provided to ensure the OPERABILITY of the reactor protection system (RPS) bus electrical protection assemblies (EPAs). Each RPS motor generator (MG) set and the alternate power source has 2 EPA CHANNEL(s) wired in series. A trip of either CHANNEL from either overvoltage, undervoltage, or underfrequency will disconnect the associated MG set or alternate power source.

The associated surveillance requirements provide for demonstration of the OPERABILITY of the RPS EPA's. The setpoints for overvoltage, undervoltage, and underfrequency have been chosen based on analysis (ref. February 4, 1983 letter to H. Denton from T. Rausch).