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

September 18, 1995

50-237

Mr. D. L. Farrar
Manager, Nuclear Regulatory Services
Commonwealth Edison Company
Executive Towers West III
1400 OPUS Place, Suite 500
Downers Grove, IL 60515

SUBJECT: ISSUANCE OF AMENDMENTS RELATED TO TSUP SECTION 3/4.9
(TAC NOS. M86743, M86744, M86745 AND M86746)

Dear Mr. Farrar:

The Commission has issued the enclosed Amendment No. 138 to Facility Operating License No. DPR-19 and Amendment No. 132 to Facility Operating License No. DPR-25 for the Dresden Nuclear Power Station, Units 2 and 3, respectively; and Amendment No. 160 to Facility Operating License No. DPR-29 and Amendment No. 156 to Facility Operating License No. DPR-30 for the Quad Cities Nuclear Power Station, Units 1 and 2, respectively. The amendments are in response to your application dated March 26, 1993, as supplemented May 15, 1995.

As a result of findings by a Diagnostic Evaluation Team inspection performed by the NRC staff at the Dresden Nuclear Power Station in 1987, Commonwealth Edison Company (ComEd, the licensee) made a decision that both the Dresden Nuclear Power Station and sister site Quad Cities Nuclear Power Station, needed attention focused on the existing custom Technical Specifications (TS) being used at both sites.

The licensee made the decision to initiate a Technical Specification Upgrade Program (TSUP) for both Dresden and Quad Cities. The licensee evaluated the current TS for both Dresden and Quad Cities against the Standard Technical Specifications (STS) contained in NUREG-0123, "Standard Technical Specification General Electric Plants BWR/4." The licensee's evaluation identified numerous potential improvements such as clarifying requirements, changing the TS to make them more understandable to eliminate interpretation, and deleting requirements that are no longer considered current with industry practice. As a result of the evaluation, ComEd has elected to upgrade both the Dresden and Quad Cities TS to the STS contained in NUREG-0123.

The TSUP for Dresden and Quad Cities is not a complete adoption of the STS. The TSUP focuses on (1) integrating additional information such as equipment operability requirements during shutdown conditions, (2) clarifying

requirements such as limiting conditions for operations and action statements utilizing STS terminology, (3) deleting superseded requirements and modifications to the TS based on the licensee's responses to Generic Letters (GL), and (4) relocating specific items to more appropriate TS locations.

The application dated March 26, 1993, as supplemented May 15, 1995, contains the proposed upgrade of Section 3/4.9 (Electrical Power Systems) of the Dresden and Quad Cities TS.

The review guidance used by the NRC staff in the review of the TSUP is described in Section 2.0 of the enclosed Safety Evaluation (SE). The staff reviewed the proposed changes and evaluated all deviations between the proposed TS, the current TS, and the STS. In no case did the licensee propose a relaxation of the licensing basis as stated in the Updated Final Safety Analysis Reports (UFSAR) for Dresden or Quad Cities.

Based on discussions between ComEd and the staff, it has been mutually agreed upon that the NRC will review the sections of TSUP as they are submitted and provide ComEd an amendment for each submittal. Once all of the TSUP sections have been reviewed and the amendments issued, it is our understanding that ComEd will make one final submittal addressing any changes that may be required as a result of problems uncovered during the course of this effort. Upon receipt and review of this final submittal, the staff will issue a final amendment which addresses any remaining open items and any changes or corrections to the previous amendments.

During our review of the proposed TS Section 3/4.9 the following items remain open and will be resolved in a future amendment:

1. TS 3.9.A, Action 8
2. TS 4.9.A.1.b
3. TS 4.9.A.8.b
4. TS 3.9.C, Actions 1 and 2
5. TS 4.9.C.2.c
6. TS 4.9.C.5
7. TS 4.9.C.6

The applicable TSUP TS will be issued with each amendment and will become effective no later than December 31, 1995, for Dresden and June 30, 1996, for Quad Cities.

The Notice of Issuance will be included in the Commission's biweekly Federal Register notice.

Sincerely,

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

Docket Nos. 50-237, 50-249, 50-254, 50-265

Enclosures:
1. Amendment No. 138 to DPR-19
2. Amendment No. 132 to DPR-25
3. Amendment No. 160 to DPR-29
4. Amendment No. 156 to DPR-30
5. Safety Evaluation

cc w/encls: see next page

The Notice of Issuance will be included in the Commission's biweekly Federal Register notice.

Sincerely,

Original signed by

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

Docket Nos. 50-237, 50-249, 50-254, 50-265

Enclosures:
1. Amendment No. 138 to DPR-19
2. Amendment No. 132 to DPR-25
3. Amendment No. 160 to DPR-29
4. Amendment No. 156 to DPR-30
5. Safety Evaluation

cc w/encls: see next page

DISTRIBUTION:
Docket Files
PUBLIC
PDIII-2 r/f (2)
J. Strosnider
OGC
C. Grimes
P. Hiland, RIII
ACRS (4)
R. Capra
J. Stang
R. Pulsifer
J. Calvo
J. Roe
C. Moore (2)
G. Hill (8)
D. Skay

*See previous concurrence

DOCUMENT NAME:DRESDEN\DRQ86743.AMD

To receive a copy of this document, indicate in the box: "C" = Copy without enclosures "E" = Copy with enclosures "N" = No copy

OFFICE	LA:PD32	PM:PD32	PM:PD32	PM:PD32	BC:EELB	BC:EMCB	D:PD32	*OGC
NAME	CMoore	DSkay:avl	JStang	RPulsifer	*JCalvo	*JStrosnider	RCapra	
DATE	9/14/95	9/14/95	9/14/95	9/14/95	08/22/95	07/13/95	9/15/95	09/08/95

OFFICIAL RECORD COPY

cc:

Michael I. Miller, Esquire
Sidley and Austin
One First National Plaza
Chicago, Illinois 60603

Mr. Thomas P. Joyce
Site Vice President
Dresden Nuclear Power Station
6500 North Dresden Road
Morris, Illinois 60450-9765

Mr. J. Heffley
Station Manager
Dresden Nuclear Power Station
6500 North Dresden Road
Morris, Illinois 60450-9765

U.S. Nuclear Regulatory Commission
Resident Inspectors Office
Dresden Station
6500 North Dresden Road
Morris, Illinois 60450-9766

Richard J. Singer
Manager - Nuclear
MidAmerican Energy Company
907 Walnut Street
P.O. Box 657
Des Moines, Iowa 50303

Brent E. Gale, Esq.
Vice President - Law and
Regulatory Affairs
One RiverCenter Place
106 East Second Street
P.O. Box 4350
Davenport, Iowa 52808

Chairman
Rock Island County Board
of Supervisors
1504 3rd Avenue
Rock Island County Office Bldg.
Rock Island, Illinois 61201

Regional Administrator
U.S. NRC, Region III
801 Warrenville Road
Lisle, Illinois 60532-4351

Illinois Department of Nuclear Safety
Office of Nuclear Facility Safety
1035 Outer Park Drive
Springfield, Illinois 62704

Chairman
Grundy County Board
Administration Building
1320 Union Street
Morris, Illinois 60450

Mr. Stephen E. Shelton
Vice President
Iowa-Illinois Gas and
Electric Company
P. O. Box 4350
Davenport, Iowa 52808

Mr. L. William Pearce
Station Manager
Quad Cities Nuclear Power Station
22710 206th Avenue North
Cordova, Illinois 61242

U.S. Nuclear Regulatory Commission
Quad Cities Resident Inspectors Office
22712 206th Avenue North
Cordova, Illinois 61242

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.

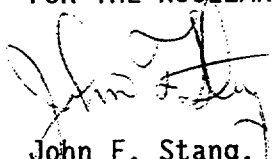
2. Accordingly, the license is amended by changes to the Technical Specifications as indicated in the attachment to this license amendment and paragraph 2.C.(2) of Facility Operating License No. DPR-19 is hereby amended to read as follows:

(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.

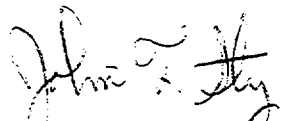
2. Accordingly, the license is amended by changes to the Technical Specifications as indicated in the attachment to this license amendment and paragraph 3.B. of Facility Operating License No. DPR-25 is hereby amended to read as follows:

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.

UNIT 2 REMOVE	UNIT 3 REMOVE	INSERT
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	34.9-3	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 ≥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 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 ≥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 31days 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 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	4.9 - SURVEILLANCE REQUIREMENTS
5. With two of the above required offsite circuit power sources inoperable:	
a. 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.	
b. 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	b. [INTENTIONALLY BLANK] This requirement is an open item to be addessed in the TSUP clean-up amendment
c. 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.	c. 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.
6. With both of the above required diesel generator power sources inoperable:	d. Simulating a loss of offsite power by itself, and:
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.	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 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	4.9 - SURVEILLANCE REQUIREMENTS
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.	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.
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	f. Simulating a loss of offsite power in conjunction with an ECCS actuation test signal, 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.	1) Verifying de-energization of the emergency buses, and load shedding from the emergency buses.
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.	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	4.9 - SURVEILLANCE REQUIREMENTS
8. [INTENTIONALLY BLANK] This requirement is an open item to be addressed in the TSUP clean-up amendment	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[g]. i. Verifying that the auto-connected loads to each diesel generator do not exceed the 2000 hour rating of 2860 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 ± 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

NUMBER OF FAILURES IN LAST 20 VALID TESTS[a]	TEST FREQUENCY
≤1	At least once per 31 days
≤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 ≥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

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.

4.9 - SURVEILLANCE REQUIREMENTS

3.9 - LIMITING CONDITIONS FOR OPERATION

C. 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 REQUIREMENTS

C. 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 ≤150 $x10^{-6}$ ohms or ≤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 addessed 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 ≤¼" above maximum level indication mark	> Minimum level indication mark, and ≤¼" 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-1and 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. 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.

4.9 - SURVEILLANCE REQUIREMENTS

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.

BASES

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

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.

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

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

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

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.

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.

BASES

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.

UNIT 1 REMOVE	UNIT 2 REMOVE	INSERT
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 ≥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	4.9 - SURVEILLANCE REQUIREMENTS
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. 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.
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.	d. Verifying[c] the diesel generator is synchronized, loaded to between 2375 and 2500 kW[d], and operates with this load for ≥60 minutes.
2. With one of the above required diesel generator power sources inoperable:	e. Verifying the diesel generator is aligned to provide standby power to the associated emergency busses.
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.	f. Verifying the pressure in required starting air receiver tanks to be ≥230 psig.
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	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 31days 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	4.9 - SURVEILLANCE REQUIREMENTS
5. With two of the above required offsite circuit power sources inoperable:	
a. 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.	b. [INTENTIONALLY BLANK] This requirement is an open item to be addessed in the TSUP clean-up amendment
b. 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.	c. 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.
c. 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.	d. Simulating a loss of offsite power by itself, and:
6. With both of the above required diesel generator power sources inoperable:	1) Verifying de-energization of the emergency buses, and load shedding from the emergency buses.
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.	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 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	4.9 - SURVEILLANCE REQUIREMENTS
8. [INTENTIONALLY BLANK] This requirement is an open item to be addressed in the TSUP clean-up amendment	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 ±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

NUMBER OF FAILURES IN LAST 20 VALID TESTS[a]	TEST FREQUENCY
≤1	At least once per 31 days
≤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 ≥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 OPERATION

C. 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 REQUIREMENTS

C. 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 ≤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 addessed 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 ≤¼" above maximum level indication mark	> Minimum level indication mark, and ≤¼" 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.

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.

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. 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.

4.9 - SURVEILLANCE REQUIREMENTS

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.

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. Theses 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.

BASES

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.

BASES

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

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

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

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.

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.

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

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

RELATED TO AMENDMENT NO. 138 TO FACILITY OPERATING LICENSE NO. DPR-19,

AMENDMENT NO. 132 TO FACILITY OPERATING LICENSE NO. DPR-25,

AMENDMENT NO. 160 TO FACILITY OPERATING LICENSE NO. DPR-29,

AND AMENDMENT NO. 156 TO FACILITY OPERATING LICENSE NO. DPR-30

COMMONWEALTH EDISON COMPANY

AND

MIDAMERICAN ENERGY COMPANY

DRESDEN NUCLEAR POWER STATION, UNITS 2 AND 3

QUAD CITIES NUCLEAR POWER STATION, UNITS 1 AND 2

DOCKET NOS. 50-237, 50-249, 50-254 AND 50-265

1.0 INTRODUCTION

By letter dated March 26, 1993, as supplemented by letter dated May 15, 1995, Commonwealth Edison Company (ComEd, the licensee) submitted an amendment to upgrade Section 3/4.9 of the Dresden Nuclear Power Station, Units 2 and 3, and the Quad Cities Nuclear Power Station, Units 1 and 2 Technical Specifications (TS). The changes have been requested as part of their Technical Specification Upgrade Program (TSUP).

As a result of findings by a Diagnostic Evaluation Team inspection performed by the NRC staff at the Dresden Nuclear Power Station in 1987, ComEd made a decision that both the Dresden Nuclear Power Station and sister site Quad Cities Nuclear Power Station, needed attention focused on the existing custom TS used at the sites.

The licensee made the decision to initiate a TSUP for both Dresden and Quad Cities. The licensee evaluated the current TS for both stations against the Standard Technical Specifications (STS) contained in NUREG-0123, "Standard Technical Specifications General Electric Plants BWR/4." Both Dresden and Quad Cities are BWR-3 designs and are nearly identical plants. The licensee's evaluation identified numerous potential improvements such as clarifying requirements, changing TS to make them more understandable and to eliminate the need for interpretation, and deleting requirements that are no longer considered current with industry practice. As a result of the evaluation,

ComEd elected to upgrade both the Dresden and Quad Cities TS to the STS contained in NUREG-0123.

The TSUP for Dresden and Quad Cities is not a complete adoption of the STS. The TSUP focuses on (1) integrating additional information such as equipment operability requirements during shutdown conditions, (2) clarifying requirements such as limiting conditions for operations and action statements utilizing STS terminology, (3) deleting superseded requirements and modifications to the TS based on the licensee's responses to Generic Letters (GL), and (4) relocating specific items to more appropriate TS locations.

The application dated March 26, 1993, as supplemented May 15, 1995, proposed to upgrade only those sections of the TS to be included in TSUP Section 3/4.9 (Electrical Power Systems) of the Dresden and Quad Cities TS.

The staff reviewed the proposed changes and evaluated all deviations and changes between the proposed TS, the STS, and the current TS. In no case did the licensee propose a change in the TS that would result in the relaxation of the current design requirements as stated in the Updated Final Safety Analysis Reports (UFSAR) for Dresden or Quad Cities.

In response to the staff's recommendations, the licensee submitted identical TS for Quad Cities and Dresden except for plant-specific equipment and design differences. Technical differences between the units are identified as appropriate in the proposed amendment.

The supplemental letter provided additional clarifying information which was within the scope of the original application and did not change the original proposed no significant hazards consideration determination.

2.0 EVALUATION

Review Guidelines - The licensees' purpose for the TSUP was to reformat the existing Dresden and Quad Cities TS into the easier to use STS format. Plant specific data, values, parameters, and equipment specific operational requirements contained in the current TS for Dresden and Quad Cities were retained by the licensee in the TSUP.

The STS contained in NUREG-0123 were developed by the NRC and industry because of the shortcomings associated with the custom TS which were issued to plants licensed in early 1970's (i.e., Dresden (1971) and Quad Cities (1972)). The STS developed by the NRC and industry provided an adequate level of protection for plant operation by assuring required systems are operable and have been proven to be able to perform their intended functions. The limiting conditions for operation (LCO), the allowed out-of-service times, and the required surveillance frequencies were developed based on industry operating experience, equipment performance, and probabilistic risk assessment analysis during the 1970's. The STS were used as the licensing basis for plants licensed starting in the late 1970's.

For the most part, ComEd's adoption of the STS resulted in more restrictive LCOs and surveillance requirements (SR). In some cases, however, the STS provide relief from the Dresden and Quad Cities current TS requirements. In all these cases, the adoption of the STS requirements for LCOs or SR does not change the current design requirements of either plant as described in each station's UFSAR. In addition, the success criteria for the availability and operability of all required systems contained in the current TS are maintained by the adoption of the STS requirements in the proposed TS.

In addition to adopting the STS guidelines and requirements in the TSUP, ComEd has also evaluated GL concerning line item improvements for TS. These GLs were factored into TSUP to make the proposed TS in the TSUP reflect industry lessons learned in the 1980's and early 1990's.

Deviations between the proposed specifications, the STS, and the current TS were reviewed by the staff to determine if the deviations were due to plant specific features or if they posed a technical deviation from the STS guidelines. Plant specific data, values, parameters, and equipment specific operational requirements contained in the current TS for Dresden and Quad Cities were retained by the licensee in the upgraded TS. Portions of the proposed TS may involve issues which have not been resolved and therefore not approved by the staff. These issues will remain open items and will be addressed by the licensee in a clean-up amendment request. Upon receipt and review of this submittal, the staff will issue a final amendment which addresses each of the open items.

Administrative Changes - Non-technical, administrative changes were intended to incorporate human factor principles into the form and structure of the STS so that they would be easier to use for plant operation's personnel. These changes are editorial in nature or involve the reorganization or reformatting of requirements without affecting technical content of the current TS or operational requirements. Every section of the proposed TS reflects this type of change.

More Restrictive Requirements - The proposed TSUP TS include certain more restrictive requirements than are contained in the existing TS. Examples of more restrictive requirements include the following: placing an LCO on plant equipment which is not required by the present TS to be operable; adding more restrictive requirements to restore inoperable equipment; and adding more restrictive surveillance requirements.

Less Restrictive Requirements - The licensee provided a justification for less restrictive requirements on a case-by-case basis as discussed in this SE. When requirements have been shown to provide little or no safety benefit, their removal from the TS may be appropriate. In most cases, these relaxations had previously been granted to individual plants on a plant-specific basis as the result of (a) generic NRC actions, and (b) new NRC staff positions that have evolved from technological advancements and operating experience.

The Dresden and Quad Cities plant design was reviewed to determine if the specific design basis was consistent with the STS contained in NUREG-0123. All changes to the current TS and deviations between the licensees' proposed TS and the STS were reviewed by the staff for acceptability to determine if adequate justification was provided (i.e., plant specific features, retention of existing operating values, etc.).

Deviations the staff finds acceptable include: (1) adding clarifying statements, (2) incorporating changes based on GL, (3) reformatting multiple steps included under STS action statements into single steps with unique identifiers, (4) retaining plant specific steps, parameters, or values, (5) moving action statements within a TS, (6) moving action statements from an existing TS to form a new TS section, and (7) omitting the inclusion of STS steps that are not in existing TS.

Relocation of Technical Specifications - The proposed TS include the relocation of some requirements from the TS to licensee-controlled documents. Section 182a of the Atomic Energy Act requires applicants for nuclear power plant operating licenses to state TS to be included as part of the license. The Commission's regulatory requirements related to the content of TS are set forth in 10 CFR 50.36. That regulation requires that the TS include items in five specific categories, including (1) safety limits, limiting safety system settings, and limiting control settings; (2) limiting conditions for operation; (3) surveillance requirements; (4) design features; and (5) administrative controls. However, the regulation does not specify the particular requirements to be included in a plant's TS.

The Commission has provided guidance for the contents of TS in its "Final Policy Statement on Technical Specification Improvements for Nuclear Power Reactors" ("Final Policy Statement"), 58 FR 39132 (July 22, 1993), in which the Commission indicated that compliance with the Final Policy Statement satisfies Section 182a of the Act. In particular, the Commission indicated that certain items could be relocated from the TS to licensee-controlled documents, consistent with the standard enunciated in *Portland General Electric Co.* (Trojan Nuclear Plant), ALAB-531, 9 NRC 263, 273 (1979). In that case, the Atomic Safety and Licensing Appeal Board indicated that "technical specifications are to be reserved for those matters as to which the imposition of rigid conditions or limitations upon reactor operation is deemed necessary to obviate the possibility of an abnormal situation or event giving rise to an immediate threat to the public health and safety."

Consistent with this approach, the Final Policy Statement identified four criteria to be used in determining whether a particular matter is required to be included in the TS, as follows: (1) Installed instrumentation that is used to detect, and indicate in the control room, a significant abnormal degradation of the reactor coolant pressure boundary; (2) a process variable, design feature, or operating restriction that is an initial condition of a design-basis accident or transient analysis that either assumes the failure of or presents a challenge to the integrity of a fission product barrier; (3) a structure, system, or component that is part of a primary success path and

which functions or actuates to mitigate a design-basis accident or transient that either assumes the failure of or presents a challenge to the integrity of a fission product barrier; (4) a structure, system, or component which operating experience or probabilistic safety assessment has shown to be significant to public health and safety. As a result, existing TS requirements which fall within or satisfy any of the criteria in the Final Policy Statement must be retained in the TS, while those TS requirements which do not fall within or satisfy these criteria may be relocated to other, licensee-controlled documents. The Commission recently amended 10 CFR 50.36 to codify and incorporate these four criteria (60 FR 36953). The change to 10 CFR 50.36 is effective as of August 18, 1995.

The following sections provide the staff's evaluations of the specific proposed TS changes.

3.0 EVALUATION OF PROPOSED TS SECTION 3/4.9

The following sections provide the staff's evaluation of the TS changes reflected in proposed TS Section 3/4.9. The purpose of proposed TS Section 3/4.9 is to assure an adequate supply of electrical power during operating and shutdown conditions.

3.1 Section 3/4.9.A, A.C. Sources - Operating

Proposed TS 3/4.9.A, "A.C. Sources - Operating," incorporates the guidance of STS Section 3/4.8.1.1 and various portions of current TS Section 3/4.9. The proposed section has been reformatted adopting the STS guidelines. Plant specific values for the listed parameters are included which are consistent with each station's UFSAR. Deviations from STS guidelines or current TS requirements are discussed below.

3.1.1 LCO

Proposed TS 3.9.A.1 and 3.9.A.2 incorporate the requirements of the current TS 3.9.A.1, 3.9.A.2, and 3.9.A.3 with the exception that the term "available" is replaced with "OPERABLE." This is a conservative change because OPERABLE is defined in TSUP Section 1.0 and has specific requirements that are more stringent than the term "available" which is not defined in the TS. Therefore, this change is acceptable.

Proposed TS 3.9.A.2 requires two separate and independent diesel generators. The design of Dresden and Quad Cities includes one diesel generator for each unit and a swing diesel which can be used by either unit. However, this design feature is not reflected in the proposed TS. The issue is an open item. A clarification of system design and a discussion of how the swing diesel will be controlled for surveillances should be provided in the clean-up amendment.

3.1.2 Applicability

The proposed TS applies to Modes 1, 2, and 3. The current TS apply prior to making the reactor critical, which is Modes 1 and 2. The proposed applicability is expanded to include hot shutdown (Mode 3) in accordance with STS guidelines. This change is an enhancement of the current TS and is, therefore, acceptable.

3.1.3 Actions

3.1.3.1 Action 1

Proposed Action 1 requires that, in the event one offsite line is inoperable, the other offsite line shall be demonstrated operable by checking breaker alignment within 1 hour and every 8 hours afterwards. In addition, if a diesel generator has not been tested within the past 24 hours, an unloaded start of the emergency diesel generator (EDG) is required within 24 hours and again within 72 hours. This is an upgrade from current TS 3.9.B.1 for Dresden and 3.9.C.1 for Quad Cities that requires only that the EDGs be demonstrated operable; it does not specify a time limit. The proposed TS represents a deviation from STS guidelines which require that the EDGs be tested within 1 hour and every 8 hours thereafter. The proposed action statement is consistent with the intent of GL 93-05. GL 93-05 recommends reducing EDG starts to reduce unnecessary wear on the diesels and thereby increase EDG reliability. Because the proposed action is an enhancement of current requirements, it is acceptable.

The proposed allowed outage time (AOT) for Action 1 is 7 days. This is a deviation from STS guidelines which allows only 72 hours, but it is consistent with the current TS requirements. If a single line remains inoperable after 7 days, the unit is required to be in hot shutdown in the next 12 hours and cold shutdown in the following 24 hours. This is an upgrade from the current TS which do not specify the actions to be taken in the event that the AOT is exceeded. The proposed change enhances the current TS and is acceptable. The deviation from STS guidelines does not reduce existing safety margins and is also acceptable.

3.1.3.2 Action 2

Proposed Action 2 requires that in the event one EDG is inoperable, the operability of the offsite circuits shall be verified within 1 hour and once per 8 hours thereafter. This is an enhancement of current TS 3.9.B.2 for Dresden and 3.9.E.1 for Quad Cities that requires only that the offsite lines be available. The use of the word "operable" provides an upgrade and a clarification since "operable" is defined in Section 1.0 of the upgraded TS.

In addition, if the EDG is inoperable due to any cause other than preplanned preventive maintenance or testing, the proposed TS requires the operability of the remaining EDG to be demonstrated within 24 hours if it has not been successfully tested within the past 24 hours and within the subsequent 72

hours. The proposed TS is a relaxation of the current TS that requires the remaining EDG be demonstrated operable immediately and daily thereafter. The proposed TS also is a relaxation of STS guidelines that requires that the remaining EDG be tested within 1 hour and every 8 hours thereafter. The reduced EDG testing is consistent with the recommendations of GL 93-05 and does not affect the existing margin of safety. Therefore, the proposed change is acceptable.

The proposed TS includes a 7 day AOT. This is a deviation from the STS guidelines which allows only 72 hours, but it is consistent with the current TS and is, therefore, acceptable.

Proposed Action 2.b deviates from STS guidelines in that it allows an exception to demonstrating operability of the remaining EDG if an EDG becomes inoperable due to preplanned preventive maintenance. While the STS guidelines do not provide this exclusion, it is consistent with the current TS. This exception also meets the intent of the guidance provided in GL 93-05 to reduce unnecessary EDG starts. The deviation from STS does not reduce existing safety margins and is acceptable.

3.1.3.3 Action 3

Proposed Action 3 discusses the actions required if one offsite power source and one EDG are inoperable. The current TS require that if one EDG is inoperable, than two offsite lines shall be available. The current TS do not address the situation in which one offsite power source and one EDG are inoperable. Therefore, the current TS would require the plant to be in cold shutdown in 24 hours. The proposed TS require that one inoperable A.C. power source be restored to operable status within 12 hours or be in hot shutdown in 12 hours and cold shutdown in the following 24 hours. The proposed TS is a relaxation of the current TS by allowing more time to reach cold shutdown. However, the current TS are ambiguous in the requirement for entering the shutdown statement since the definition of "available" is not clearly specified. The proposed TS clearly defines the circumstances in which the action must be taken by using the term "operable" and clearly specifies actions to be taken if one offsite power source and one EDG are inoperable. The additional time allowed to reach cold shutdown is a reasonable period to restore one source to operability and does not significantly affect existing safety margins because the redundant EDG and offsite source are still operable. Therefore, the proposed TS is acceptable.

The proposed action is consistent with STS guidelines with the following exceptions. The STS guidelines require demonstrating operability of the operable EDG within 1 hour and every 8 hours. The proposed TS requires the operable EDG to be tested within 8 hours if it hasn't been successfully tested within the past 24 hours and within the subsequent 72 hours.

The STS guidelines also require restoring both offsite lines and both EDGs within 72 hours while the proposed TS allows 7 days from the time of initial loss. The proposed TS requires that one of the inoperable AC sources (one

offsite power source or one EDG) be restored to operable within 12 hours. After restoring one source, either one offsite power source or one EDG will remain inoperable and the appropriate action must be taken. The required proposed action for either condition is to restore the AC source within 7 days. This is also consistent with the current AOT for one EDG or one offsite source inoperable. Therefore, the proposed 7 days in action 3 is appropriate. Based on the above, the proposed TS is acceptable.

3.1.3.4 Action 4

Proposed Action 4.a requires that, with one EDG inoperable, the required systems, subsystems, trains, and components associated with the operable EDG be verified to be operable within 2 hours. The current TS require that all low pressure core cooling and containment cooling systems associated with the operable EDG be operable (Quad Cities uses the term "available"). The change is an enhancement in that it clarifies the actions to be taken and the time in which action is required, and is more conservative in that it encompasses all required systems. Therefore, the proposed action is acceptable.

Proposed Action 4.b requires that if this requirement is not met, then the applicable actions for the affected systems must be taken or the unit must be in hot shutdown within the next 12 hours and cold shutdown within the following 24 hours consistent with STS guidelines. This is a relaxation of the current TS which require cold shutdown within 24 hours. The extension of the time required to be in cold shutdown provides for an orderly shutdown and does not affect the existing safety margins. In addition, the requirement for hot shutdown in 12 hours and cold shutdown in the following 24 hours is consistent with the proposed actions for both trains inoperable for the majority of systems which rely on the EDGs for emergency power. The proposed action deviates from STS guidelines which do not contain a provision for actions to be taken for the associated systems or components inoperable prior to initiating shutdown.

3.1.3.5 Action 5

Proposed Action 5 discusses the requirements when both offsite lines are inoperable. The proposed action statement requires that the EDGs be demonstrated operable within 8 hours and within the subsequent 72 hours. This is an enhancement to the current TS which require that the EDGs be demonstrated operable but does not provide a time frame in which this must be accomplished. The proposed action deviates from STS guidelines which require that the EDGs be demonstrated operable within 1 hour and every 8 hours thereafter. The proposed requirements are consistent with proposed Actions 1, 2, and 3. The reduced EDG testing is consistent with the intent of GL 93-05 by reducing unnecessary EDG starts and is acceptable.

The current Quad Cities TS require that reactor power be reduced to 40 percent in the event that both offsite lines become inoperable. This requirement is not included in the current Dresden TS and has not been retained in the proposed TS. Therefore, the proposed TS allow the plant to operate at full

power during the AOT. The current requirement to reduce power is based on an assumption that the main generator can continue to operate separated from the grid. The staff recognizes that changing the operating condition of the plant with less than a full complement of redundant systems is inconsistent with efforts to reduce challenges to safety systems that may occur during plant shutdowns. Operating at 100 percent power following a loss of both offsite lines does not substantially decrease plant safety as opposed to operating at 40 percent power. Therefore, this change is acceptable.

Proposed Action 5 requires that at least one of the offsite circuits be restored within 24 hours or the plant must be in hot shutdown within 12 hours and cold shutdown within the following 24 hours. This is an enhancement to the current TS which do not specify the action to be taken if the requirements are not met. The proposed TS is consistent with the STS guidelines. The proposed TS requires both offsite lines to be restored within 7 days from the initial loss of power or be in hot shutdown within 12 hours and cold shutdown within the following 24 hours. This is a deviation from STS guidelines which require that both offsite lines be operable within 72 hours from initial loss of power. Proposed Action 5 is consistent with proposed Action 1 above and the current TS which allow a 7 day AOT for one offsite circuit inoperable. This change is acceptable.

The proposed action statement deletes a requirement in the current TS to notify the NRC within 24 hours of losing power to both offsite circuits. This requirement has been deleted because it is redundant to the reporting requirements in 10 CFR 50.72 and 50.73. Further, STS guidelines do not require notification to the NRC if both offsite power circuits are inoperable. The staff finds that sufficient regulatory controls exist under 10 CFR 50.72 and 50.73 to assure continued protection of public health and safety. Therefore this change is acceptable.

3.1.3.6 Action 6

Proposed Action 6 discusses the actions to be taken if both EDGs are inoperable. Because the current TS do not specifically address this condition, the requirements were adopted from STS guidelines. Proposed action 6.a requires demonstration of operability of the offsite sources within 1 hour and at least once per 8 hours thereafter. This action is acceptable.

Proposed action 6.b requires one EDG to be restored to operable status within 2 hours or be in hot shutdown within 12 hours and in cold shutdown within the following 24 hours. Current TS would require the plant to enter TS 3.0.A and be in hot shutdown in 12 hours and cold shutdown within the following 24 hours. Therefore, the proposed action is a relaxation of current requirements by allowing 2 hours to restore one EDG. Because the offsite electrical power system is the only source of A.C. power in this situation, the risk associated with continued operation for a short time (two hours) should 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. A two hour AOT to make repairs is an appropriate length of time and is acceptable.

Proposed Action 6.b also contains a requirement to 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. The purpose of this requirement is to ensure that a check of the required two train systems is still performed within 2 hours if one of the remaining EDGs is restored. This is consistent with proposed action 4 which is required when one EDG is inoperable. Proposed action 6.b ensures that this check is performed again if, within the duration of the 7 day AOT for one diesel generator inoperable (proposed TS 3.9.A action 2), a second EDG becomes temporarily inoperable. The requirement to verify that the trains of systems supported by the operable EDG are operable is consistent with current requirements but is an enhancement of current requirements by specifying a time limit. Therefore, the proposed TS is acceptable.

Proposed Action 6.c requires the demonstration of the continued operability of the restored EDG within the subsequent 72 hours. This requirement is not included in STS, but is consistent with proposed Action 2 for one EDG inoperable. This is a relaxation of the current TS which requires daily verification of operability. This change is acceptable based on the recommendation of GL 93-05 to reduce unnecessary EDG testing and is acceptable.

Proposed Action 6.d requires that both EDGs be restored operable within 7 days from the time of initial loss. This is a deviation from the STS which requires both EDGs to be restored within 72 hours. The proposed TS is consistent with proposed Action 2 regarding loss of one EDG and is consistent with current TS requirements. Because the proposed action statement is consistent with the current safety analysis, it is acceptable.

3.1.3.7 Action 7

Proposed Action 7 discusses the actions to be taken if the fuel oil in the bulk fuel storage tanks does not meet the properties specified in proposed TS 4.9.A.5 and 4.9.A.6. The current TS do not contain a requirement for actions to be taken if the fuel oil does not meet the specifications. The STS also does not contain guidelines for fuel oil which does not meet specifications. The proposed action allows 7 days to restore the fuel oil properties to within specified limits. The proposed time period of 7 days is acceptable because the fuel oil properties of interest, even if they were not within stated limits, would not have an immediate effect on EDG operation. If one or more of these properties is not within limits, it is not necessary to declare the EDG or the fuel oil storage system inoperable. It is acceptable to continue operation for up to 31 days while measures are taken to ensure that the properties of the mixed fuel oil are within limits. The proposed TS is an enhancement of current TS and is acceptable.

3.1.3.8 Action 8

Proposed Action 8 discusses the requirements for reporting EDG failures to the NRC. The proposed action may refer to proposed TS Section 6.9.B "Special

Reports." This will be left as an open item, contingent upon its correction in the TSUP clean-up package.

3.1.4 Surveillance Requirements

3.1.4.1 Testing of Circuits

Proposed TS 4.9.A.1.a requires weekly verification of correct breaker alignment and power availability to demonstrate operability of each of the required independent circuits between the offsite transmission network and the onsite Class 1E distribution system. This is a relaxation of current Quad Cities TS (current Dresden TS do not contain this requirement) which requires a daily status check of the availability of electric power. Although the proposed TS reduces the periodicity of the surveillance, current requirements are vague and provide little guidance to operators. The proposed TS adds the additional requirement to verify breaker alignment. A seven day surveillance frequency has been shown to be acceptable based on industry experience and is consistent with STS guidelines. Because the proposed surveillance requirement (SR) provides additional requirements for the offsite transmission network, the relaxation in periodicity does not significantly reduce plant safety margins for Quad Cities and is an enhancement of current TS for Dresden. Therefore, the proposed TS is acceptable.

Proposed TS 4.9.A.1.b is a new requirement not in the current TS and is consistent with STS 4.8.1.1.1.b with the following deviation. The STS require that, every 18 months, the independent circuits between the offsite transmission network and the onsite Class 1E distribution system be demonstrated operable by manually and automatically transferring the unit power supply from the normal circuit to the alternate circuit. The TS proposed in the March 26, 1993, submittal did not require an automatic transfer test. This issue will remain open and will be addressed in the clean-up amendment.

3.1.4.2 Monthly Testing of Diesel Generators

Proposed TS 4.9.A.2 requires that the EDGs be demonstrated operable in accordance with the frequency specified in proposed Table 4.9.A-1. This table bases the test frequency (either weekly or monthly) on the number of failures in the last 20 valid starts. Failures in EDG starts indicate possible degradation of the reliability of the EDG. Increasing the test frequency will allow for a more timely accumulation of additional test data upon which to base judgement of the reliability of the EDG. Current TS 4.9.D for Dresden and 4.9.A.1 for Quad Cities require the EDG operability tests to be performed on a monthly frequency, regardless of the previous performance. The proposed TS represents a more conservative requirement and is an enhancement of the current TS. Proposed Table 4.9.A-1 deviates from the STS table. The STS Table 4.8.1.1.2-1 specifies the number of failures in the previous 100 tests. It also requires slightly different testing frequencies than the proposed table. Because the proposed TS is an enhancement of current TS, it is acceptable.

The proposed SR contains a footnote (a) which is not included in the current TS. The footnote states: "All planned diesel generator tests shall be conducted in accordance with manufacturer's recommendations regarding engine prelube, leak detection and warmup procedures, and as applicable regarding loading and shutdown recommendations." Emergency diesel generator starts without prior engine prelube create unnecessary engine wear, thereby reducing total EDG reliability. The engine prelube does not result in an enhanced start performance that could mask the engine's ability to start in accident conditions without a prelube. The proposed footnote is consistent with the recommendations of GL 93-05. This change is acceptable.

Proposed TS 4.9.A.2.c requires verification that the EDG starts and accelerates to synchronous speed within a specified range of voltage and frequency. The current TS require only that the EDG deliver "rated voltage and frequency." The proposed SR clarifies the current TS by specifying values for voltage and frequency and is, therefore, acceptable. The proposed SR deviates from the STS requirement which specifies a minimum speed that the EDG must obtain. The requirement to obtain a specified minimum speed is redundant to the requirement to obtain the specified frequency range and its deletion does not affect the validity of the surveillance. Therefore, this deviation from STS is acceptable.

Proposed TS 4.9.A.2.d requires verification that the EDG is synchronized, fully loaded and operates for 60 minutes. The proposed TS enhances the current Quad Cities TS by specifying the load that must be achieved. There are no similar current TS requirements for Dresden. The proposed TS is an enhancement of current TS and is therefore acceptable.

Proposed TS 4.9.A.2.e requires verification that the EDG is aligned to provide standby power to the associated emergency buses. This is a new requirement adopted from STS guidance. This is an enhancement of the current TS and is acceptable.

Proposed TS 4.9.A.2.f requires verification that the pressure in the required starting air receiver tanks is greater than or equal to 230 psig for Quad Cities and 220 psig for Dresden. The current TS contains a requirement that the starting air compressor be checked for its ability to recharge the air receiver tanks. This requirement has been replaced by the proposed SR. The proposed TS is more restrictive than the current TS as it provides an acceptable limit to which the starting air receiver tanks must achieve rather than just ensuring that the equipment to recharge the tanks is operable. The proposed SR is based on STS guidance. The STS requirement is that the pressure in all air receivers be verified. The proposed SR requires only that the pressure in the required starting air receiver tanks be verified. Therefore, redundant air receiver system components may be out-of-service but because the required number of starting air receiver tanks are pressurized to the required pressure, they will fulfill their function and meet the design function of the system. The proposed TS is an enhancement of the current requirements and is acceptable.

Proposed TS 4.9.A.7 is a new requirement based on STS guidance. It requires a fast start of the EDG every 184 days. The fast start is established at less than or equal to 13 seconds consistent with the current LOCA analysis assumptions for both Dresden and Quad Cities. The proposed SR deviates from STS guidance in the allowed time to complete loading. The STS require loading within 60 seconds while the proposed TS allow 200 seconds to complete loading. The synchronization and loading must be done manually and require considerable attention to detail. Therefore, an extended time is acceptable to accomplish this task and does not affect the safety analysis. This requirement is an enhancement of the current TS which does not contain this surveillance. Based on the above evaluation, the proposed TS is acceptable.

3.1.4.3 Testing of Fuel and Fuel Tanks

Proposed TS 4.9.A.3 requires the removal of accumulated water from the fuel oil day tank every 31 days or after each operation of the EDG for greater than 1 hour. Proposed TS 4.9.A.4 requires the removal of accumulated water from the fuel oil bulk storage tanks every 92 days. These are new requirements based on STS guidance. These SRs are an enhancement of the current requirements and are acceptable.

Proposed TS 4.9.A.5 requires the sampling of new fuel oil prior to its addition to the storage tanks. The current TS do not require surveillances of new fuel, therefore, this is a new requirement which enhances the current TS. The proposed surveillance is based on STS guidelines but deviates from the STS guidance by allowing the addition of new fuel oil to the storage tanks before the test for viscosity is complete. The proposed TS allows 31 days from the time the sample is taken to verify that the viscosity is within American Society for Testing and Materials (ASTM) limits. The 31-day time period is acceptable because, even if the viscosity was not within limits, there would be no immediate effect on EDG operation. Continued operation is acceptable for up to 31 days while measures are taken to ensure that the properties of the mixed fuel oil are within limits or that the fuel oil properties are being restored to within limits. This deviation from STS is acceptable.

Proposed TS 4.9.A.5 also deviates from STS guidelines in that it does not include the permissible values for fuel oil tests. Instead, the proposed SR refers to applicable ASTM limits. The details of the methods for performing the EDG fuel oil surveillances are not necessary for inclusion in the TS and are adequately controlled by procedures. Therefore, this deviation from the STS is acceptable.

Proposed TS 4.9.A.5.b for Quad Cities includes a footnote that the particulate contamination surveillance is not required for No. 1 fuel oil, but is required for No. 2 fuel oil and blends. The current Quad Cities TS have no criteria delineated with respect to fuel oil, therefore, proposed TS 4.A.5.b is an enhancement of current TS and the exception for No. 1 fuel oil does not decrease the current level of safety. The current Dresden TS do not contain this exception.

Proposed TS 4.9.A.6 requires sampling of the bulk fuel storage tanks monthly. The current TS require monthly sampling of diesel fuel (which includes logging of the quantity of fuel and checking the quality). The proposed requirement is consistent with the required frequency of the current TS and provides enhanced guidance to the operators by specifying the parameters to be checked. The proposed SR is more restrictive in that it requires a specific maximum allowable amount of particulate contaminant. The proposed TS is more conservative than the STS guidance which recommends that this sample be taken once every 92 days and is more restrictive in the allowed value of particulate contaminant. Because this requirement is an enhancement of the current TS and is more conservative than STS, the proposed SR is acceptable.

3.1.4.4 Testing During Refueling Outages

Proposed TS 4.9.A.8, with the exception of 4.9.A.8.f, is a new requirement based on STS guidelines with some modifications to account for plant design. Proposed TS 4.9.A.8.a, d, e, g, h, i, j, and k are consistent with STS guidelines and applicable to Dresden and Quad Cities plant design. These TS require the following surveillances to be performed every 18 months: an EDG inspection, simulation of a loss of offsite power, simulation of ECCS actuation without loss of offsite power, verification of automatic bypass of EDG trips upon an emergency actuation signal, a 24 hour EDG run, verification that the auto-connected loads do not exceed the 2000 hour rating, simulation of restoration of offsite power, and operability of the automatic load sequence timer. The proposed TS are an enhancement of current TS and are acceptable.

Proposed TS 4.9.A.8.b verifies that the diesel generator is capable of rejecting its largest emergency load. The TS proposed in the March 26, 1993, submittal deviated from STS guidelines by not including the size of the load to be rejected or the voltage and frequency to be maintained during the load rejection. This SR will remain open pending its approval in the clean-up amendment.

Proposed TS 4.9.A.8.c deviates from STS guidelines by not providing a specific value of load that must be rejected. This prevents artificial loading that would increase the probability of a loss of offsite power while conducting the test. This change from STS guidelines is acceptable. The proposed TS is a new requirement and is an enhancement of the current TS and is therefore acceptable.

Proposed TS 4.9.A.8.f requires a simulation of loss of offsite power in conjunction with an ECCS actuation test signal. The proposed TS enhances the current TS by providing more specific acceptance criteria and is acceptable.

The proposed TS does not incorporate the guidelines of STS 4.8.1.1.2.e.6 regarding loss of an EDG with offsite power not available. This TS is not adopted per the guidance of GL 83-30. In addition, the guidelines of STS 4.8.1.1.2.e.12, 13, and 14 are not included in the station designs and are, therefore, not included in the proposed TS. STS 4.8.1.1.2.e.16 is also not

included since this demonstration is redundant and encompassed within proposed TS 4.9.A.8.g. The staff finds these deviations from STS guidelines to be acceptable.

3.1.4.5 Testing at 10 Year Intervals

Proposed TS 4.9.A.9 is a new requirement based on STS guidelines. The proposed TS requires starting both EDGs simultaneously every 10 years and verifying that they accelerate to 900 rpm in less than or equal to 13 seconds. This is consistent with STS guidelines and is an enhancement of the current TS. Therefore, the proposed TS SR is acceptable.

Proposed TS 4.9.A.10 is a new requirement based on STS guidelines. It requires draining and cleaning of the fuel oil storage tanks every 10 years. The proposed TS deviates from STS guidelines by not identifying the chemical solution to be used to clean the tanks. Therefore, the proposed TS allows the chemicals to be used only if needed. The STS also contain a requirement to perform a pressure test of those portions of the fuel oil system designed to Section III of the American Society of Mechanical Engineers (ASME) Boiler and Pressure Vessel Code (Code). This requirement is not included in the proposed TS since the EDG support systems at Dresden and Quad Cities are not designed to ASME requirements. These deviations from STS are acceptable. Because this SR is an enhancement of current requirements, it is acceptable.

3.1.5 Conclusion

Based on the above evaluation, the staff finds that the proposed TS for Section 3/4.9.A has been reformatted adopting the STS guidelines. The staff has reviewed the proposed TS against the STS and current TS requirements and finds that the deviations from STS guidelines and current TS are acceptable. Therefore, the staff finds the proposed TS Section 3/4.9.A, with the exception of the open items, acceptable.

3.2 Section 3/4.9.B, "A.C. Sources - Shutdown"

Proposed TS 3/4.9.B, "A.C. Sources - Shutdown," incorporates the requirements of STS Section 3/4.8.1.2 and current TS 3/4.9.C and 3/4.9.D for Dresden and 3.9.E.3 for Quad Cities. The proposed section has been reformatted based on STS guidelines. Plant specific values for the listed parameters are included which are consistent with each station's UFSAR. Deviations from STS guidelines or current TS requirements are discussed below.

3.2.1 LCO

Proposed TS 3.9.B.1 is a new requirement based on STS guidelines. It requires an operable circuit between the offsite transmission network and onsite Class 1E distribution system during shutdown. This requirement is an enhancement of the current TS and is consistent with STS. Therefore, this LCO is acceptable.

Proposed TS 3.9.B.2 includes the requirement of the current TS to have one operable EDG, but is more restrictive. In addition to the current Dresden requirement to maintain at least 10,000 gallons of fuel in the bulk fuel storage system, the proposed TS requires at least 205 gallons of fuel in the fuel oil day tank and an operable fuel oil transfer pump. This is an enhancement of the current TS and is acceptable.

3.2.2 Applicability

The proposed applicability of TS 3/4.9.B is Modes 4 and 5, and when handling irradiated fuel in the secondary containment. The current TS applies in the shutdown or refueling Modes when work is being done which has the potential for draining the vessel, secondary equipment is required, or a core or containment cooling system is required. The proposed applicability encompasses the current TS applicability and is acceptable.

3.2.3 Actions

The proposed actions for TS 3/4.9.B are adopted from STS guidelines since no actions exist in current TS. These actions are an enhancement of current TS, consistent with STS, and applicable to the Dresden and Quad Cities designs. Therefore, the proposed actions are acceptable.

3.2.4 Surveillance Requirements

Proposed TS 4.9.B requires that all surveillances in proposed TS 4.9.A be performed with the exception of 4.9.A.2.d. This is consistent with the intent of the current TS requirement except that the current TS does not contain the exception for 4.9.A.2.d. This exception was included since the performance of proposed TS 4.9.A.2.d presents a risk of a single fault resulting in a station blackout. The exception does not exclude the EDG from being capable of performing the particular function; just the requirement to demonstrate it while that source of power is being relied upon to support meeting the LCO. The change to the current requirements represents more conservative operation and does not affect the margin of safety. The proposed SR is consistent with STS. Based on the above evaluation, the proposed TS is acceptable.

3.2.5 Conclusion

Based on the above evaluation, the staff finds that the proposed TS for Section 3/4.9.B has been reformatted based on STS guidelines. The staff has reviewed the proposed TS against the STS and current TS requirements and finds that the deviations from STS guidelines and current TS are acceptable. Therefore, the staff finds the proposed TS Section 3/4.9.B acceptable.

3.3 Section 3/4.9.C, "D.C. Sources - Operating"

Proposed TS 3/4.9.C, "D.C. Sources - Operating," incorporates the requirements of STS Section 3/4.8.2.1 and various portions of current TS 3/4.9. The proposed section has been reformatted based on STS guidelines. Plant specific

values for the listed parameters are included which are consistent with each station's UFSAR. Deviations from STS guidelines or current TS requirements are discussed below.

3.3.1 LCO and Applicability

Proposed TS 3.9.C requires two operable 250 volt batteries and two operable 125 volt batteries, each with a full capacity charger. The proposed TS incorporates the requirements of the current TS and enhances the requirements by specifying allowable values of electrolyte level, float voltage, and specific gravity which the batteries must meet to be considered operable. The proposed TS for Quad Cities deletes the current requirement for an operable 24/48 volt station battery. At Quad Cities, no equipment is supported by these batteries which is required for safe shutdown of the units. The Quad Cities 24/48 VDC system supports only SRM and IRM instrumentation. Therefore, the controls of this system may be relocated to station administrative methods for Quad Cities. The staff has determined that the requirements for the 24/48 volt station battery are not required to be in the TS for Quad Cities under 10 CFR 50.36 or Section 182a of the Atomic Energy Act. Further, they do not fall within any of the four criteria discussed in Section 2.0 above. In addition, the staff finds that sufficient regulatory controls exist under administrative procedures to assure continued protection of public health and safety. The STS do not contain a requirement for this battery. The deviation from the current TS for Quad Cities does not affect the plant safety margins and is, therefore, acceptable.

Dresden has maintained the requirement for an operable 24/48 volt station battery due to design differences in the supported equipment. The Dresden 24/48 VDC system supports the analog trip systems, the dP-type scram discharge volume level switches, the signal isolators and the stack gas, radwaste discharge and offgas radiation monitors. Therefore, the Dresden proposed TS is equivalent to the current TS and is acceptable.

3.3.2 Actions

Proposed Actions 1 and 2 address the inoperability of one of the 250 volt or 125 volt (or 24/48 volt for Dresden) station batteries. These action statements are an open item and will be addressed in the clean-up package.

Proposed Actions 4, 5, and 6 are new requirements adopted from STS and provide the required actions for batteries which do not meet the operability criteria established in proposed Table 4.9.C-1. These action statements are not included in the current TS because the criteria in Table 4.9.C-1 are not included in current TS. The proposed actions are consistent with STS guidelines, are applicable to the Dresden and Quad Cities designs, and provide enhanced guidance to operators. Proposed Actions 4, 5, and 6 are an enhancement of the current TS and are acceptable.

3.3.3 Surveillance Requirements

Proposed TS 4.9.C.1 requires weekly verification that the parameters in Table 4.9.C-1 meet Category A limits, that there is correct breaker alignment to the battery chargers, and that the total battery terminal voltage is greater than the specified value. 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. This SR is more restrictive than the current TS (TS 4.9.A.1 for Dresden and TS 4.9.B.1 for Quad Cities) which only require that the specific gravity, temperature, and voltage of the pilot cell and overall battery voltage be measured without providing limiting values. The proposed TS deletes the requirement to measure the temperature of the pilot cell and adds the requirement to measure the electrolyte level consistent with STS guidance. The requirement to measure electrolyte temperature is encompassed within proposed TS 4.9.C.2. This requirement is consistent with the recommendations of IEEE-450 and ensures that lower-than-normal temperatures do not act to inhibit or reduce battery capacity. The proposed TS provides adequate indication of potential battery degradation and is acceptable.

Proposed TS 4.9.C.2 requires verification every 92 days that the batteries meet the Category B parameters of Table 4.9.C-1, that there is no visible corrosion at either terminals or connectors or the resistance is below a specified value, and that the average electrolyte temperature is above 60 degrees Fahrenheit. This SR incorporates the requirements of current TS 4.9.A.2 (Dresden) and 4.9.B.2 (Quad Cities) with the additional requirement of the measurement of electrolyte level and the requirements for inspection of the terminals and connectors. 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 proposed SR is more restrictive than current requirements and provides enhanced guidance to operators. Proposed TS 4.9.C.2.c provides the requirements for measuring electrolyte temperature. The method of performing this surveillance is an open item and will be addressed in the clean-up amendment. Therefore, proposed TS 4.9.C.2, with the exception of the open item in TS 4.9.C.2.c, is acceptable.

Proposed TS 4.9.C.3 is a new TS adopted from STS and specifies the 18 month battery inspections. These requirements are consistent with STS, are applicable to Dresden and Quad Cities designs, and are an enhancement of the current TS. Therefore, proposed TS 4.9.C.3 is acceptable.

Proposed TS 4.9.C.4 is a test of the batteries' capability to satisfy the design requirement of the DC electrical power system. The proposed test is consistent with current TS 3.9.A.3 (Dresden) and 3.9.B.3 (Quad Cities). The proposed SR deviates from STS in that it does not contain specific values of battery voltage and amperage during the simulated load test. This information is more appropriate for owner-controlled documentation and it is not included in the current TS. Therefore, the deviation from STS is acceptable.

Proposed TS 4.9.C.5 is performed every 60 months to test the constant current capacity of a battery to detect any degradation due to age and usage. The method for performing this surveillance is an open item and will be addressed in the clean-up amendment.

Proposed TS 4.9.C.6 requires that a performance discharge test be performed for any battery that shows signs of degradation or has reached 85% of the service life. The criteria for determining battery degradation and the surveillance frequency are open items and will be addressed in the clean-up amendment.

3.3.4 Conclusion

Based on the above evaluation, the staff finds the proposed TS 3/4.9.C has adopted the guidelines of STS and the deviations from current requirements or STS guidelines are acceptable. Therefore, the staff finds the proposed TS, with the exception of the open items, acceptable.

3.4 Section 3/4.9.D, "D.C. Sources - Shutdown"

Proposed TS 3/4.9.D, "D.C. Sources - Shutdown," incorporates the guidelines of STS Section 3/4.8.2.2. This is a new section since the current TS does not contain provisions for D.C. sources during shutdown and when handling irradiated fuel in the secondary containment. Plant specific values for the listed parameters are included which are consistent with each station's UFSAR. The proposed TS is an enhancement of the current TS, is applicable to the Dresden and Quad Cities designs and is, therefore, acceptable.

3.5 Section 3/4.9.E, "Distribution - Operating"

Proposed TS 3/4.9.E, "Distribution - Operating," incorporates the requirements of STS Section 3/4.8.3.1 and current TS 3.9.A.4. The proposed section has been reformatted based on STS guidelines. Plant specific values for the listed parameters, which are consistent with each station's UFSAR, are included.

Current TS do not address D.C. power distribution systems and, therefore, the requirements were adopted from STS. The proposed TS deviates from STS by adding the 250 volt D.C. power distribution to be consistent with the requirements of proposed TS 3.9.D. Also, the current TS does not contain requirements for 120 volt vital services. The proposed TS adds the 120 volt Essential Service Bus and Instrument Bus based on STS guidelines. These buses are the primary sources of electrical power for much of the required safety related instrumentation. Proposed actions are adopted from STS guidelines since provisions do not exist in current TS. The proposed LCOs and action statements are an enhancement of the current TS and are acceptable.

The current Quad Cities TS contain a surveillance requirement that the 4160 volt and 480 volt buses be checked daily. Current Dresden TS do not contain this requirement. The proposed TS for both Dresden and Quad Cities requires

that the required power distribution system divisions be verified to be energized once per 7 days. The test frequency is based on STS guidance. The proposed weekly test frequency with the added action statements provide adequate assurance of required onsite power distribution system operability. Although the proposed amendment reduces the periodicity of the surveillance for Quad Cities, current requirements are vague and provide insufficient guidance to site operating personnel regarding the disposition of operability of the equipment. The current TS require only a status check of the equipment while the proposed TS requires verification of correct breaker alignment and voltage. These additional surveillance requirements compensate for the relaxation in periodicity and therefore, the proposed Quad Cities TS is acceptable. The addition of this TS SR is an enhancement of the current Dresden TS and is also acceptable for Dresden.

Based on the above evaluation, proposed TS 3/4.9.E is acceptable.

3.6 Section 3/4.9.F, "Distribution - Shutdown"

Proposed TS 3/4.9.F, "Distribution - Shutdown," incorporates the requirements of STS Section 3/4.8.3.2. The current TS do not contain provisions for power distribution systems while the plant is shutdown or while conducting handling of irradiated fuel in the secondary containment. Plant specific values for the listed parameters are included which are consistent with each station's UFSAR.

The proposed TS deviates from STS guidelines by not including the 120 volt essential service bus and instrument bus as a required component of the A.C. power distribution system. These buses are not included because the components which are supported by these buses (with one exception) are not required in modes 4 and 5. The one exception is the SRM/IRM recorders which provide information only and are not a TS requirement. Because the supported components do not perform a safety function in shutdown Modes, the busses serve no accident mitigation function in those Modes. Therefore, the deviation from STS guidelines is acceptable. The proposed SRs are consistent with STS guidelines and applicable to the Dresden and Quad Cities plant design. The proposed SR enhance the current TS which have no SRs and are therefore acceptable.

3.7 Section 3/4.9.G, "Reactor Protection System Power Monitoring"

Proposed TS 3/4.9.G, "RPS Power Monitoring," incorporates the requirements of current TS 3/4.1.A for Dresden and 3/4.9.F.1 for Quad Cities. The proposed TS incorporates the guidelines of STS Section 3/4.8.4.4 as modified by GL 91-09. The proposed TS has been reformatted based on STS guidelines. Plant specific values for the listed parameters are included which are consistent with each station's UFSAR. Deviations from STS guidelines or current TS requirements are discussed below.

3.7.1 LCO and Applicability

The proposed TS requires the operability of two RPS electric power monitoring channels for each RPS motor-generator (MG) set or alternate power supplies

during modes 1, 2, 3, and 5 and during cold shutdown conditions (Mode 4) with any control rod withdrawn. This is a relaxation of the current Dresden TS and the STS guidelines which require operability "at all times." Because the RPS functions to insert control rods, the RPS power monitoring system is only required to be operable during mode 4 if control rods are withdrawn. If rods are not withdrawn during mode 4 conditions, then the requirements of the RPS power monitoring system are not required to support the safe operation of the plant and, therefore, the relaxation from current Dresden TS is acceptable. The proposed applicability is more restrictive than the current Quad Cities TS applicability which does not include the shutdown modes and is therefore acceptable.

3.7.2 Surveillance Requirements

The proposed SR deviates from STS in the periodicity of the channel functional test. The proposed TS requires the performance of a channel functional test each time the plant is in cold shutdown for a period of more than 24 hours unless the test was performed in the previous 6 months. The STS require the test at least once per 6 months. The proposed SR is consistent with the current requirements which allow the performance of the test in cold shutdown in order to avoid the potential of tripping an RPS MG set at power and the potential for inadvertent reactor scrams. Generic Letter 91-01 recommends this testing method as an alternative to testing during power operations. Because the proposed TS is consistent with current requirements, the deviation from STS requirements is acceptable.

3.7.3 Conclusion

Based on the above evaluation, the staff finds that the proposed TS 3/4.9.G has adopted the guidelines of STS and that the deviations from current requirements or STS guidelines are acceptable. Therefore, the staff finds the proposed TS acceptable.

3.8 Technical Specification Bases

The staff has reviewed the proposed Bases for TS 3/4.9. The proposed Bases have been prepared using the guidelines of the STS. The staff finds these proposed Bases acceptable.

3.9 Open Items

The following issues should be left as open items contingent upon their correction and implementation in the clean-up amendment.

1. TS 3.9.A, Action 8.
2. TS 4.9.A.1.b
3. TS 4.9.A.8.b
4. TS 3.9.C, Actions 1 and 2.
5. TS 4.9.C.2.c
6. TS 4.9.C.5
7. TS 4.9.C.6

4.0 STATE CONSULTATION

In accordance with the Commission's regulations, the Illinois State official was notified of the proposed issuance of the amendments. The State official had no comments.

5.0 ENVIRONMENTAL CONSIDERATION

The amendments change a requirement with respect to the installation or use of a facility component located within the restricted area as defined in 10 CFR Part 20 and change surveillance requirements. The NRC staff has determined that the amendments involve no significant increase in the amounts, and no significant change in the types, of any effluent that may be released offsite, and that there is no significant increase in individual or cumulative occupational radiation exposure. The Commission has previously issued a proposed finding that the amendments involve no significant hazards consideration, and there has been no public comment on such finding (59 FR 2864). Accordingly, the amendments meet the eligibility criteria for categorical exclusion set forth in 10 CFR 51.22(c)(9). Pursuant to 10 CFR 51.22(b), no environmental impact statement or environmental assessment need be prepared in connection with the issuance of the amendments.

6.0 CONCLUSION

The Commission has concluded, based on the considerations discussed above, that: (1) there is reasonable assurance that the health and safety of the public will not be endangered by operation in the proposed manner, (2) such activities will be conducted in compliance with the Commission's regulations, and (3) the issuance of the amendments will not be inimical to the common defense and security or to the health and safety of the public.

Principal Contributor: D. Skay

Date: September 18, 1995