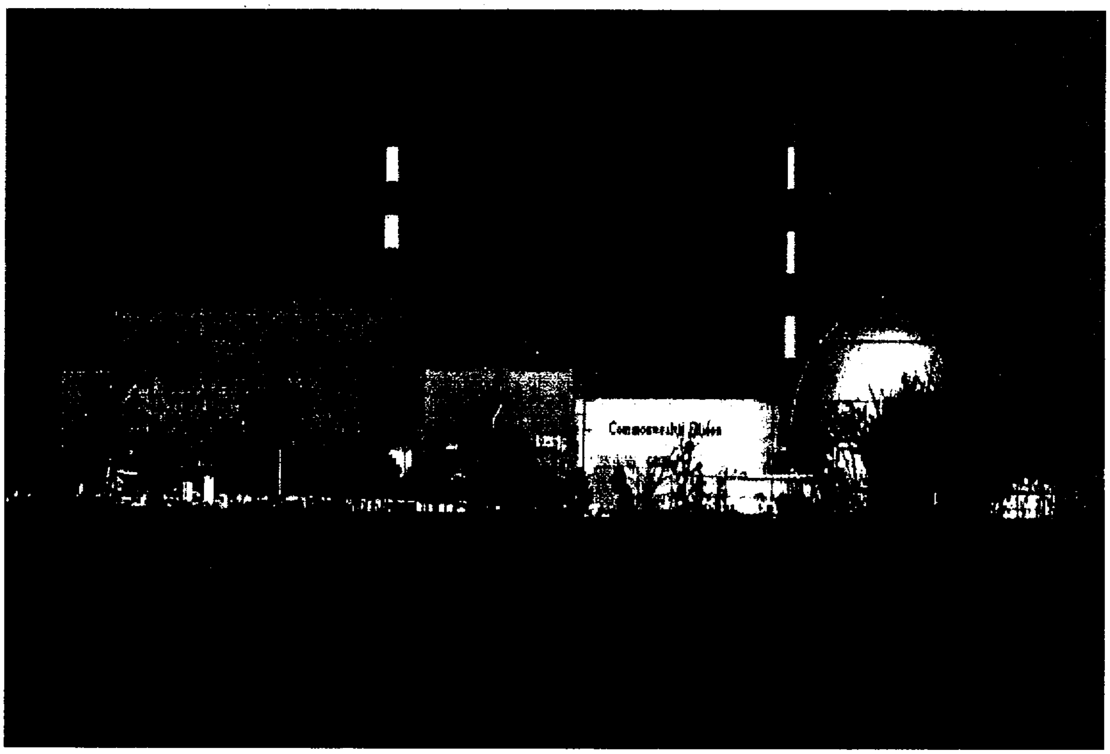
Improved Technical Specifications



Dresden Station

Volume 9:
Section 3.8

ComEd

3.8 ELECTRICAL POWER SYSTEMS

3.8.1 AC Sources - Operating

LCO 3.8.1 The following AC electrical power sources shall be OPERABLE:

a. Two qualified circuits between the offsite transmission network and the onsite Class 1E AC Electrical Power Distribution System;

b. Two diesel generators (DGs)

c. One qualified circuit between the offsite transmission network and the opposite unit's Division 2 onsite Class 1E AC electrical power distribution subsystem capable of supporting the equipment required to be OPERABLE by LCO 3.6.4.3, "Standby Gas Treatment (SGT) System," LCO 3.7.4, "Control Room Emergency Ventilation (CREV) System" (Unit 3 only), and LCO 3.7.5, "Control Room Emergency Ventilation Air Conditioning (AC) System" (Unit 3 only); and

d. The opposite unit's DG capable of supporting the equipment required to be OPERABLE by LCO 3.6.4.3, LCO 3.7.4 (Unit 3 only), and LCO 3.7.5 (Unit 3 only).

APPLICABILITY: MODES 1, 2, and 3.

------------------------------------NOTE------------------------------------
The opposite unit's AC electrical power sources in LCO 3.8.1.c and d are not required to be OPERABLE when the associated required equipment (SGT subsystem, CREV System (Unit 3 only), and Control Room Emergency Ventilation AC System (Unit 3 only)) is inoperable.

ACTIONS

------------------------------------NOTE------------------------------------
LCO 3.0.4 is not applicable for the opposite unit's AC electrical power sources.

CONDITION	REQUIRED ACTION		COMPLETION TIME
A. One required offsite circuit inoperable.	A.1	Perform SR 3.8.1.1 for OPERABLE required offsite circuit.	1 hour <u>AND</u> Once per 8 hours thereafter
	<u>AND</u>		
	A.2	Declare required feature(s) with no offsite power available inoperable when the redundant required feature(s) are inoperable.	24 hours from discovery of no offsite power to one division concurrent with inoperability of redundant required feature(s)
	<u>AND</u>		
	A.3	Restore required offsite circuit to OPERABLE status.	7 days <u>AND</u> 14 days from discovery of failure to meet LCO 3.8.1.a or b

(continued)

ACTIONS

CONDITION	REQUIRED ACTION		COMPLETION TIME
B. One required DG inoperable.	B.1	Perform SR 3.8.1.1 for OPERABLE required offsite circuit(s).	1 hour AND Once per 8 hours thereafter
	AND		
	B.2	Declare required feature(s), supported by the inoperable DG, inoperable when the redundant required feature(s) are inoperable.	4 hours from discovery of Condition B concurrent with inoperability of redundant required feature(s)
	AND		
	B.3.1	Determine OPERABLE DG(s) are not inoperable due to common cause failure.	24 hours
	OR		
	B.3.2	Perform SR 3.8.1.2 for OPERABLE DG(s).	24 hours
	AND		
	B.4	Restore required DG to OPERABLE status.	7 days AND 14 days from discovery of failure to meet LCO 3.8.1.a or b

(continued)

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
C. Two required offsite circuits inoperable.	C.1 Declare required feature(s) inoperable when the redundant required feature(s) are inoperable.	12 hours from discovery of Condition C concurrent with inoperability of redundant required feature(s)
	AND	
	C.2 Restore one required offsite circuit to OPERABLE status.	24 hours
D. One required offsite circuit inoperable. AND One required DG inoperable.	------------NOTE------------ Enter applicable Conditions and Required Actions of LCO 3.8.7, "Distribution Systems - Operating," when Condition D is entered with no AC power source to any required division. ----------------------------	
	D.1 Restore required offsite circuit to OPERABLE status.	12 hours
	OR	
	D.2 Restore required DG to OPERABLE status.	12 hours
E. Two required DGs inoperable.	E.1 Restore one required DG to OPERABLE status.	2 hours

(continued)

ACTIONS

CONDITION	REQUIRED ACTION		COMPLETION TIME
F. Required Action and Associated Completion Time of Condition A, B, C, D, or E not met.	F.1	Be in MODE 3.	12 hours
	<u>AND</u>		
	F.2	Be in MODE 4.	36 hours
G. Three or more required AC sources inoperable.	G.1	Enter LCO 3.0.3.	Immediately

SURVEILLANCE REQUIREMENTS

------------------------------------NOTES------------------------------------

1. SR 3.8.1.1 through 3.8.1.20 are applicable only to the given unit's AC electrical power sources.

2. SR 3.8.1.21 is applicable to the opposite unit's AC electrical power sources.

SURVEILLANCE		FREQUENCY
SR 3.8.1.1	Verify correct breaker alignment and indicated power availability for each offsite circuit.	7 days
SR 3.8.1.2	-------------------NOTES------------------- 1. All DG starts may be preceded by an engine prelube period and followed by a warmup period prior to loading. 2. A modified DG start involving idling and gradual acceleration to synchronous speed may be used for this SR as recommended by the manufacturer. When modified start procedures are not used, the time, voltage, and frequency tolerances of SR 3.8.1.8 must be met. 3. A single test of the common DG at the specified Frequency will satisfy the Surveillance for both units. --- Verify each DG starts from standby conditions and achieves steady state voltage $\geq$ 3952 V and $\leq$ 4368 V and frequency $\geq$ 58.8 Hz and $\leq$ 61.2 Hz.	 31 days

(continued)

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.8.1.3	-------------------NOTES------------------- 1. DG loadings may include gradual loading as recommended by the manufacturer. 2. Momentary transients outside the load range do not invalidate this test. 3. This Surveillance shall be conducted on only one DG at a time. 4. This SR shall be preceded by and immediately follow, without shutdown, a successful performance of SR 3.8.1.2 or SR 3.8.1.8. 5. A single test of common DG at the specified Frequency will satisfy the Surveillance for both units. --- Verify each DG is synchronized and loaded and operates for ≥ 60 minutes at a load ≥ 2340 kW and ≤ 2600 kW.	31 days
SR 3.8.1.4	Verify each day tank contains ≥ 205 gal of fuel oil and each bulk fuel storage tank contains ≥ 10,000 gal of fuel oil.	31 days
SR 3.8.1.5	Remove accumulated water from each day tank.	31 days
SR 3.8.1.6	Verify each fuel oil transfer pump operates to automatically transfer fuel oil from the storage tank to the day tank.	31 days

(continued)

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.8.1.7	Check for and remove accumulated water from each bulk storage tank.	92 days
SR 3.8.1.8	-------------------NOTES------------------- 1. All DG starts may be preceded by an engine prelube period. 2. A single test of the common DG at the specified Frequency will satisfy the Surveillance for both units. --- Verify each DG starts from standby condition and achieves: a. In ≤ 13 seconds, voltage ≥ 3952 V and Frequency ≥ 58.8 Hz, and b. Steady state voltage ≥ 3952 V and ≤ 4368 V and frequency ≥ 58.8 Hz and ≤ 61.2 Hz.	184 days
SR 3.8.1.9	Verify manual transfer of unit power supply from the normal offsite circuit to the alternate offsite circuit.	24 months

(continued)

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.8.1.10	------------------NOTE------------------ A single test of the common DG at the specified Frequency will satisfy the Surveillance for both units. -- Verify each DG rejects a load greater than or equal to its associated single largest post-accident load, and: 1. following load rejection, the frequency is ≤ 66.73 Hz; 2. Within 3 seconds following load rejection, the voltage is ≥ 3952 V and ≤ 4368 V; and 3. Within 4 seconds following load rejection, the frequency is ≥ 58.8 Hz and ≤ 61.2 Hz.	24 months
SR 3.8.1.11	------------------NOTES------------------ 1. A single test of the common DG at the specified Frequency will satisfy the Surveillance for both units. 2. Momentary transients outside the voltage limit do not invalidate this test. -- Verify each DG does not trip and voltage is maintained ≤ 5000 V during and following a load rejection of ≥ 2340 kW and ≤ 2600 kW.	24 months

(continued)

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.8.1.12	------------------NOTE------------------- All DG starts may be preceded by an engine prelube period. --- Verify on an actual or simulated loss of offsite power signal: a. De-energization of emergency buses; b. Load shedding from emergency buses; and c. DG auto-starts from standby condition and: 1. energizes permanently connected loads in $\leq$ 13 seconds, 2. maintains steady state voltage $\geq$ 3952 V and $\leq$ 4368 V, 3. maintains steady state frequency $\geq$ 58.8 Hz and $\leq$ 61.2 Hz, and 4. supplies permanently connected loads for $\geq$ 5 minutes.	24 months

(continued)

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.8.1.13	------------------NOTE------------------ All DG starts may be preceded by an engine prelube period. -- Verify on an actual or simulated Emergency Core Cooling System (ECCS) initiation signal each DG auto-starts from standby condition and: a. In $\leq$ 13 seconds after auto-start achieves voltage $\geq$ 3952 V and frequency $\geq$ 58.8 Hz; b. Achieves steady state voltage $\geq$ 3952 V and $\leq$ 4368 V and frequency $\geq$ 58.8 Hz and $\leq$ 61.2 Hz; c. Operates for $\geq$ 5 minutes; d. Permanently connected loads remain energized from the offsite power system; and e. Emergency loads are auto-connected to the offsite power system.	24 months
SR 3.8.1.14	Verify each DG's automatic trips are bypassed on actual or simulated loss of voltage signal on the emergency bus concurrent with an actual or simulated ECCS initiation signal except: a. Engine overspeed; and b. Generator differential current.	24 months

(continued)

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.8.1.15	------------------NOTES------------------ 1. Momentary transients outside the load range and power factor limit do not invalidate this test. 2. If grid conditions do not permit, the power factor limit is not required to be met. Under this condition, the power factor shall be maintained as close to the limit as practicable. 3. A single test of the common DG at the specified Frequency will satisfy the Surveillance for both units. --------------------------------------- Verify each DG operating within the power factor limit operates for ≥ 24 hours: a. For ≥ 2 hours loaded ≥ 2730 kW and ≤ 2860 kW; and b. For the remaining hours of the test loaded ≥ 2340 kW and ≤ 2600 kW.	24 months

(continued)

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.8.1.16	------------------NOTES------------------ 1. This Surveillance shall be performed within 5 minutes of shutting down the DG after the DG has operated ≥ 2 hours loaded ≥ 2340 kW. Momentary transients below the load limit do not invalidate this test. 2. All DG starts may be preceded by an engine prelube period. 3. A single test of the common DG at the specified Frequency will satisfy the Surveillance for both units. -- Verify each DG starts and achieves: a. In ≤ 13 seconds, voltage ≥ 3952 and frequency ≥ 58.8 Hz; and b. Steady state voltage ≥ 3952 V and ≤ 4368 V and frequency ≥ 58.8 Hz and ≤ 61.2 Hz.	24 months
SR 3.8.1.17	Verify each DG: a. Synchronizes with offsite power source while loaded with emergency loads upon a simulated restoration of offsite power; b. Transfers loads to offsite power source; and c. Returns to ready-to-load operation.	24 months

(continued)

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.8.1.18	Verify interval between each sequenced load block is within ± 10% of design interval for each load sequence time delay relay.	24 months
SR 3.8.1.19	------------------NOTE------------------ All DG starts may be preceded by an engine prelube period. -- Verify, on an actual or simulated loss of offsite power signal in conjunction with an actual or simulated ECCS initiation signal: a. De-energization of emergency buses; b. Load shedding from emergency buses; and c. DG auto-starts from standby condition and: 1. energizes permanently connected loads in ≤ 13 seconds, 2. energizes auto-connected emergency loads, 3. maintains steady state voltage ≥ 3952 V and ≤ 4368 V, 4. maintains steady state frequency ≥ 58.8 Hz and ≤ 61.2 Hz, and 5. supplies permanently connected and auto-connected emergency loads for ≥ 5 minutes.	24 months

(continued)

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.8.1.20	------------------NOTE------------------ All DG starts may be preceded by an engine prelube period. -- Verify, when started simultaneously from standby condition, each DG achieves, in $\leq$ 13 seconds, voltage $\geq$ 3952 V and frequency $\geq$ 58.8 Hz.	10 years
SR 3.8.1.21	------------------NOTE------------------ When the opposite unit is in MODE 4 or 5, or moving irradiated fuel assemblies in secondary containment, the following opposite unit SRs are not required to be performed: SR 3.8.1.3, SR 3.8.1.10 through SR 3.8.1.12, and SR 3.8.1.14 through SR 3.8.1.17. -- For required opposite unit AC electrical power sources, the SRs of the opposite unit's Specification 3.8.1, except SR 3.8.1.9, SR 3.8.1.13, SR 3.8.1.18, SR 3.8.1.19, and SR 3.8.1.20, are applicable.	In accordance with applicable SRs

3.8 ELECTRICAL POWER SYSTEMS

3.8.2 AC Sources - Shutdown

LCO 3.8.2 The following AC electrical power sources shall be OPERABLE:

a. One qualified circuit between the offsite transmission network and the onsite Class 1E AC electrical power distribution subsystem(s) required by LCO 3.8.8, "Distribution Systems - Shutdown"; and

b. One diesel generator (DG) capable of supplying one division of the onsite Class 1E AC electrical power distribution subsystem(s) required by LCO 3.8.8.

APPLICABILITY: MODES 4 and 5,
During movement of irradiated fuel assemblies in the secondary containment.

ACTIONS

------------------------------------NOTE------------------------------------
LCO 3.0.3 is not applicable.

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One required offsite circuit inoperable.	------------NOTE------------ Enter applicable Condition and Required Actions of LCO 3.8.8, when any required division is de-energized as a result of Condition A. ----------------------------	
	A.1 Declare affected required feature(s), with no offsite power available, inoperable.	Immediately
	<u>OR</u>	
	A.2.1 Suspend CORE ALTERATIONS.	Immediately
	<u>AND</u>	
		(continued)

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. (continued)	A.2.2 Suspend movement of irradiated fuel assemblies in the secondary containment. AND	Immediately
	A.2.3 Initiate action to suspend operations with a potential for draining the reactor vessel (OPDRVs). AND	Immediately
	A.2.4 Initiate action to restore required offsite power circuit to OPERABLE status.	Immediately

(continued)

ACTIONS

CONDITION	REQUIRED ACTION		COMPLETION TIME
B. One required DG inoperable.	B.1	Suspend CORE ALTERATIONS.	Immediately
	AND		
	B.2	Suspend movement of irradiated fuel assemblies in secondary containment.	Immediately
	AND		
	B.3	Initiate action to suspend OPDRVs.	Immediately
	AND		
	B.4	Initiate action to restore required DG to OPERABLE status.	Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.8.2.1	------------------NOTES------------------ 1. The following SRs are not required to be performed: SR 3.8.1.3, SR 3.8.1.10 through SR 3.8.1.12, and SR 3.8.1.14 through SR 3.8.1.19. 2. SR 3.8.1.13 and SR 3.8.1.19 are not required to be met when associated ECCS subsystem(s) are not required to be OPERABLE per LCO 3.5.2, "ECCS - Shutdown." -- For AC sources required to be OPERABLE the SRs of Specification 3.8.1, except SR 3.8.1.9, SR 3.8.1.20, and SR 3.8.1.21, are applicable.	In accordance with applicable SRs

3.8 ELECTRICAL POWER SYSTEMS

3.8.3 Diesel Fuel Oil and Starting Air

LCO 3.8.3 The stored diesel fuel oil and starting air subsystem shall be within limits for each required diesel generator (DG).

APPLICABILITY: When associated DG is required to be OPERABLE.

ACTIONS

------------------------------------NOTE------------------------------------
Separate Condition entry is allowed for each DG.

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One or more DGs with stored fuel oil total particulates not within limit.	A.1 Restore stored fuel oil total particulates to within limit.	7 days
B. One or more DGs with new fuel oil properties not within limits.	B.1 Restore stored fuel oil properties to within limits.	30 days
C. One or more DGs with required starting air receiver pressure < 220 psig and $\geq$ 175 psig.	C.1 Restore starting air receiver pressure to $\geq$ 220 psig.	48 hours

(continued)

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
D. Required Action and associated Completion Time of Condition A, B, or C not met. <u>OR</u> One or more DGs with stored diesel fuel oil or starting air subsystem not within limits for reasons other than Condition A, B, or C.	D.1 Declare associated DG inoperable.	Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.8.3.1	Verify fuel oil properties of new and stored fuel oil are tested in accordance with, and maintained within the limits of, the Diesel Fuel Oil Testing Program.	In accordance with the Diesel Fuel Oil Testing Program
SR 3.8.3.2	Verify each required DG air start receiver pressure is $\geq$ 220 psig.	31 days

3.8 ELECTRICAL POWER SYSTEMS

3.8.4 DC Sources – Operating

LCO 3.8.4 The following DC electrical power subsystems shall be OPERABLE:

a. Two 250 VDC electrical power subsystems; and

b. Division 1 and Division 2 125 VDC electrical power subsystems; and

c. The opposite unit's Division 2 125 VDC electrical power subsystem capable of supporting equipment required to be OPERABLE by LCO 3.6.4.3, "Standby Gas Treatment (SGT) System," LCO 3.7.4, "Control Room Emergency Ventilation (CREV) System" (Unit 3 only), LCO 3.7.5, "Control Room Emergency Ventilation Air Conditioning (AC) System" (Unit 3 only), and LCO 3.8.1, "AC Sources – Operating."

APPLICABILITY: MODES 1, 2, and 3.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One 250 VDC battery inoperable as a result of maintenance or testing.	A.1 Restore 250 VDC battery to OPERABLE status.	Prior to exceeding 7 cumulative days per operating cycle of battery inoperability, on a per battery basis, as a result of maintenance or testing

(continued)

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
B. One 250 VDC battery inoperable, due to the need to replace the battery, as determined by maintenance or testing.	B.1 Restore 250 VDC battery to OPERABLE status.	7 days
C. One 250 VDC electrical power subsystem inoperable for reasons other than Conditions A or B.	C.1 Restore 250 VDC electrical power subsystem to OPERABLE status.	2 hours
D. ---------NOTE--------- Only applicable if the opposite unit is in MODE 1, 2, or 3. --------------------- Division 1 or 2 125 VDC battery inoperable as a result of maintenance or testing.	D.1 Place associated OPERABLE alternate 125 VDC electrical power subsystem in service. <u>AND</u> D.2 Restore 125 VDC battery to OPERABLE status.	2 hours Prior to exceeding 7 cumulative days per operating cycle on a per battery basis

(continued)

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
E. ---------NOTE--------- Only applicable if the opposite unit is in MODE 1, 2, or 3. --------------------- Division 1 or 2 125 VDC battery inoperable, due to the need to replace the battery, as determined by maintenance or testing.	E.1 Place associated OPERABLE alternate 125 VDC electrical power subsystem in service. <u>AND</u> E.2 Restore 125 VDC battery to OPERABLE status.	2 hours 7 days
F. Division 1 or 2 125 VDC electrical power subsystem inoperable for reasons other than Condition D or E.	F.1 Restore 125 VDC electrical power subsystem to OPERABLE status. <u>OR</u> F.2 --------NOTE--------- Only applicable if the opposite unit is not in MODE 1, 2, or 3. -------------------- Place associated OPERABLE alternate 125 VDC electrical power subsystem in service.	2 hours 2 hours

(continued)

ACTIONS

CONDITION	REQUIRED ACTION		COMPLETION TIME
G. Opposite unit Division 2 125 VDC electrical power subsystem inoperable.	G.1	Restore opposite unit Division 2 125 VDC electrical power subsystem to OPERABLE status.	7 days
H. Required Action and Associated Completion Time not met.	H.1	Be in MODE 3.	12 hours
	AND		
	H.2	Be in MODE 4.	36 hours

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.8.4.1	Verify battery terminal voltage on float charge is: a. ≥ 260.4 VDC for each 250 VDC subsystem; b. ≥ 125.9 VDC for each 125 VDC subsystem; and c. ≥ 130.2 VDC for Unit 2 alternate battery.	7 days
SR 3.8.4.2	Verify no visible corrosion at battery terminals and connectors. OR Verify battery connection resistance is ≤ 1.5E-4 ohm for inter-cell connections and ≤ 1.5E-4 ohm for terminal connections.	92 days
SR 3.8.4.3	Verify each required 250 V battery charger supplies ≥ 200 amps at ≥ 260 VDC for ≥ 4 hours for the 250 VDC subsystems.	18 months
SR 3.8.4.4	Verify battery cells, cell plates, and racks show no visual indication of physical damage or abnormal deterioration that could degrade battery performance.	24 months
SR 3.8.4.5	Remove visible corrosion and verify battery cell to cell and terminal connections are coated with anti-corrosion material.	24 months

(continued)

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.8.4.6	Verify battery connection resistance is $\leq$ 1.5E-4 ohm for inter-cell connections and $\leq$ 1.5E-4 ohm for terminal connections.	24 months
SR 3.8.4.7	Verify each required 125 V battery charger supplies $\geq$ 200 amps at $\geq$ 130 VDC for $\geq$ 4 hours for the 125 VDC subsystems.	24 months
SR 3.8.4.8	------------------NOTE------------------ The modified performance discharge test in SR 3.8.4.9 may be performed in lieu of the service test in SR 3.8.4.8 provided the modified performance discharge test completely envelopes the service test. -- Verify battery capacity is adequate to supply, and maintain in OPERABLE status, the required emergency loads for the design duty cycle when subjected to a battery service test.	24 months

(continued)

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.8.4.9	Verify battery capacity is $\geq$ 80% of the manufacturer's rating when subjected to a performance discharge test or a modified performance discharge test.	60 months AND 12 months when battery shows degradation or has reached 85% of expected life with capacity < 100% of manufacturer's rating AND 24 months when battery has reached 85% of the expected life with capacity $\geq$ 100% of manufacturer's rating

3.8 ELECTRICAL POWER SYSTEMS

3.8.5 DC Sources - Shutdown

LCO 3.8.5 DC electrical power subsystems shall be OPERABLE to support the DC electrical power distribution subsystem(s) required by LCO 3.8.8, "Distribution Systems - Shutdown."

APPLICABILITY: MODES 4 and 5,
During movement of irradiated fuel assemblies in the secondary containment.

ACTIONS

------------------------------------NOTE------------------------------------
LCO 3.0.3 is not applicable.

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One or more required DC electrical power subsystems inoperable.	A.1 Declare affected required feature(s) inoperable.	Immediately
	OR	
	A.2.1 Suspend CORE ALTERATIONS.	Immediately
	AND	
	A.2.2 Suspend movement of irradiated fuel assemblies in the secondary containment.	Immediately
	AND	
		(continued)

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. (continued)	A.2.3 Initiate action to suspend operations with a potential for draining the reactor vessel. AND A.2.4 Initiate action to restore required DC electrical power subsystems to OPERABLE status.	Immediately Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.8.5.1	------------------NOTE------------------ The following SRs are not required to be performed for 250 VDC electrical power subsystem(s): SR 3.8.4.3, SR 3.8.4.8 and SR 3.8.4.9. --- For DC electrical power subsystems required to be OPERABLE the following SRs are applicable: SR 3.8.4.1, SR 3.8.4.2, SR 3.8.4.3, SR 3.8.4.4, SR 3.8.4.5, SR 3.8.4.6, SR 3.8.4.7, SR 3.8.4.8, and SR 3.8.4.9.	In accordance with applicable SRs

3.8 ELECTRICAL POWER SYSTEMS

3.8.6 Battery Cell Parameters

LCO 3.8.6 Battery cell parameters for the 125 V and 250 V station batteries shall be within limits.

APPLICABILITY: When associated DC electrical power subsystems are required to be OPERABLE.

ACTIONS

-----------------------------------NOTE-----------------------------------
Separate Condition entry is allowed for each battery.

CONDITION	REQUIRED ACTION		COMPLETION TIME
A. One or more batteries with one or more battery cell parameters not within Table 3.8.6-1 Category A or B limits.	A.1	Verify pilot cell(s) electrolyte level and float voltage meet Table 3.8.6-1 Category C limits.	1 hour
	<u>AND</u>		
	A.2	Verify battery cell parameters meet Table 3.8.6-1 Category C limits.	24 hours <u>AND</u> Once per 7 days thereafter
	<u>AND</u>		
	A.3	Restore battery cell parameters to Table 3.8.6-1 Category A and B limits.	31 days

(continued)

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
B. Required Action and associated Completion Time of Condition A not met. OR One or more batteries with average electrolyte temperature of the representative cells not within limits. OR One or more batteries with one or more battery cell parameters not within Table 3.8.6-1 Category C limits.	B.1 Declare associated battery inoperable.	Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.8.6.1	Verify battery cell parameters meet Table 3.8.6-1 Category A limits.	7 days
SR 3.8.6.2	Verify battery cell parameters meet Table 3.8.6-1 Category B limits.	92 days <u>AND</u> Once within 7 days after battery discharge < 105 V for 125 V batteries and < 210 V for 250 V batteries <u>AND</u> Once within 7 days after battery overcharge > 150 V for 125 V batteries and > 300 V for 250 V batteries
SR 3.8.6.3	Verify average electrolyte temperature of representative cells is > 65°F.	92 days

Table 3.8.6-1 (page 1 of 1)
Battery Cell Parameter Requirements

PARAMETER	CATEGORY A: LIMITS FOR EACH DESIGNATED PILOT CELL	CATEGORY B: LIMITS FOR EACH CONNECTED CELL	CATEGORY C: LIMITS FOR EACH CONNECTED CELL
Electrolyte Level	> Minimum level indication mark, and ≤ ¼ inch above maximum level indication mark[(a)]	> Minimum level indication mark, and ≤ ¼ inch above maximum level indication mark[(a)]	Above top of plates, and not overflowing
Float Voltage	≥ 2.13 V	≥ 2.13 V	> 2.07 V
Specific Gravity[(b)(c)]	≥ 1.200	≥ 1.195 AND Average of all connected cells > 1.205	Not more than 0.020 below average of all connected cells AND Average of all connected cells ≥ 1.195

(a) It is acceptable for the electrolyte level to temporarily increase above the specified maximum level during and following equalizing charges provided it is not overflowing.

(b) Corrected for electrolyte temperature and level.

(c) A battery charging current of < 2 amps when on float charge is acceptable for meeting specific gravity limits following a battery recharge, for a maximum of 7 days. When charging current is used to satisfy specific gravity requirements, specific gravity of each connected cell shall be measured prior to expiration of the 7 day allowance.

3.8 ELECTRICAL POWER SYSTEMS

3.8.7 Distribution Systems - Operating

LCO 3.8.7 The following electrical power distribution subsystems shall be OPERABLE:

a. Division 1 and Division 2 AC and DC electrical power distribution subsystems;

b. Essential service and instrument 120 VAC buses, and

c. The portions of the opposite unit's Division 2 AC and DC electrical power distribution subsystem necessary to support equipment required to be OPERABLE by LCO 3.6.4.3, "Standby Gas Treatment (SGT) System," LCO 3.7.4, "Control Room Emergency Ventilation (CREV) System" (Unit 3 only), LCO 3.7.5, "Control Room Emergency Ventilation Air Conditioning (AC) System" (Unit 3 only), and LCO 3.8.1, "AC Sources - Operating."

APPLICABILITY: MODES 1, 2, and 3.

ACTIONS

CONDITION	REQUIRED ACTION		COMPLETION TIME
A. One or more AC electrical power distribution subsystems inoperable.	A.1	Restore AC electrical power distribution subsystems to OPERABLE status.	8 hours AND 16 hours from discovery of failure to meet LCO 3.8.7.a or b

(continued)

ACTIONS

CONDITION	REQUIRED ACTION		COMPLETION TIME
B. Essential service 120 VAC bus inoperable.	B.1	Restore essential service 120 VAC bus to OPERABLE status.	8 hours AND 16 hours from discovery of failure to meet LCO 3.8.7.a or b
C. Instrument 120 VAC bus inoperable.	C.1	Restore instrument 120 VAC bus to OPERABLE status.	8 hours AND 16 hours from discovery of failure to meet LCO 3.8.7.a or b
D. One or more DC electrical power distribution subsystems inoperable.	D.1	Restore DC electrical power distribution subsystems to OPERABLE status.	2 hours AND 16 hours from discovery of failure to meet LCO 3.8.7.a or b
E. Required opposite unit Division 2 AC and DC electrical power distribution subsystem inoperable.	E.1	Restore required opposite unit Division 2 AC and DC electrical power distribution subsystem to OPERABLE status.	7 days

(continued)

ACTIONS

CONDITION	REQUIRED ACTION		COMPLETION TIME
F. Required Action and associated Completion Time of Condition A, B, C, D, or E not met.	F.1	Be in MODE 3.	12 hours
	AND		
	F.2	Be in MODE 4.	36 hours
G. Two or more electrical power distribution subsystems inoperable that result in a loss of function.	G.1	Enter LCO 3.0.3.	Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.8.7.1	Verify correct breaker alignments and voltage to required AC and DC electrical power distribution subsystems and the essential service and instrument 120 VAC buses.	7 days

3.8 ELECTRICAL POWER SYSTEMS

3.8.8 Distribution Systems - Shutdown

LCO 3.8.8 The necessary portions of the AC, DC, and the opposite unit's Division 2 electrical power distribution subsystems shall be OPERABLE to support equipment required to be OPERABLE.

APPLICABILITY: MODES 4 and 5,
During movement of irradiated fuel assemblies in the secondary containment.

ACTIONS

------------------------------------NOTE------------------------------------
LCO 3.0.3 is not applicable.

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One or more required AC or DC electrical power distribution subsystems inoperable.	A.1 Declare associated supported required feature(s) inoperable.	Immediately
	<u>OR</u>	
	A.2.1 Suspend CORE ALTERATIONS.	Immediately
	<u>AND</u>	
		(continued)

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. (continued)	A.2.2 Suspend movement of irradiated fuel assemblies in the secondary containment.	Immediately
	AND	
	A.2.3 Initiate action to suspend operations with a potential for draining the reactor vessel.	Immediately
	AND	
	A.2.4 Initiate actions to restore required AC and DC electrical power distribution subsystems to OPERABLE status.	Immediately
	AND	
	A.2.5 Declare associated required shutdown cooling subsystem(s) inoperable and not in operation.	Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.8.8.1	Verify correct breaker alignments and voltage to required AC and DC electrical power distribution subsystems.	7 days

B 3.8 ELECTRICAL POWER SYSTEMS

B 3.8.1 AC Sources - Operating

BASES

BACKGROUND

The unit Class 1E AC Electrical Power Distribution System AC sources consist of the offsite power sources, and the onsite standby power sources (diesel generators (DGs) 2, 3, and 2/3). As required by UFSAR, Section 3.1.2.2.8 (Ref. 1), the design of the AC electrical power system provides independence and redundancy to ensure an available source of power to the Engineered Safety Feature (ESF) systems.

The Class 1E unit AC distribution system is, for the most part, divided into redundant load groups (Divisions 1 and 2), so loss of any one group does not prevent the minimum safety functions from being performed. The exception is that the opposite unit's Division 2 AC Electrical Power Distribution System powers shared Division 2 loads (i.e., standby gas treatment subsystem, Control Room Emergency Ventilation (CREV) System (Unit 3 only), and Control Room Emergency Ventilation Air Conditioning (AC) System (Unit 3 only)). Although shared by both units, the CREV System and Control Room Emergency Ventilation AC System are single train systems that are powered only from a single Unit 2 motor control center. Each unit's load group has connections to two physically independent offsite power sources and a single DG.

Offsite power is supplied to each of the 138 kV and 345 kV switchyards from the transmission network by six and seven transmission lines, respectively. From the 138 kV switchyards, one qualified electrically and physically separated circuit normally provides AC power, through reserve auxiliary transformer (RAT) 22, to 4160 V Essential Service System (ESS) bus 24-1 via ESS bus 24 to supply the Division 2 loads of Unit 2. From the 345 kV switchyard, another qualified, electrically and physically separated circuit normally provides AC power, through RAT 32, to 4160 V ESS bus 34-1 via ESS bus 34 to supply the Division 2 loads of Unit 3. Unit auxiliary transformer (UAT) 21, which is normally supplied by the Unit 2 main generator, is normally aligned to Unit 2 to supply Division 1 4160 V ESS bus 23-1 via ESS bus 23. Finally, UAT 31, which is normally supplied by the Unit 3 main generator, is normally aligned to Unit 3 to supply Division 1 4160 V ESS bus 33-1 via ESS bus 33.

(continued)

BASES

BACKGROUND (continued)

When a main generator is not operating, the loads fed from the UAT are automatically transferred to the RAT on a generator trip (RAT 22 will supply 4160 V ESS bus 23-1 via 4160 V ESS bus 23 and RAT 32 will supply 4160 V ESS bus 33-1 via 4160 V ESS bus 33). The given unit's RAT is the primary (normal) offsite source to the Division 1 and 2 load groups. The RAT of the opposite unit provides the second (alternate) qualified offsite source through bus ties provided between the corresponding ESS buses of the two units. Additionally, the UAT of either unit provides another source of offsite power to the ESS buses only when the unit is shutdown and the UAT is being backfed from the grid. Physical changes to the generator links are required to place the unit in an alignment to allow backfeed. The offsite AC electrical power sources are designed and located so as to minimize to the extent practical the likelihood of their simultaneous failure under operating and postulated accident and environmental conditions. A detailed description of the offsite power network and circuits to the onsite Class 1E ESS buses is found in the UFSAR, Section 8.2 (Ref. 2).

A qualified offsite circuit consists of all breakers, transformers, switches, interrupting devices, cabling, and controls required to transmit power from the offsite transmission network to the onsite Class 1E ESS bus or buses.

RATs 22 and 32 are sized to accommodate the simultaneous starting of all ESF loads on receipt of an accident signal without the need for load sequencing.

The onsite standby power source for 4160 V ESS 23-1, 24-1, 33-1, and 34-1 consists of three DGs. DGs 2 and 3 are dedicated to ESS buses 24-1 and 34-1, respectively. DG 2/3 is a shared power source and can supply either Unit 2 ESS bus 23-1 or Unit 3 ESS bus 33-1. A DG starts automatically on a loss of coolant accident (LOCA) signal (i.e., low reactor water level signal or high drywell pressure signal) (refer to LCO 3.3.5.1, "Emergency Core Cooling System (ECCS) Instrumentation") or on an ESS bus degraded voltage or undervoltage signal (refer to LCO 3.3.8.1, "Loss of Power (LOP) Instrumentation"). After the DG has started, it automatically ties to its respective bus after offsite power

(continued)

BASES

BACKGROUND (continued)

is tripped as a consequence of ESS bus undervoltage or degraded voltage, independent of or coincident with a LOCA signal. The DGs also start and operate in the standby mode without tying to the ESS bus on a LOCA signal alone. In the event of a LOCA on a unit, DG 2/3 will start and supply the unit (bus 23-1 or 33-1) experiencing the accident if no offsite power is available. This is accomplished by using the accident signal to prevent the DG 2/3 output breaker from closing on the nonaccident unit. Following the trip of offsite power, buses 23-1, 24-1, 33-1, and 34-1 are automatically disconnected from their normal supply and all nonessential loads are disconnected from the ESS bus. When the DG is tied to the ESS bus, loads are then sequentially connected to their respective ESS bus, if a LOCA signal is present, by the sequence logic. The sequencing logic controls the starting signals to motor breakers to prevent overloading the DG.

In the event of a loss of offsite power, the ESF electrical loads are automatically connected to the DGs in sufficient time to provide for safe reactor shutdown and to mitigate the consequences of a Design Basis Accident (DBA) such as a LOCA.

Certain required plant loads are returned to service in a predetermined sequence in order to prevent overloading of the DGs in the process. Within 30 seconds after the initiating signal is received, all automatic and permanently connected loads needed to recover the unit or maintain it in a safe condition are returned to service.

DGs 2, 3, and 2/3 have the following ratings:

a. 2600 kW - continuous,

b. 2860 kW - 2000 hours.

APPLICABLE SAFETY ANALYSES

The initial conditions of DBA and transient analyses in the UFSAR, Chapter 6 (Ref. 3) and Chapter 15 (Ref. 4), assume ESF systems are OPERABLE. The AC 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 (RCS), and containment design limits are not exceeded. These limits are discussed in more detail in the

(continued)

BASES

APPLICABLE SAFETY ANALYSES (continued)

Bases for Section 3.2, Power Distribution Limits; Section 3.5, Emergency Core Cooling System (ECCS) and Isolation Condenser (IC) System; and Section 3.6, Containment Systems.

The OPERABILITY of the AC electrical power sources is consistent with the initial assumptions of the accident analyses and is based upon meeting the design basis of the unit. This includes maintaining the onsite or offsite AC sources OPERABLE during accident conditions in the event of:

a. An assumed loss of all offsite power or all onsite AC power; and

b. A worst case single failure.

AC sources satisfy Criterion 3 of 10 CFR 50.36(c)(2)(ii).

LCO

Two qualified circuits between the offsite transmission network and the onsite Class 1E AC Electrical Power Distribution System, two separate and independent DGs, one qualified circuit between the offsite transmission network and the opposite unit's Division 2 onsite Class 1E AC Electrical Power Distribution subsystem capable of supporting equipment required to be OPERABLE by LCO 3.6.4.3, "Standby Gas treatment (SGT) System," LCO 3.7.4, "Control Room Emergency Ventilation (CREV) System" (Unit 3 only), and LCO 3.7.5, "Control Room Emergency Ventilation Air Conditioning (AC) System" (Unit 3 only), and the opposite unit's DG capable of supporting the equipment required to be OPERABLE by LCO 3.6.4.3, LCO 3.7.4 (Unit 3 only), and LCO 3.7.5 (Unit 3 only), ensure availability of the required power to shut down the reactor and maintain it in a safe shutdown condition after an anticipated operational occurrence (AOO) or a postulated DBA.

Qualified offsite circuits are those that are described in the UFSAR, and are part of the licensing basis for the unit.

Each offsite circuit from the 138 kV and 345 kV switchyards must be capable of maintaining rated frequency and voltage, and accepting required loads during an accident, while connected to the 4160 V ESS buses. An offsite circuit to

(continued)

BASES

LCO (continued)

each unit consists of the incoming breakers and disconnects to the respective 22 and 32 RATs, RATs 22 and 32, and the respective circuit path including feeder breakers to 4160 V ESS buses. A qualified circuit does not have to be connected to the ESS bus (i.e., the main generator can be connected to the ESS bus) as long as the capability to fast transfer to the qualified circuit exists. The other qualified offsite circuit for each unit is provided by a bus tie between the corresponding ESS buses of the two units. The breakers connecting the buses must be capable of closure. For Unit 2, LCO 3.8.1.a is met if RAT 22 is capable of supplying ESS buses 23-1 and 24-1 and if RAT 32 (or UAT 31 on backfeed) can supply ESS buses 23-1 and 24-1 via the associated unit tie. For Unit 3, LCO 3.8.1.a is met if RAT 32 can supply ESS buses 33-1 and 34-1 and if RAT 22 (or UAT 21 on backfeed) can supply ESS buses 33-1and 34-1 via the associated unit tie. For Unit 2, LCO 3.8.1.c is met if RAT 32 (or UAT 31 on backfeed) is capable of supplying ESS bus 39 to support equipment required by LCO 3.6.4.3. For Unit 3, LCO 3.8.1.c is met if RAT 22 (or UAT 21 on backfeed) is capable of supplying ESS bus 29 to support equipment required by LCO 3.6.4.3, LCO 3.7.4, and LCO 3.7.5.

The respective unit DG and shared DG must be capable of starting, accelerating to rated speed and voltage, and connecting to its respective 4160 V ESS bus on detection of bus undervoltage. This sequence must be accomplished within 13 seconds. Each respective unit DG and shared DG must also be capable of accepting required loads within the assumed loading sequence intervals, and must continue to operate until offsite power can be restored to the 4160 V ESS buses. These capabilities are required to be met from a variety of initial conditions, such as DG in standby with the engine hot and DG in standby with the engine at ambient condition. Proper sequencing of loads, including tripping of non-essential loads, is a required function for DG OPERABILITY.

The opposite unit's DG must be capable of starting, accelerating to rated speed and voltage, and connecting to its Division 2 Class 1E AC electrical power distribution subsystem on detection of bus undervoltage. This sequence must be accomplished within 13 seconds and is required to be met from the same variety of initial conditions specified for the respective unit and shared DGs. For Unit 2 to meet

(continued)

BASES

LCO (continued)

LCO 3.8.1.d, DG 3 must be capable of supplying ESS bus 34-1 on a loss of power to the bus in order to supply ESS bus 39 to support equipment required by LCO 3.6.4.3. Similarly, for Unit 3 to meet LCO 3.8.1.d, DG 2 must be capable of supplying ESS bus 24-1 on a loss of power to the bus in order to supply ESS bus 29 to support equipment required by LCO 3.6.4.3, LCO 3.7.4, and LCO 3.7.5.

The AC sources must be separate and independent (to the extent possible) of other AC sources. For the DGs, the separation and independence are complete. For the offsite AC sources, the separation and independence are to the extent practical. A qualified circuit may be connected to both divisions of either unit, with manual transfer capability to the other circuit OPERABLE, and not violate separation criteria. A qualified circuit that is not connected to the 4160 V ESS buses is required to have OPERABLE manual transfer capability to the 4160 V ESS buses to support OPERABILITY of that qualified circuit.

APPLICABILITY

The AC sources are required to be OPERABLE in MODES 1, 2, and 3 to ensure that:

a. Acceptable fuel design limits and reactor coolant pressure boundary limits are not exceeded as a result of AOOs or abnormal transients; and

b. Adequate core cooling is provided and containment OPERABILITY and other vital functions are maintained in the event of a postulated DBA.

A Note has been added taking exception to the Applicability requirements for the opposite unit's Division 2 AC electrical power sources in LCO 3.8.1.c and d, provided the associated required equipment (SGT subsystem, CREV System (Unit 3 only), and Control Room Emergency Ventilation AC System (Unit 3 only)) is inoperable. This exception is intended to allow declaring of the opposite unit's Division 2 supported equipment inoperable either in lieu of declaring the opposite unit's Division 2 source inoperable, or at any time subsequent to entering ACTIONS for an inoperable opposite unit Division 2 source. This exception is acceptable since, with the opposite unit powered Division 2

(continued)

BASES

APPLICABILITY (continued)

equipment inoperable and the associated ACTIONS entered, the opposite unit Division 2 AC sources provide no additional assurance of meeting the above criteria.

The AC power requirements for MODES 4 and 5 and other conditions in which AC sources are required are covered in LCO 3.8.2, "AC Sources – Shutdown."

ACTIONS

A Note has been added to the ACTIONS to exclude the MODE change restriction of LCO 3.0.4 for the opposite unit's AC electrical power sources. This exception allows entry into the applicable MODE while relying on the ACTIONS even though the ACTIONS may eventually require a plant shutdown. This allowance is acceptable due to the low probability of an event requiring the opposite unit equipment

A.1

To ensure a highly reliable power source remains with one offsite circuit inoperable, it is necessary to verify the availability of the remaining required offsite circuit on a more frequent basis. Since the Required Action only specifies "perform," a failure of SR 3.8.1.1 acceptance criteria does not result in a Required Action not met. However, if a second required circuit fails SR 3.8.1.1, the second offsite circuit is inoperable, and Condition C, for two offsite circuits inoperable, is entered.

A.2

Required Action A.2, which only applies if the division cannot be powered from an offsite source, is intended to provide assurance that an event with a coincident single failure of the associated DG does not result in a complete loss of safety function of critical systems. These features are designed with redundant safety related divisions (i.e., single division systems are not included). Redundant required features failures consist of inoperable features associated with a division redundant to the division that has no offsite power.

(continued)

BASES

ACTIONS

A.2 (continued)

The Completion Time for Required Action A.2 is intended to allow time for the operator to evaluate and repair any discovered inoperabilities. This Completion Time also allows an exception to the normal "time zero" for beginning the allowed outage time "clock." In this Required Action the Completion Time only begins on discovery that both:

a. The division has no offsite power supplying its loads; and

b. A redundant required feature on the other division is inoperable.

If, at any time during the existence of this Condition (one offsite circuit inoperable) a redundant required feature subsequently becomes inoperable, this Completion Time would begin to be tracked.

Discovering no offsite power to one 4160 V ESS bus of the onsite Class 1E Power Distribution System coincident with one or more inoperable redundant required support or supported features, or both, that are associated with any other ESS bus that has offsite power, results in starting the Completion Time for the Required Action. Twenty-four hours is acceptable because it minimizes risk while allowing time for restoration before the unit is subjected to transients associated with shutdown.

The remaining OPERABLE offsite circuit and DGs are adequate to supply electrical power to the onsite Class 1E Distribution System. Thus, on a component basis, single failure protection may have been lost for the required feature's function; however, function is not lost. The 24 hour Completion Time takes into account the component OPERABILITY of the redundant counterpart to the inoperable required feature. Additionally, the 24 hour Completion Time takes into account the capacity and capability of the remaining AC sources, a reasonable time for repairs, and the low probability of a DBA occurring during this period.

(continued)

BASES

ACTIONS (continued)

A.3

With one offsite circuit inoperable, the reliability of the offsite system is degraded, and the potential for a loss of offsite power is increased, with attendant potential for a challenge to the plant safety systems. In this condition, however, the remaining OPERABLE offsite circuit and DGs are adequate to supply electrical power to the onsite Class 1E Distribution System.

The 7 day Completion Time takes into account the capacity and capability of the remaining AC sources, reasonable time for repairs, and the low probability of a DBA occurring during this period.

The second Completion Time for Required Action A.3 establishes a limit on the maximum time allowed for any combination of required AC power sources to be inoperable during any single contiguous occurrence of failing to meet LCO 3.8.1.a or b. If Condition A is entered while, for instance, a DG is inoperable, and that DG is subsequently returned OPERABLE, the LCO may already have been not met for up to 7 days. This situation could lead to a total of 14 days, since initial failure to meet the LCO, to restore the offsite circuit. At this time, a DG could again become inoperable, the circuit restored OPERABLE, and an additional 7 days (for a total of 21 days) allowed prior to complete restoration of the LCO. The 14 day Completion Time provides a limit on the time allowed in a specified condition after discovery of failure to meet LCO 3.8.1.a or b. This limit is considered reasonable for situations in which Conditions A and B are entered concurrently. The "AND" connector between the 7 day and 14 day Completion Times means that both Completion Times apply simultaneously, and the more restrictive Completion Time must be met.

Similar to Required Action A.2, the Completion Time of Required Action A.3 allows for an exception to the normal "time zero" for beginning the allowed outage time "clock." This exception results in establishing the "time zero" at the time LCO 3.8.1.a or b was initially not met, instead of at the time that Condition A was entered.

(continued)

BASES

ACTIONS (continued)

B.1

To ensure a highly reliable power source remains with one DG inoperable, it is necessary to verify the availability of the required offsite circuits on a more frequent basis. Since the Required Action only specifies "perform," a failure of SR 3.8.1.1 acceptance criteria does not result in a Required Action being not met. However, if a circuit fails to pass SR 3.8.1.1, it is inoperable. Upon offsite circuit inoperability, additional Conditions must then be entered.

B.2

Required Action B.2 is intended to provide assurance that a loss of offsite power, during the period that a DG is inoperable, does not result in a complete loss of safety function of critical systems. These features are designed with redundant safety related divisions (i.e., single division systems are not included). Redundant required features failures consist of inoperable features associated with a division redundant to the division that has an inoperable DG.

The Completion Time is intended to allow the operator time to evaluate and repair any discovered inoperabilities. This Completion Time also allows for an exception to the normal "time zero" for beginning the allowed outage time "clock." In this Required Action the Completion Time only begins on discovery that both:

a. An inoperable DG exists; and

b. A redundant required feature on the other division (Division 1 or 2) is inoperable.

If, at any time during the existence of this Condition (one DG inoperable), a redundant required feature subsequently becomes inoperable, this Completion Time begins to be tracked.

Discovering one required DG inoperable coincident with one or more inoperable redundant required support or supported

(continued)

BASES

ACTIONS

B.2 (continued)

features, or both, that are associated with the OPERABLE DG(s), results in starting the Completion Time for the Required Action. Four hours from the discovery of these events existing concurrently is acceptable because it minimizes risk while allowing time for restoration before subjecting the unit to transients associated with shutdown.

The remaining OPERABLE DGs and offsite circuits are adequate to supply electrical power to the onsite Class 1E Distribution System. Thus, on a component basis, single failure protection for the required feature's function may have been lost; however, function has not been lost. The 4 hour Completion Time takes into account the component OPERABILITY of the redundant counterpart to the inoperable required feature. Additionally, the 4 hour Completion Time takes into account the capacity and capability of the remaining AC sources, reasonable time for repairs, and low probability of a DBA occurring during this period.

B.3.1 and B.3.2

Required Action B.3.1 provides an allowance to avoid unnecessary testing of OPERABLE DGs. If it can be determined that the cause of the inoperable DG does not exist on the OPERABLE DG(s), SR 3.8.1.2 does not have to be performed. If the cause of inoperability exists on other DG(s), they are declared inoperable upon discovery, and Condition E or G of LCO 3.8.1 is entered, as applicable. Once the failure is repaired, and the common cause failure no longer exists, Required Action B.3.1 is satisfied. If the cause of the initial inoperable DG cannot be confirmed not to exist on the remaining DG(s), performance of SR 3.8.1.2 suffices to provide assurance of continued OPERABILITY of those DGs.

In the event the inoperable DG is restored to OPERABLE status prior to completing either B.3.1 or B.3.2, the station corrective action program will continue to evaluate the common cause possibility. This continued evaluation, however, is no longer under the 24 hour constraint imposed while in Condition B.

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BASES

ACTIONS

B.3.1 and B.3.2 (continued)

According to Generic Letter 84-15 (Ref. 5), 24 hours is a reasonable time to confirm that the OPERABLE DG(s) are not affected by the same problem as the inoperable DG.

B.4

In Condition B, the remaining OPERABLE DGs and offsite circuits are adequate to supply electrical power to the onsite Class 1E Distribution System. The 7 day Completion Time takes into account the capacity and capability of the remaining AC sources, a reasonable time for repairs, and the low probability of a DBA occurring during this period.

The second Completion Time for Required Action B.4 establishes a limit on the maximum time allowed for any combination of required AC power sources to be inoperable during any single contiguous occurrence of failing to meet LCO 3.8.1.a or b. If Condition B is entered while, for instance, an offsite circuit is inoperable and that circuit is subsequently restored OPERABLE, the LCO may already have been not met for up to 7 days. This situation could lead to a total of 14 days, since initial failure of the LCO, to restore the DG. At this time, an offsite circuit could again become inoperable, the DG restored OPERABLE, and an additional 7 days (for a total of 21 days) allowed prior to complete restoration of the LCO. The 14 day Completion Time provides a limit on the time allowed in a specified condition after discovery of failure to meet LCO 3.8.1.a or b. This limit is considered reasonable for situations in which Conditions A and B are entered concurrently. The "AND" connector between the 7 day and 14 day Completion Times means that both Completion Times apply simultaneously, and the more restrictive must be met.

Similar to Required Action B.2, the Completion Time of Required Action B.4 allows for an exception to the normal "time zero" for beginning the allowed outage time "clock." This exception results in establishing the "time zero" at the time that LCO 3.8.1.a or b was initially not met, instead of the time that Condition B was entered.

(continued)

ACTIONS (continued)

C.1 and C.2

Required Action C.1 addresses actions to be taken in the event of inoperability of redundant required features concurrent with inoperability of two offsite circuits. Required Action C.1 reduces the vulnerability to a loss of function. The Completion Time for taking these actions is reduced to 12 hours from that allowed with one division without offsite power (Required Action A.2). The rationale for the reduction to 12 hours is that Regulatory Guide 1.93 (Ref. 6) allows a Completion Time of 24 hours for two required offsite circuits inoperable, based upon the assumption that two complete safety divisions are OPERABLE. When a concurrent redundant required feature failure exists, this assumption is not the case, and a shorter Completion Time of 12 hours is appropriate. These features are designed with redundant safety related divisions, (i.e., single division systems are not included in the list). Redundant required features failures consist of any of these features that are inoperable because any inoperability is on a division redundant to a division with inoperable offsite circuits.

The Completion Time for Required Action C.1 is intended to allow the operator time to evaluate and repair any discovered inoperabilities. This Completion Time also allows for an exception to the normal "time zero" for beginning the allowed outage time "clock." In this Required Action, the Completion Time only begins on discovery that both:

a. Two required offsite circuits are inoperable; and

b. A redundant required feature is inoperable.

If, at any time during the existence of this Condition (two offsite circuits inoperable), a redundant required feature subsequently becomes inoperable, this Completion Time begins to be tracked.

According to Regulatory Guide 1.93 (Ref. 6), operation may continue in Condition C for a period that should not exceed 24 hours. This level of degradation means that the offsite

(continued)

BASES

ACTIONS

C.1 and C.2 (continued)

electrical power system does not have the capability to effect a safe shutdown and to mitigate the effects of an accident; however, the onsite AC sources have not been degraded. This level of degradation generally corresponds to a total loss of the immediately accessible offsite power sources.

Because of the normally high availability of the offsite sources, this level of degradation may appear to be more severe than other combinations of two AC sources inoperable that involve one or more DGs inoperable. However, two factors tend to decrease the severity of this degradation level:

a. The configuration of the redundant AC electrical power system that remains available is not susceptible to a single bus or switching failure; and

b. The time required to detect and restore an unavailable offsite power source is generally much less than that required to detect and restore an unavailable onsite AC source.

With both of the required offsite circuits inoperable, sufficient onsite AC sources are available to maintain the unit in a safe shutdown condition in the event of a DBA or transient. In fact, a simultaneous loss of offsite AC sources, a LOCA, and a worst case single failure were postulated as a part of the design basis in the safety analysis. Thus, the 24 hour Completion Time provides a period of time to effect restoration of one of the offsite circuits commensurate with the importance of maintaining an AC electrical power system capable of meeting its design criteria.

According to Regulatory Guide 1.93 (Ref. 6), with the available offsite AC sources two less than required by the LCO, operation may continue for 24 hours. If two offsite sources are restored within 24 hours, unrestricted operation may continue. If only one required offsite source is restored within 24 hours, power operation continues in accordance with Condition A.

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ACTIONS (continued)

D.1 and D.2

Pursuant to LCO 3.0.6, the Distribution System ACTIONS would not be entered even if all AC sources to it were inoperable, resulting in de-energization. Therefore, the Required Actions of Condition D are modified by a Note to indicate that when Condition D is entered with no AC source to any required 4160 V ESS bus (i.e., the bus is de-energized), ACTIONS for LCO 3.8.7, "Distribution Systems — Operating," must be immediately entered. This allows Condition D to provide requirements for the loss of the required offsite circuit and one required DG without regard to whether a division is de-energized. LCO 3.8.7 provides the appropriate restrictions for a de-energized division.

According to Regulatory Guide 1.93 (Ref. 6), operation may continue in Condition D for a period that should not exceed 12 hours. In Condition D, individual redundancy is lost in both the offsite electrical power system and the onsite AC electrical power system. Since power system redundancy is provided by two diverse sources of power, however, the reliability of the power systems in this Condition may appear higher than that in Condition C (loss of both required offsite circuits). This difference in reliability is offset by the susceptibility of this power system configuration to a single bus or switching failure. The 12 hour Completion Time takes into account the capacity and capability of the remaining AC sources, reasonable time for repairs, and the low probability of a DBA occurring during this period.

E.1

With two required DGs inoperable, there is no more than one remaining standby AC source. Thus, with an assumed loss of offsite electrical power, sufficient standby AC sources may not be available to power the minimum required ESF functions. Since the offsite electrical power system is the only source of AC power for the majority of ESF equipment at 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. (The immediate shutdown could cause grid instability, which could

(continued)

BASES

ACTIONS

E.1 (continued)

result in a total loss of AC power.) Since any inadvertent unit generator trip could also result in a total loss of offsite AC power, however, the time allowed for continued operation is severely restricted. 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.

According to Regulatory Guide 1.93 (Ref. 6), with both DGs inoperable, operation may continue for a period that should not exceed 2 hours. The Completion Time assumes complete loss of onsite (DG) AC capability to power the minimum loads needed to respond to analyzed events.

F.1 and F.2

If the inoperable AC electrical power sources cannot be restored to OPERABLE status within the associated Completion Time, the unit must be brought to a MODE in which the LCO does not apply. To achieve this status, the unit must be brought to at least MODE 3 within 12 hours and to MODE 4 within 36 hours. The allowed Completion Times are reasonable, based on operating experience, to reach the required plant conditions from full power conditions in an orderly manner and without challenging plant systems.

G.1

Condition G corresponds to a level of degradation in which all redundancy in the AC electrical power supplies has been lost. At this severely degraded level, any further losses in the AC electrical power system will cause a loss of function. Therefore, no additional time is justified for continued operation. The unit is required by LCO 3.0.3 to commence a controlled shutdown.

SURVEILLANCE REQUIREMENTS

The AC sources are designed to permit inspection and testing of all important areas and features, especially those that have a standby function, in accordance with

(continued)

SURVEILLANCE REQUIREMENTS (continued)

UFSAR, Section 3.1.2.2.9 (Ref. 7). Periodic component tests are supplemented by extensive functional tests during refueling outages (under simulated accident conditions). The SRs for demonstrating the OPERABILITY of the DGs are consistent with the recommendations of Regulatory Guide 1.9 (Ref. 8), Regulatory Guide 1.108 (Ref. 9), and Regulatory Guide 1.137 (Ref. 10), as addressed in the UFSAR.

The Surveillances are modified by two Notes to clearly identify how the Surveillances apply to the given unit and the opposite unit AC electrical power sources. Note 1 states that SR 3.8.1.1 through 3.8.1.20 are applicable only to the given unit AC electrical power sources and Note 2 states that SR 3.8.1.21 is applicable to the opposite unit AC electrical power sources. These Notes are necessary since the opposite unit AC electrical power sources are not required to meet all of the requirements of the given unit AC electrical power sources (e.g., the opposite unit's DG is not required to start on the opposite unit's ECCS initiation signal to support the OPERABILITY of the given unit).

Where the SRs discussed herein specify voltage and frequency tolerances, the following summary is applicable. The minimum steady state output voltage of 3952 V is 90% of the nominal 4160 V output voltage. This value, which is specified in ANSI C84.1 (Ref. 11), allows for voltage drop to the terminals of 4000 V motors whose minimum operating voltage is specified as 90% or 3600 V. It also allows for voltage drops to motors and other equipment down through the 120 V level where minimum operating voltage is also usually specified as 90% of name plate rating. The specified maximum steady state output voltage of 4368 V is equal to the maximum operating voltage specified for 4000 V motors. It ensures that for a lightly loaded distribution system, the voltage at the terminals of 4000 V motors is no more than the maximum rated operating voltages. The specified minimum and maximum frequencies of the DG are 58.8 Hz and 61.2 Hz, respectively. These values are equal to ± 2% of the 60 Hz nominal frequency and are derived from the recommendations found in Regulatory Guide 1.9 (Ref. 8).

(continued)

BASES

SURVEILLANCE REQUIREMENTS (continued)

SR 3.8.1.1

This SR ensures proper circuit continuity for the offsite AC electrical power supply to the onsite distribution network and availability of offsite AC electrical power. The breaker alignment verifies that each breaker is in its correct position to ensure that distribution buses and loads are connected to their preferred power source and that appropriate independence of offsite circuits is maintained. The 7 day Frequency is adequate since breaker position is not likely to change without the operator being aware of it and because its status is displayed in the control room.

SR 3.8.1.2 and SR 3.8.1.8

These SRs help to ensure the availability of the standby electrical power supply to mitigate DBAs and transients and maintain the unit in a safe shutdown condition.

To minimize the wear on moving parts that do not get lubricated when the engine is not running, these SRs have been modified by a Note (Note 1 for SR 3.8.1.2 and Note 1 for SR 3.8.1.8) to indicate that all DG starts for these Surveillances may be preceded by an engine prelube period and followed by a warmup prior to loading.

For the purposes of this testing, the DGs are started from standby conditions. Standby conditions for a DG mean that the diesel engine coolant and oil are being continuously circulated and temperature is being maintained consistent with manufacturer recommendations.

In order to reduce stress and wear on diesel engines, the manufacturer has recommended a modified start in which the starting speed of DGs is limited, warmup is limited to this lower speed, and the DGs are gradually accelerated to synchronous speed prior to loading. These start procedures are the intent of Note 2 of SR 3.8.1.2.

SR 3.8.1.8 requires that, at a 184 day Frequency, the DG starts from standby conditions and achieves required voltage and frequency within 13 seconds. The 13 second start requirement supports the assumptions in the design basis

(continued)

BASES

SURVEILLANCE REQUIREMENTS

SR 3.8.1.2 and SR 3.8.1.8 (continued)

LOCA analysis of UFSAR, Section 6.3 (Ref. 12). The 13 second start requirement is not applicable to SR 3.8.1.2 (see Note 2 of SR 3.8.1.2), when a modified start procedure as described above is used. If a modified start is not used, the 13 second start requirement of SR 3.8.1.8 applies.

Since SR 3.8.1.8 does require a 13 second start, it is more restrictive than SR 3.8.1.2, and it may be performed in lieu of SR 3.8.1.2.

In addition, the DG is required to maintain proper voltage and frequency limits after steady state is achieved. The voltage and frequency limits are normally achieved within 13 seconds. The time for the DG to reach steady state operation, unless the modified DG start method is employed, is periodically monitored and the trend evaluated to identify degradation of governor and voltage regulator performance.

To minimize testing of the common DG, Note 3 of SR 3.8.1.2 and Note 2 of SR 3.8.1.8 allow a single test of the common DG (instead of two tests, one for each unit) to satisfy the requirements for both units. This is allowed since the main purpose of the Surveillance can be met by performing the test on either unit. If the DG fails one of these Surveillances, the DG should be considered inoperable on both units, unless the cause of the failure can be directly related to only one unit.

The 31 day Frequency for SR 3.8.1.2 is consistent with Regulatory Guide 1.9 (Ref. 8). The 184 day Frequency for SR 3.8.1.8 is a reduction in cold testing consistent with Generic Letter 84-15 (Ref. 5). These Frequencies provide adequate assurance of DG OPERABILITY, while minimizing degradation resulting from testing.

SR 3.8.1.3

This Surveillance verifies that the DGs are capable of synchronizing and accepting a load approximately equivalent to that corresponding to the continuous rating. A minimum

(continued)

BASES

SURVEILLANCE REQUIREMENTS

SR 3.8.1.3 (continued)

run time of 60 minutes is required to stabilize engine temperatures, while minimizing the time that the DG is connected to the offsite source.

Although no power factor requirements are established by this SR, the DG is normally operated at a power factor between 0.8 lagging and 1.0 when running synchronized with the grid. The 0.8 power factor value is the design rating of the machine at a particular kVA. The 1.0 power factor value is an operational condition where the reactive power component is zero, which minimizes the reactive heating of the generator. Operating the generator at a power factor between 0.8 lagging and 1.0 avoids adverse conditions associated with underexciting the generator and more closely represents the generator operating requirements when performing its safety function (running isolated on its associated 4160 V ESS bus). The load band is provided to avoid routine overloading of the DG. Routine overloading may result in more frequent teardown inspections in accordance with vendor recommendations in order to maintain DG OPERABILITY.

The 31 day Frequency for this Surveillance is consistent with Regulatory Guide 1.9 (Ref. 8).

Note 1 modifies this Surveillance to indicate that diesel engine runs for this Surveillance may include gradual loading, as recommended by the manufacturer, so that mechanical stress and wear on the diesel engine are minimized.

Note 2 modifies this Surveillance by stating that momentary transients because of changing bus loads do not invalidate this test. Similarly, momentary power factor transients above the limit do not invalidate the test.

Note 3 indicates that this Surveillance should be conducted on only one DG at a time in order to avoid common cause failures that might result from offsite circuit or grid perturbations.

Note 4 stipulates a prerequisite requirement for performance of this SR. A successful DG start must precede this test to credit satisfactory performance.

(continued)

BASES

SURVEILLANCE REQUIREMENTS

SR 3.8.1.3 (continued)

To minimize testing of the common DG, Note 5 allows a single test of the common DG (instead of two tests, one for each unit) to satisfy the requirements for both units. This is allowed since the main purpose of the Surveillance can be met by performing the test on either unit. If the DG fails one of these Surveillances, the DG should be considered inoperable on both units, unless the cause of the failure can be directly related to only one unit.

SR 3.8.1.4

This SR provides verification that the level of fuel oil in the day tank is at or above the level at which fuel oil is automatically added. The level is expressed as an equivalent volume in gallons, and is selected to ensure adequate fuel oil for a minimum of 1 hour of DG operation at full load plus 10%.

This SR also provides verification that there is an adequate inventory of fuel oil in the storage tanks to support each DG's operation for approximately 2 days at full load. The approximate 2 day period is sufficient time to place the unit in a safe shutdown condition and to bring in replenishment fuel from an offsite location.

The 31 day Frequency is adequate to ensure that a sufficient supply of fuel oil is available, since low level alarms are provided and facility operators would be aware of any large uses of fuel oil during this period.

SR 3.8.1.5 and SR 3.8.1.7

Microbiological fouling is a major cause of fuel oil degradation. There are numerous bacteria that can grow in fuel oil and cause fouling, but all must have a water environment in order to survive. Removal of water from the fuel oil day tank once every 31 days eliminates the necessary environment for bacterial survival. This is accomplished by draining a portion of the contents from the bottom of the day tank to the top of the storage tank.

(continued)

BASES

SURVEILLANCE REQUIREMENTS

SR 3.8.1.5 and SR 3.8.1.7 (continued)

Checking for and removal of any accumulated water from the bulk storage tank once every 92 days also eliminates the necessary environment for bacterial survival. In addition, the Diesel Fuel Oil Testing Program also requires the sampling of the bulk storage tank to ensure water content is consistent with the applicable ASTM standards. This is the most effective means of controlling microbiological fouling. In addition, it eliminates the potential for water entrainment in the fuel oil during DG operation. Water may come from any of several sources, including condensation, ground water, rain water, contaminated fuel oil, and breakdown of the fuel oil by bacteria. Frequent checking for and removal of accumulated water minimizes fouling and provides data regarding the watertight integrity of the fuel oil system. The Surveillance Frequencies are established by Regulatory Guide 1.137 (Ref. 10). This SR is for preventive maintenance. The presence of water does not necessarily represent a failure of this SR provided that accumulated water is removed during performance of this Surveillance.

SR 3.8.1.6

This Surveillance demonstrates that each fuel oil transfer pump operates and automatically transfers fuel oil from its associated storage tank to its associated day tank. It is required to support continuous operation of standby power sources. This Surveillance provides assurance that each fuel oil transfer pump is OPERABLE, the fuel oil piping system is intact, the fuel delivery piping is not obstructed, and the controls and control systems for automatic fuel transfer systems are OPERABLE.

The Frequency for this SR is consistent with the Frequency for testing the DGs in SR 3.8.1.3. DG operation for SR 3.8.1.3 is normally long enough that fuel oil level in the day tank will be reduced to the point where the fuel oil transfer pump automatically starts to restore fuel oil level by transferring oil from the storage tank.

(continued)

SURVEILLANCE REQUIREMENTS (continued)

SR 3.8.1.9

Transfer of each 4160 V ESS bus power supply from the normal offsite circuit to the alternate offsite circuit demonstrates the OPERABILITY of the alternate circuit distribution network to power the shutdown loads. This SR includes the transfer of each UAT to the associated unit RAT and a verification of the cross tie between the unit's 4160 V ESS buses. The 24 month Frequency of the Surveillance is based on engineering judgment taking into consideration the plant conditions required to perform the Surveillance, and is intended to be consistent with expected fuel cycle lengths. Operating experience has shown that these components usually pass the SR when performed on the 24 month Frequency. Therefore, the Frequency was concluded to be acceptable from a reliability standpoint.

SR 3.8.1.10

Each DG is provided with an engine overspeed trip to prevent damage to the engine. Recovery from the transient caused by the loss of a large load could cause diesel engine overspeed, which, if excessive, might result in a trip of the engine. This Surveillance demonstrates the DG load response characteristics and capability to reject the largest single load without exceeding predetermined voltage and frequency and while maintaining a specified margin to the overspeed trip. The largest single load for each DG is a service water pump (686 kW). The specified load value conservatively bounds the expected kW rating of the single largest loads under accident conditions. This Surveillance may be accomplished by:

a. Tripping the DG output breaker with the DG carrying greater than or equal to its associated single largest post-accident load while paralleled to offsite power, or while solely supplying the bus; or

b. Tripping its associated single largest post-accident load with the DG solely supplying the bus.

Consistent with Regulatory Guide 1.9 (Ref. 8), the load rejection test is acceptable if the diesel speed does not

(continued)

BASES

SURVEILLANCE REQUIREMENTS

SR 3.8.1.10 (continued)

exceed the nominal (synchronous) speed plus 75% of the difference between nominal speed and the overspeed trip setpoint, or 115% of nominal speed, whichever is lower. This corresponds to 66.73 Hz, which is the nominal speed plus 75% of the difference between nominal speed and the overspeed trip setpoint.

The time, voltage and frequency tolerances specified in this SR are derived from Regulatory Guide 1.9 (Ref. 8) recommendations for response during load sequence intervals. The 3 seconds specified in SR 3.8.1.10.b is equal to 60% of the 5 second load sequence interval associated with sequencing the ECCS low pressure pumps during an undervoltage on the bus concurrent with a LOCA. The 4 seconds specified in SR 3.8.1.10.c is equal to 80% of the 5 second load sequence interval associated with sequencing the ECCS low pressure pumps during an undervoltage on the bus concurrent with a LOCA. The voltage and frequency specified are consistent with the design range of the equipment powered by the DG. SR 3.8.1.10.a corresponds to the maximum frequency excursion, while SR 3.8.1.10.b and SR 3.8.1.10.c are steady state voltage and frequency values specified to which the system must recover following load rejection. The 24 month Frequency takes into consideration the plant conditions required to perform the Surveillance, and is intended to be consistent with expected fuel cycle lengths.

This SR is modified by a Note. The reason for the Note is to minimize testing of the common DG and allow a single test of the common DG (instead of two tests, one for each unit) to satisfy the requirements for both units. This is allowed since the main purpose of the Surveillance can be met by performing the test on either unit. If the DG fails one of these Surveillances, the DG should be considered inoperable on both units, unless the cause of the failure can be directly related to only one unit.

(continued)

BASES

SURVEILLANCE REQUIREMENTS (continued)

SR 3.8.1.11

Consistent with Regulatory Guide 1.9 (Ref. 8), paragraph C.2.2.8, this Surveillance demonstrates the DG capability to reject a full load without overspeed tripping or exceeding the predetermined voltage limits. The DG full load rejection may occur because of a system fault or inadvertent breaker tripping. This Surveillance ensures proper engine generator load response under the simulated test conditions. This test simulates the loss of the total connected load that the DG experiences following a full load rejection and verifies that the DG does not trip upon loss of the load.

These acceptance criteria provide DG damage protection. While the DG is not expected to experience this transient during an event, and continues to be available, this response ensures that the DG is not degraded for future application, including reconnection to the bus if the trip initiator can be corrected or isolated.

In order to ensure that the DG is tested under load conditions that are as close to design basis conditions as possible, a load band (90% to 100%) has been specified based on Regulatory Guide 1.9 (Ref. 8).

The 24 month Frequency takes into consideration the plant conditions required to perform the Surveillance, and is intended to be consistent with expected fuel cycle lengths.

This SR is modified by two Notes. To minimize testing of the common DG, Note 1 allows a single test of the common DG (instead of two tests, one for each unit) to satisfy the requirements for both units. This is allowed since the main purpose of the Surveillance can be met by performing the test on either unit. If the DG fails one of these Surveillances, the DG should be considered inoperable on both units, unless the cause of the failure can be directly related to only one unit. Note 2 modifies this Surveillance by stating that momentary transients outside the voltage limit do not invalidate this test.

(continued)

BASES

SURVEILLANCE REQUIREMENTS (continued)

SR 3.8.1.12

Consistent with Regulatory Guide 1.9 (Ref. 8), paragraph C.2.2.4, this Surveillance demonstrates the as designed operation of the standby power sources during loss of the offsite source. This test verifies all actions encountered from the loss of offsite power, including shedding of the nonessential loads and energization of the emergency buses and respective loads from the DG. It further demonstrates the capability of the DG to automatically achieve the required voltage and frequency within the specified time.

The DG auto-start and energization of permanently connected loads time of 13 seconds is derived from requirements of the accident analysis for responding to a design basis large break LOCA (Ref. 12). The Surveillance should be continued for a minimum of 5 minutes in order to demonstrate that all starting transients have decayed and stability has been achieved.

The requirement to verify the connection and power supply of permanently connected loads is intended to satisfactorily show the relationship of these loads to the DG loading logic. In certain circumstances, many of these loads cannot actually be connected or loaded without undue hardship or potential for undesired operation. For instance, a component or system may be out-of-service and closure of its associated breaker during this test may damage the component or system. In lieu of actual demonstration of the connection and loading of these loads, testing that adequately shows the capability of the DG system to perform these functions is acceptable. This testing may include any series of sequential, overlapping, or total steps so that the entire connection and loading sequence is verified.

The Frequency of 24 months takes into consideration plant conditions required to perform the Surveillance, and is intended to be consistent with expected fuel cycle lengths.

This SR is modified by a Note. The reason for the Note is to minimize wear and tear on the DGs during testing. For the purpose of this testing, the DGs shall be started from standby conditions, that is, with the engine coolant and lube oil being continuously circulated and temperature maintained consistent with manufacturer recommendations.

(continued)

BASES

SURVEILLANCE REQUIREMENTS (continued)

SR 3.8.1.13

Consistent with Regulatory Guide 1.9 (Ref. 9), paragraph C.2.2.5, this Surveillance demonstrates that the DG automatically starts and achieves the required voltage and frequency within the specified time (13 seconds) from the design basis actuation signal (LOCA signal). In addition, the DG is required to maintain proper voltage and frequency limits after steady state is achieved. The time for the DG to reach the steady state voltage and frequency limits is periodically monitored and the trend evaluated to identify degradation of governor and voltage regulator performance. The DG is required to operate for $\geq$ 5 minutes. The 5 minute period provides sufficient time to demonstrate stability. SR 3.8.1.13.d and SR 3.8.1.13.e ensure that permanently connected loads and emergency loads are energized from the offsite electrical power system on a LOCA signal without loss of offsite power.

The requirement to verify the connection and power supply of permanent and auto-connected loads is intended to satisfactorily show the relationship of these loads to the loading logic for loading onto offsite power. In certain circumstances, many of these loads cannot actually be connected or loaded without undue hardship or potential for undesired operation. For instance, ECCS injection valves are not desired to be stroked open, high pressure injection systems are not capable of being operated at full flow, or systems performing a decay heat removal function are not desired to be realigned to the ECCS mode of operation. In lieu of actual demonstration of the connection and loading of these loads, testing that adequately shows the capability of the AC Electrical Power System to perform these functions is acceptable. This testing may include any series of sequential, overlapping, or total steps so that the entire connection and loading sequence is verified.

The Frequency of 24 months takes into consideration plant conditions required to perform the Surveillance, and is intended to be consistent with the expected fuel cycle lengths.

(continued)

BASES

SURVEILLANCE REQUIREMENTS

SR 3.8.1.13 (continued)

This SR is modified by a Note. The reason for the Note is to minimize wear and tear on the DGs during testing. For the purpose of this testing, the DGs must be started from standby conditions, that is, with the engine coolant and oil being continuously circulated and temperature maintained consistent with manufacturer recommendations.

SR 3.8.1.14

Consistent with Regulatory Guide 1.9 (Ref. 8) paragraph C.2.2.12, this Surveillance demonstrates that DG non-critical protective functions (e.g., high jacket water temperature) are bypassed on an ECCS initiation test signal and critical protective functions (engine overspeed and generator differential current) trip the DG to avert substantial damage to the DG unit. The non-critical trips are bypassed during DBAs and provide an alarm on an abnormal engine condition. This alarm provides the operator with sufficient time to react appropriately. The DG availability to mitigate the DBA is more critical than protecting the engine against minor problems that are not immediately detrimental to emergency operation of the DG.

The 24 month Frequency is based on engineering judgment, takes into consideration plant conditions required to perform the Surveillance, and is intended to be consistent with expected fuel cycle lengths.

SR 3.8.1.15

Regulatory Guide 1.9 (Ref. 8), paragraph C.2.2.9, requires demonstration that the DGs can start and run continuously at full load capability for an interval of not less than 24 hours, 22 hours of which is at a load equivalent to 90% to 100% of the continuous rating of the DG and 2 hours of which is at a load equivalent to 105% to 110% of the continuous rating of the DG. The DG starts for this Surveillance can be performed either from standby or hot conditions. The provisions for prelube and warmup, discussed in SR 3.8.1.2, and for gradual loading, discussed in SR 3.8.1.3, are applicable to this SR.

(continued)

BASES

SURVEILLANCE REQUIREMENTS

SR 3.8.1.15 (continued)

In order to ensure that the DG is tested under load conditions that are as close to design conditions as possible, testing must be performed at a power factor as close to the accident load power factor as practicable. When synchronized with offsite power, the power factor limit is $\leq$ 0.85. This power factor is chosen to bound the actual worst case inductive loading that the DG could experience under design basis accident conditions.

The 24 month Frequency takes into consideration plant conditions required to perform the Surveillance, and is intended to be consistent with expected fuel cycle lengths.

This Surveillance is modified by three Notes. Note 1 states that momentary transients do not invalidate this test. The load band is provided to avoid routine overloading of the DG. Routine overloading may result in more frequent teardown inspections in accordance with vendor recommendations in order to maintain DG OPERABILITY. Similarly, momentary power factor transients above the limit do not invalidate the test. Note 2 is provided in recognition that under certain conditions, it is necessary to allow the surveillance to be conducted at a power factor other than the specified limit. These conditions occur when grid voltage is high, and the additional field excitation needed to get the power factor to the specified limit results in voltages on the emergency buses that are too high. Under these conditions, the power factor should be maintained as close as practicable to the specified limit while still maintaining acceptable voltage limits on the emergency buses. In other circumstances, the grid voltage may be such that the DG excitation levels needed to obtain the specified power factor may not cause unacceptable voltages on the emergency buses, but the transient voltage at the generator terminals would be in excess of those recommended for the DG if the DG output breaker were to trip during the Surveillance. In such cases, the power factor shall be maintained as close as practicable to the specified limit while still ensuring that if the DG output breaker were to trip during the Surveillance that the maximum DG winding voltage would not be exceeded. To minimize testing

(continued)

BASES

SURVEILLANCE REQUIREMENTS

SR 3.8.1.15 (continued)

of the common DG, Note 3 allows a single test of the common DG (instead of two tests, one for each unit) to satisfy the requirements for both units. This is allowed since the main purpose of the Surveillance can be met by performing the test on either unit. If the DG fails one of these Surveillances, the DG should be considered inoperable on both units, unless the cause of the failure can be directly related to only one unit.

SR 3.8.1.16

This Surveillance demonstrates that the diesel engine can restart from a hot condition, such as subsequent to shutdown from normal Surveillances, and achieve the required voltage and frequency within 13 seconds. The 13 second time is derived from the requirements of the accident analysis for responding to a design basis large break LOCA (Ref. 12). In addition, the DG is required to maintain proper voltage and frequency limits after steady state is achieved. The time for the DG to reach the steady state voltage and frequency limits is periodically monitored and the trend evaluated to identify degradation of governor and voltage regulator performance.

The 24 month Frequency takes into consideration the plant conditions required to perform the Surveillance, and is intended to be consistent with the expected fuel cycle lengths.

This SR is modified by three Notes. Note 1 ensures that the test is performed with the diesel sufficiently hot. The requirement that the diesel has operated for at least 2 hours at approximately full load conditions prior to performance of this Surveillance is based on manufacturer recommendations for achieving hot conditions. Momentary transients due to changing bus loads do not invalidate this test. Note 2 allows all DG starts to be preceded by an engine prelube period to minimize wear and tear on the diesel during testing. To minimize testing of the common DG, Note 3 allows a single test of the common DG (instead of

(continued)

BASES

SURVEILLANCE REQUIREMENTS

SR 3.8.1.16 (continued)

two tests, one for each unit) to satisfy the requirements for both units. This is allowed since the main purpose of the Surveillance can be met by performing the test on either unit. If the DG fails one of these Surveillances, the DG should be considered inoperable on both units, unless the cause of the failure can be directly related to only one unit.

SR 3.8.1.17

Consistent with Regulatory Guide 1.9 (Ref. 8), paragraph C.2.2.11, this Surveillance ensures that the manual synchronization and load transfer from the DG to the offsite source can be made and that the DG can be returned to ready-to-load status when offsite power is restored. It also ensures that the auto-start logic is reset to allow the DG to reload if a subsequent loss of offsite power occurs. The DG is considered to be in ready-to-load status when the DG is at rated speed and voltage, the output breaker is open and can receive an auto-close signal on bus undervoltage, and the individual load timers are reset.

The Frequency of 24 months takes into consideration plant conditions required to perform the Surveillance, and is intended to be consistent with expected fuel cycle lengths.

SR 3.8.1.18

Under accident conditions with loss of offsite power loads are sequentially connected to the bus by the automatic load sequence time delay relays. The sequencing logic controls the permissive and starting signals to motor breakers to prevent overloading of the DGs due to high motor starting currents. The 10% load sequence time interval tolerance ensures that a sufficient time interval exists for the DG to restore frequency and voltage prior to applying the next load and that safety analysis assumptions regarding ESF equipment time delays are not violated. Reference 14 provides a summary of the automatic loading of ESS buses.

(continued)

BASES

SURVEILLANCE REQUIREMENTS

SR 3.8.1.18 (continued)

The Frequency of 24 months takes into consideration plant conditions required to perform the Surveillance, and is intended to be consistent with expected fuel cycle lengths.

SR 3.8.1.19

In the event of a DBA coincident with a loss of offsite power, the DGs are required to supply the necessary power to ESF systems so that the fuel, RCS, and containment design limits are not exceeded.

This Surveillance demonstrates DG operation, as discussed in the Bases for SR 3.8.1.12, during a loss of offsite power actuation test signal in conjunction with an ECCS initiation signal. In lieu of actual demonstration of connection and loading of loads, testing that adequately shows the capability of the DG system to perform these functions is acceptable. This testing may include any series of sequential, overlapping, or total steps so that the entire connection and loading sequence is verified.

The Frequency of 24 months takes into consideration plant conditions required to perform the Surveillance, and is intended to be consistent with expected fuel cycle lengths.

This SR is modified by a Note. The reason for the Note is to minimize wear and tear on the DGs during testing. For the purpose of this testing, the DGs must be started from standby conditions, that is, with the engine coolant and oil being continuously circulated and temperature maintained consistent with manufacturer recommendations.

SR 3.8.1.20

This Surveillance demonstrates that the DG starting independence has not been compromised. Also, this Surveillance demonstrates that each engine can achieve proper frequency and voltage within the specified time when the DGs are started simultaneously.

(continued)

BASES

SURVEILLANCE REQUIREMENTS

SR 3.8.1.20 (continued)

The 10 year Frequency is consistent with the recommendations of Regulatory Guide 1.9 (Ref. 8).

This SR is modified by a Note. The reason for the Note is to minimize wear on the DG during testing. For the purpose of this testing, the DGs must be started from standby conditions, that is, with the engine coolant and oil continuously circulated and temperature maintained consistent with manufacturer recommendations.

SR 3.8.1.21

With the exception of this Surveillance, all other Surveillances of this Specification (SR 3.8.1.1 through SR 3.8.1.20) are applied only to the given unit AC sources. This Surveillance is provided to direct that appropriate Surveillances for the required opposite unit AC sources are governed by the applicable opposite unit Technical Specifications. Performance of the applicable opposite unit Surveillances will satisfy the opposite unit requirements, as well as satisfying the given unit Surveillance Requirement. Exceptions are noted to the opposite unit SRs of LCO 3.8.1. SR 3.8.1.9 and SR 3.8.1.20 are excepted since only one opposite unit offsite circuit and DG is required by the given unit's Specification. SR 3.8.1.13, SR 3.8.1.18, and SR 3.8.1.19 are excepted since these SRs test the opposite unit's ECCS initiation signal, which is not needed for the AC electrical power sources to be OPERABLE on the given unit.

The Frequency required by the applicable opposite unit SR also governs performance of that SR for the given unit.

As Noted, if the opposite unit is in MODE 4 or 5, or moving irradiated fuel assemblies in the secondary containment, the following opposite unit SRs are not required to be performed: SR 3.8.1.3, SR 3.8.1.10 through SR 3.8.1.12, and SR 3.8.1.14 through SR 3.8.1.17. This ensures that a given unit SR will not require an opposite unit SR to be performed, when the opposite unit Technical Specifications exempts performance of an opposite unit SR (however, as stated in the opposite unit SR 3.8.2.1 Note 1, while performance of an SR is exempted, the SR must still be met).

(continued)

BASES (continued)

REFERENCES

1. UFSAR, Section 3.1.2.2.8.
2. UFSAR, Section 8.2.
3. UFSAR, Chapter 6.
4. UFSAR, Chapter 15.
5. Generic Letter 84-15, July 2, 1984.
6. Regulatory Guide 1.93, Revision 0, December 1974.
7. UFSAR, Section 3.1.2.2.9.
8. Regulatory Guide 1.9, Revision 3, July 1993.
9. Regulatory Guide 1.108, Revision 1, August 1977.
10. Regulatory Guide 1.137, Revision 1, October 1979.
11. ANSI C84.1, 1982.
12. UFSAR, Section 6.3.
13. UFSAR, Section 8.3.1.5.1.

B 3.8 ELECTRICAL POWER SYSTEMS

B 3.8.2 AC Sources - Shutdown

BASES

BACKGROUND

A description of the AC sources is provided in the Bases for LCO 3.8.1, "AC Sources - Operating."

APPLICABLE SAFETY ANALYSES

The OPERABILITY of the minimum AC sources during MODES 4 and 5, and during movement of irradiated fuel assemblies in the secondary containment ensures that:

a. The facility can be maintained in the shutdown or refueling condition for extended periods;

b. Sufficient instrumentation and control capability is available for monitoring and maintaining the unit status; and

c. Adequate AC electrical power is provided to mitigate events postulated during shutdown, such as an inadvertent draindown of the vessel or a fuel handling accident.

In general, when the unit is shutdown the Technical Specifications requirements ensure that the unit has the capability to mitigate the consequences of postulated accidents. However, assuming a single failure and concurrent loss of all offsite or loss of all onsite power is not required. The rationale for this is based on the fact that many Design Basis Accidents (DBAs) that are analyzed in MODES 1, 2, and 3 have no specific analyses in MODES 4 and 5. Worst case bounding events are deemed not credible in MODES 4 and 5 because the energy contained within the reactor pressure boundary, reactor coolant temperature and pressure, and corresponding stresses result in the probabilities of occurrences significantly reduced or eliminated, and minimal consequences. These deviations from DBA analysis assumptions and design requirements during shutdown conditions are allowed by the LCO for required systems.

During MODES 1, 2, and 3, various deviations from the analysis assumptions and design requirements are allowed within the ACTIONS. This allowance is in recognition that

(continued)

BASES

APPLICABLE SAFETY ANALYSES (continued)

certain testing and maintenance activities must be conducted, provided an acceptable level of risk is not exceeded. During MODES 4 and 5, performance of a significant number of required testing and maintenance activities is also required. In MODES 4 and 5, the activities are generally planned and administratively controlled. Relaxations from typical MODES 1, 2, and 3 LCO requirements are acceptable during shutdown MODES, based on:

a. The fact that time in an outage is limited. This is a risk prudent goal as well as a utility economic consideration.

b. Requiring appropriate compensatory measures for certain conditions. These may include administrative controls, reliance on systems that do not necessarily meet typical design requirements applied to systems credited in operation MODE analyses, or both.

c. Prudent utility consideration of the risk associated with multiple activities that could affect multiple systems.

d. Maintaining, to the extent practical, the ability to perform required functions (even if not meeting MODES 1, 2, and 3 OPERABILITY requirements) with systems assumed to function during an event.

In the event of an accident during shutdown, this LCO ensures the capability of supporting systems necessary for avoiding immediate difficulty, assuming either a loss of all offsite power or a loss of all onsite (diesel generator (DG)) power.

The AC sources satisfy Criterion 3 of 10 CFR 50.36(c)(2)(ii).

LCO

One offsite circuit supplying the onsite Class 1E power distribution subsystem(s) of LCO 3.8.8, "Distribution Systems - Shutdown," ensures that all required loads are powered from offsite power. An OPERABLE DG, associated with a Distribution System Essential Service System (ESS) bus required OPERABLE by LCO 3.8.8, ensures that a diverse power source is available for providing electrical power support

(continued)

BASES

LCO (continued)

assuming a loss of the offsite circuit. Together, OPERABILITY of the required offsite circuit and DG ensures the availability of sufficient AC sources to operate the plant in a safe manner and to mitigate the consequences of postulated events during shutdown (e.g., fuel handling accidents and reactor vessel draindown).

The qualified offsite circuit(s) must be capable of maintaining rated frequency and voltage while connected to their respective ESS bus(es), and of accepting required loads during an accident. Qualified offsite circuits are those that are described in the UFSAR and are part of the licensing basis for the unit. The offsite circuit from the 138 kV or 345 kV switchyard consists of the incoming breakers and disconnects to the 22 or 32 reserve auxiliary transformer (RAT), associated 22 or 32 RAT, and the respective circuit path including feeder breakers to 4160 kV ESS buses required by LCO 3.8.8. Another qualified circuit is provided by the bus tie between the corresponding ESS buses of the two units.

The required DG must be capable of starting, accelerating to rated speed and voltage, connecting to its respective 4160 V ESS bus on detection of bus undervoltage, and accepting required loads. This sequence must be accomplished within 13 seconds. Each DG must also be capable of accepting required loads within the assumed loading sequence intervals, and must continue to operate until offsite power can be restored to the 4160 V ESS buses. These capabilities are required to be met from a variety of initial conditions such as DG in standby with engine hot and DG in standby with engine at ambient conditions. Additional DG capabilities must be demonstrated to meet required Surveillances. Proper sequencing of loads, including tripping of nonessential loads, is a required function for DG OPERABILITY. The necessary portions of the DG Cooling Water and Ultimate Heat Sink System capable of providing cooling to the required DG is also required.

It is acceptable for divisions to be cross tied during shutdown conditions, permitting a single offsite power circuit to supply all required divisions.

(continued)

BASES (continued)

APPLICABILITY

The AC sources are required to be OPERABLE in MODES 4 and 5 and during movement of irradiated fuel assemblies in the secondary containment to provide assurance that:

a. Systems providing adequate coolant inventory makeup are available for the irradiated fuel assemblies in the core in case of an inadvertent draindown of the reactor vessel;

b. Systems needed to mitigate a fuel handling accident are available;

c. Systems necessary to mitigate the effects of events that can lead to core damage during shutdown are available; and

d. Instrumentation and control capability is available for monitoring and maintaining the unit in a cold shutdown condition or refueling condition.

AC power requirements for MODES 1, 2, and 3 are covered in LCO 3.8.1.

ACTIONS

LCO 3.0.3 is not applicable while in MODE 4 or 5. However, since irradiated fuel assembly movement can occur in MODE 1, 2, or 3, the ACTIONS have been modified by a Note stating that LCO 3.0.3 is not applicable. If moving irradiated fuel assemblies while in MODE 4 or 5, LCO 3.0.3 would not specify any action. If moving irradiated fuel assemblies while in MODE 1, 2, or 3, the fuel movement is independent of reactor operations. Entering LCO 3.0.3 while in MODE 1, 2, or 3 would require the unit to be shutdown, but would not require immediate suspension of movement of irradiated fuel assemblies. The Note to the ACTIONS, "LCO 3.0.3 is not applicable," ensures that the actions for immediate suspension of irradiated fuel assembly movement are not postponed due to entry into LCO 3.0.3.

A.1

An offsite circuit is considered inoperable if it is not available to one required ESS 4160 V ESS bus. If two or more 4160 V ESS buses are required per LCO 3.8.8, one

(continued)

BASES

ACTIONS

A.1 (continued)

division with offsite power available may be capable of supporting sufficient required features to allow continuation of CORE ALTERATIONS, fuel movement, and operations with a potential for draining the reactor vessel. By the allowance of the option to declare required features inoperable that are not powered from offsite power, appropriate restrictions can be implemented in accordance with the required feature(s) LCOs' ACTIONS. Required features remaining powered from a qualified offsite circuit, even if that circuit is considered inoperable because it is not powering other required features, are not declared inoperable by this Required Action.

A.2.1, A.2.2, A.2.3, A.2.4, B.1, B.2, B.3, and B.4

With the offsite circuit not available to all required divisions, the option still exists to declare all required features inoperable per Required Action A.1. Since this option may involve undesired administrative efforts, the allowance for sufficiently conservative actions is made. With the required DG inoperable, the minimum required diversity of AC power sources is not available. It is, therefore, required to suspend CORE ALTERATIONS, movement of irradiated fuel assemblies in the secondary containment, and activities that could result in inadvertent draining of the reactor vessel.

Suspension of these activities shall not preclude completion of actions to establish a safe conservative condition. These actions minimize the probability of the occurrence of postulated events. It is further required to immediately initiate action to restore the required AC sources and to continue this action until restoration is accomplished in order to provide the necessary AC power to the plant safety systems.

The Completion Time of immediately is consistent with the required times for actions requiring prompt attention. The restoration of the required AC electrical power sources should be completed as quickly as possible in order to minimize the time during which the plant safety systems may be without sufficient power.

(continued)

BASES

ACTIONS

A.2.1, A.2.2, A.2.3, A.2.4, B.1, B.2, B.3, and B.4 (continued)

Pursuant to LCO 3.0.6, the Distribution System ACTIONS would not be entered even if all AC sources to it are inoperable, resulting in de-energization. Therefore, the Required Actions of Condition A have been modified by a Note to indicate that when Condition A is entered with no AC power to any required ESS bus, ACTIONS for LCO 3.8.8 must be immediately entered. This Note allows Condition A to provide requirements for the loss of the offsite circuit whether or not a division is de-energized. LCO 3.8.8 provides the appropriate restrictions for the situation involving a de-energized division.

SURVEILLANCE REQUIREMENTS

SR 3.8.2.1

SR 3.8.2.1 requires the SRs from LCO 3.8.1 that are necessary for ensuring the OPERABILITY of the AC sources in other than MODES 1, 2, and 3 to be applicable. SR 3.8.1.9 is not required to be met since only one offsite circuit is required to be OPERABLE. SR 3.8.1.20 is excepted because starting independence is not required with the DG(s) that is not required to be OPERABLE. SR 3.8.1.21 is not required to be met because the opposite unit's DG is not required to be OPERABLE in MODES 4 and 5, and during movement of irradiated fuel assemblies in secondary containment. Refer to the corresponding Bases for LCO 3.8.1 for a discussion of each SR.

This SR is modified by two Notes. The reason for Note 1 is to preclude requiring the OPERABLE DG(s) from being paralleled with the offsite power network or otherwise rendered inoperable during the performance of SRs, and to preclude de-energizing a required 4160 V ESS bus or disconnecting a required offsite circuit during performance of SRs. With limited AC sources available, a single event could compromise both the required circuit and the DG. It is the intent that these SRs must still be capable of being met, but actual performance is not required during periods when the DG and offsite circuit are required to be OPERABLE. Note 2 states that SRs 3.8.1.13 and 3.8.1.19 are not required to be met when its associated ECCS subsystem(s) are

(continued)

BASES

SURVEILLANCE REQUIREMENTS	<u>SR 3.8.2.1</u> (continued) not required to be OPERABLE. These SRs demonstrate the DG response to an ECCS initiation signal (either alone or in conjunction with a loss of offsite power signal). This is consistent with the ECCS instrumentation requirements that do not require the ECCS initiation signals when the associated ECCS subsystem is not required to be OPERABLE per LCO 3.5.2, "ECCS — Shutdown."
REFERENCES	None.

B 3.8 ELECTRICAL POWER SYSTEMS

B 3.8.3 Diesel Fuel Oil and Starting Air

BASES

BACKGROUND

For proper operation of the standby DGs, it is necessary to ensure the proper quality of the fuel oil. Regulatory Guide 1.137 (Ref. 1) addresses the recommended fuel oil practices as supplemented by ANSI N195 (Ref. 2). The fuel oil properties governed by these SRs are the water and sediment content, the flashpoint and kinematic viscosity, specific gravity (or API gravity), and impurity level.

Each DG has a starting air system that includes two pair of air receivers, each with adequate capacity for three successive starts without recharging the air start receivers.

APPLICABLE SAFETY ANALYSES

The initial conditions of Design Basis Accident (DBA) and transient analyses in UFSAR, Chapter 6 (Ref. 3), and Chapter 15 (Ref. 4), assume Engineered Safety Feature (ESF) systems are OPERABLE. The DGs are designed to provide sufficient capacity, capability, redundancy, and reliability to ensure the availability of necessary power to ESF systems so that fuel, Reactor Coolant System, and containment design limits are not exceeded. These limits are discussed in more detail in the Bases for Section 3.2, Power Distribution Limits; Section 3.5, Emergency Core Cooling System (ECCS) and Isolation Condenser (IC) System; and Section 3.6, Containment Systems.

Since diesel fuel oil and starting air subsystem support the operation of the standby AC power sources, they satisfy Criterion 3 of 10 CFR 50.36(c)(2)(ii).

LCO

Stored diesel fuel oil is required to meet specific standards for quality. This requirement supports the availability of DGs required to shut down the reactor and to maintain it in a safe condition for an anticipated operational occurrence (AOO) or a postulated DBA with loss of offsite power.

(continued)

BASES

LCO cont'd)	The starting air system is required to have a minimum capacity for three successive DG starts without recharging the air start receivers.
APPLICABILITY	The AC sources (LCO 3.8.1 and LCO 3.8.2) are required to ensure the availability of the required power to shut down the reactor and maintain it in a safe shutdown condition after an AOO or a postulated DBA. Because stored diesel fuel oil and starting air subsystems support LCO 3.8.1 and LCO 3.8.2, stored diesel fuel oil and starting air are required to be within limits when the associated DG is required to be OPERABLE.

ACTIONS

The ACTIONS Table is modified by a Note indicating that separate Condition entry is allowed for each DG. This is acceptable, since the Required Actions for each Condition provide appropriate compensatory actions for each inoperable DG subsystem. Complying with the Required Actions for one inoperable DG subsystem may allow for continued operation, and subsequent inoperable DG subsystem(s) are governed by separate Condition entry and application of associated Required Actions.

A.1

This Condition is entered as a result of a failure to meet the acceptance criterion for particulates. Normally, trending of particulate levels allows sufficient time to correct high particulate levels prior to reaching the limit of acceptability. Poor sample procedures, contaminated sampling equipment, and errors in laboratory analysis can produce failures that do not follow a trend. Since the presence of particulates does not mean failure of the fuel oil to burn properly in the diesel engine, since particulate concentration is unlikely to change significantly between Surveillance Frequency intervals, and since proper engine performance has been recently demonstrated (within 31 days), it is prudent to allow a brief period prior to declaring the associated DG inoperable. The 7 day Completion Time allows for further evaluation, resampling, and re-analysis of the DG fuel oil.

(continued)

BASES

ACTIONS (continued)

B.1

With the new fuel oil properties defined in the Bases for SR 3.8.3.1 not within the required limits, a period of 30 days is allowed for restoring the stored fuel oil properties. This period provides sufficient time to test the stored fuel oil to determine that the new fuel oil, when mixed with previously stored fuel oil, remains acceptable, or to restore the stored fuel oil properties. This restoration may involve feed and bleed procedures, filtering, or combination of these procedures. Even if a DG start and load was required during this time interval and the fuel oil properties were outside limits, there is high likelihood that the DG would still be capable of performing its intended function.

C.1

With the required starting air receiver pressure < 220 psig, sufficient capacity for three successive DG starts does not exist. However, as long as the receiver pressure is ≥ 175 psig, there is adequate capacity for at least one start, and the DG can be considered OPERABLE while the air receiver pressure is restored to the required limit. A period of 48 hours is considered sufficient to complete restoration to the required pressure prior to declaring the DG inoperable. This period is acceptable based on the remaining air start capacity, the fact that most DG starts are accomplished on the first attempt, and the low probability of an event during this brief period.

D.1

With a Required Action and associated Completion Time of Condition A, B, or C not met, or the stored diesel fuel oil or starting air subsystem not within limits for reasons other than addressed by Condition A, B, or C, the associated DG may be incapable of performing its intended function and must be immediately declared inoperable.

(continued)

BASES (continued)

SURVEILLANCE REQUIREMENTS

SR 3.8.3.1

The tests of new fuel oil prior to addition to the storage tanks are a means of determining whether new fuel oil is of the appropriate grade and has not been contaminated with substances that would have an immediate detrimental impact on diesel engine combustion. If results from these tests are within acceptable limits, the fuel oil may be added to the storage tanks without concern for contaminating the entire volume of fuel oil in the storage tanks. These tests are to be conducted prior to adding the new fuel to the storage tank(s). The tests, limits, and applicable ASTM Standards are as follows:

a. Sample the new fuel oil in accordance with ASTM D4057-95 (Ref. 5);

b. Verify that the new fuel oil sample has: (1) an absolute specific gravity at 60°F of ≥ 0.83 and ≤ 0.89 or an API gravity at 60°F of ≥ 27 and ≤ 39 when tested in accordance with ASTM D1298-85 (Ref. 5); (2) a kinematic viscosity at 40°C of ≥ 1.9 centistokes and ≤ 4.1 centistokes when tested in accordance with ASTM D445-97 (Ref. 5); and (3) a flash point of ≥ 125°F when tested in accordance with ASTM D93-99a (Ref. 5); and

c. Verify that the new fuel oil has a clear and bright appearance with proper color when tested in accordance with ASTM D4176-93 (Ref. 5) or a water and sediment content within limits when tested in accordance with ASTM D2709-96 (Ref. 5). The clear and bright appearance with proper color test is only applicable to fuels that meet the ASTM color requirements (i.e., ASTM color 5 or less).

Failure to meet any of the above limits is cause for rejecting the new fuel oil, but does not represent a failure to meet the LCO concern since the fuel oil is not added to the storage tanks.

Following the initial new fuel oil sample, the fuel oil is analyzed within 31 days following addition of the new fuel oil to the fuel oil storage tank(s) to establish that the other properties specified in Table 1 of ASTM D975-98b (Ref. 5) are met for new fuel oil when tested in accordance

(continued)

BASES

SURVEILLANCE REQUIREMENTS

SR 3.8.3.1 (continued)

with ASTM D975-98b (Ref. 5), except that the analysis for sulfur may be performed in accordance with ASTM D4294-98 (Ref. 5) or ASTM D2622-98 (Ref. 5). The 31 day period is acceptable because the fuel oil properties of interest, even if they were not within stated limits, would not have an immediate effect on DG operation. This Surveillance ensures the availability of high quality fuel oil for the DGs.

Fuel oil degradation during long term storage shows up as an increase in particulate, mostly due to oxidation. The presence of particulate does not mean that the fuel oil will not burn properly in a diesel engine. The particulate can cause fouling of filters and fuel oil injection equipment, however, which can cause engine failure.

Particulate concentrations should be determined in accordance with ASTM D5452-98 (Ref. 5). This method involves a gravimetric determination of total particulate concentration in the fuel oil and has a limit of 10 mg/l. It is acceptable to obtain a field sample for subsequent laboratory testing in lieu of field testing.

The Frequency of this test takes into consideration fuel oil degradation trends that indicate that particulate concentration is unlikely to change significantly between Frequency intervals.

SR 3.8.3.2

This Surveillance ensures that, without the aid of the refill compressor, sufficient air start capacity for each DG is available. The system design requirements provide for a minimum of three engine starts without recharging. The pressure specified in this SR is intended to support the lowest value at which the three starts can be accomplished.

The 31 day Frequency takes into account the capacity, capability, redundancy, and diversity of the AC sources and other indications available in the control room, including alarms, to alert the operator to below normal air start pressure.

(continued)

BASES (continued)

REFERENCES

1. Regulatory Guide 1.137, Rev. 1, October 1979.

2. ANSI N195, 1976.

3. UFSAR, Chapter 6.

4. UFSAR, Chapter 15.

5. ASTM Standards: D4057-95; D1298-85; D445-97; D93-99a; D975-98b; D4176-93; D2709-96; D4294-98; D2622-98; and D5452-98.

B 3.8 ELECTRICAL POWER SYSTEMS

B 3.8.4 DC Sources - Operating

BASES

BACKGROUND

The DC electrical power systems provide the AC emergency power system with control power. They also provide both motive and control power to selected safety related equipment. Also, these DC subsystems provide DC electrical power to inverters, which in turn power the AC essential service buses. As required by UFSAR, Section 3.1.2.2.8 (Ref. 1), the DC electrical power system is designed to have sufficient independence, redundancy, and testability to perform its safety functions, assuming a single failure. The DC electrical power system is consistent with the recommendations of Safety Guide 6 (Ref. 2) and IEEE-308 (Ref. 3).

The 250 VDC power sources provide motive power to selected safety related larger DC loads such as DC motor-driven pumps and valves. Each 250 VDC subsystem is energized by one 250 V battery and two 250 V battery chargers (one normally inservice charger and one swing charger). Each battery is exclusively associated with a single 250 VDC subsystem. Each normal battery charger exclusively associated with a 250 VDC subsystem cannot be interconnected with any other 250 VDC subsystem. The swing charger, shared between units, can be aligned to only one unit at a time. The normal and swing chargers are normally supplied from an associated unit AC load group bus. These AC buses are arranged so they can be aligned to any viable available plant AC source. The loads between the redundant 250 VDC subsystem are not transferable.

The Division 1 and Division 2 125 VDC power sources provide both motive and control power to selected safety related equipment, as well as circuit breaker control power for the nonsafety related 4160 V switchgear, and all 480 V load centers. Each 125 VDC subsystem is energized by two 125 V batteries (one normal battery and one alternate battery) and three 125 V battery chargers (one normal charger, one backup charger, and one alternate charger). Each battery is exclusively associated with a single 125 VDC subsystem. Each set of battery chargers exclusively associated with a

(continued)

BASES

BACKGROUND (continued)

125 VDC subsystem cannot be interconnected with any other 125 VDC subsystem. The 125 VDC subsystem alternate battery and charger are susceptible to single failure and therefore are not reliable as normal or continuous use 125 VDC sources. The chargers are supplied from a 480 VAC bus. These AC buses are arranged so they can be aligned to any viable available plant AC source. The loads between the redundant 125 VDC subsystems are not automatically transferable except for the diesel generator (DG) (i.e., 2/3 DG control circuit), High Pressure Coolant Injection (HPCI) System, and Automatic Depressurization System, the logic circuits and valves of which are normally fed from the Division 1 125 VDC system. The Division 1 125 VDC electrical power subsystem consists of the unit battery, two chargers, and all the associated control equipment and interconnecting cabling up to the associated unit's 125 VDC Division 1 bus. The Division 2 125 VDC electrical power subsystem consists of the opposite unit battery, two chargers, and all the associated control equipment, buses, and interconnecting cabling up to the associated units Division 2 125 VDC bus.

The opposite unit Division 2 125 VDC electrical power subsystem source provides control power to safety related loads common to both units such as standby gas treatment. The Division 2 125 VDC electrical power subsystem consists of the opposite unit batteries, chargers, and all associated control equipment, buses, and interconnecting cabling up to the associated opposite Division 2 125 VDC bus.

During normal operation, the DC loads are powered from the battery chargers with the batteries floating on the system. In case of loss of normal power to the battery charger, the DC loads are automatically powered from the associated batteries.

The DC power distribution system is described in more detail in Bases for LCO 3.8.7, "Distribution System – Operating," and LCO 3.8.8, "Distribution System – Shutdown."

Each battery has adequate storage capacity to carry the normal loads plus all loads required for safe shutdown on one unit and operational loads required to limit the consequences of a design basis event on the other unit for a period of 4 hours (Ref. 4).

(continued)

BASES

BACKGROUND (continued)

Each DC battery is separately housed in a ventilated room apart from its charger and distribution centers. Each subsystem is located in an area separated physically and electrically from the other subsystems to ensure that a single failure in one subsystem does not cause a failure in a redundant subsystem. There is no sharing between redundant Class 1E subsystems such as batteries, battery chargers, or distribution panels.

The batteries for DC electrical power subsystems are sized to produce required capacity at 80% of nameplate rating, corresponding to warranted capacity at end of life cycles and the 100% design demand. The minimum design voltage limit is 105/210 V.

Each DC electrical power subsystem battery charger has ample power output capacity for the steady state operation of connected loads required during normal operation, while at the same time maintaining its battery bank fully charged. Each battery charger has sufficient capacity to restore the battery from the design minimum charge to its fully charged state while supplying normal steady state loads (Ref. 4).

APPLICABLE SAFETY ANALYSES

The initial conditions of Design Basis Accident (DBA) and transient analyses in the UFSAR, Chapter 6 (Ref. 5) and Chapter 15 (Ref. 6), assume that Engineered Safety Feature (ESF) systems are OPERABLE. The DC electrical power system provides normal and emergency DC electrical power for the DGs, emergency auxiliaries, and control and switching during all MODES of operation.

The OPERABILITY of the DC subsystems is consistent with the initial assumptions of the accident analyses and is based upon meeting the design basis of the unit. This includes maintaining DC sources OPERABLE during accident conditions in the event of:

a. An assumed loss of all offsite AC power or all onsite AC power; and

b. A worst case single failure.

The DC sources satisfy Criterion 3 of 10 CFR 50.36(c)(2)(ii).

(continued)

BASES (continued)

LCO

The DC electrical power subsystems – with: a) each 250 VDC subsystem consisting of one 250 VDC battery, one battery charger and the corresponding control equipment and interconnecting cabling supplying power to the associated bus, b) the Division 1 and 2 125 VDC subsystem each consisting of one 125 VDC battery, one battery charger, and the corresponding control equipment, buses, and interconnecting cabling; and c) opposite unit Division 2 125 VDC subsystem each consisting of one battery, one charger, and the corresponding control equipment, buses, and interconnecting cabling are required to be OPERABLE to ensure the availability of the required power to shut down the reactor and maintain it in a safe condition after an anticipated operational occurrence (AOO) or a postulated DBA. Loss of any DC electrical power subsystem does not prevent the minimum safety function from being performed (Ref. 4).

APPLICABILITY

The DC electrical power sources are required to be OPERABLE in MODES 1, 2, and 3 to ensure safe unit operation and to ensure that:

a. Acceptable fuel design limits and reactor coolant pressure boundary limits are not exceeded as a result of AOOs or abnormal transients; and

b. Adequate core cooling is provided, and containment integrity and other vital functions are maintained in the event of a postulated DBA.

The DC electrical power requirements for MODES 4 and 5 and other conditions in which the DC electrical power sources are required are addressed in LCO 3.8.5, "DC Sources – Shutdown."

ACTIONS

A.1

Condition A, 250 VDC battery inoperable as a result of maintenance or testing, represents one subsystem with a loss of ability to completely respond to an event. It is therefore imperative that the operator's attention focus on stabilizing the unit, minimizing the potential for complete

(continued)

BASES

ACTIONS

A.1 (continued)

loss of 250 VDC power to the affected subsystem. Operation in this Condition is needed during the operating cycle to ensure the battery is maintained OPERABLE.

If one of the 250 VDC batteries is inoperable, the remaining 250 VDC electrical power subsystem has the capacity to support a safe shutdown of one unit and to mitigate an accident condition in the other unit. Since a subsequent worst case single failure could, however, result in the loss of minimum necessary DC electrical subsystems to mitigate a worst case accident, continued power operation is limited. Required Action A.1 limits the time the unit can operate in this condition to 7 cumulative days per operating cycle, for any one battery. Therefore, each 250 VDC battery can be removed from service to perform maintenance or testing as long as the cumulative time is not exceeded for that battery.

The 7 day cumulative Completion Time is based on the capacity and capability of the remaining DC sources to supply the required loads.

B.1

Condition B, 250 VDC battery inoperable due to the need to replace the battery as determined by maintenance or testing, represents one subsystem with a loss of ability to completely respond to an event. It is therefore imperative that the operator's attention focus on stabilizing the unit, minimizing the potential for complete loss of 250 VDC power to the affected subsystem. Operation in this Condition may be needed during the operating cycle to completely replace a battery to maintain the 250 VDC subsystem OPERABLE for the remainder of the cycle.

If one of the 250 VDC batteries is inoperable, the remaining 250 VDC electrical power subsystem has the capacity to support a safe shutdown of one unit and to mitigate an accident condition in the other unit. Since a subsequent worst case single failure could, however, result in the loss of minimum necessary DC electrical subsystems to mitigate a

(continued)

BASES

ACTIONS

B.1 (continued)

worst case accident, continued power operation is limited. Required Action B.1 limits the time the unit can operate in this condition to 7 days. Therefore, each 250 VDC battery can be removed from service to completely replace a battery.

The 7 day Completion Time to restore the 250 VDC battery is based on the capacity and capability of the remaining DC sources to supply the required loads.

C.1

With one 250 VDC electrical power subsystem inoperable for reasons other than Condition B or C, Condition C represents one 250 VDC electrical power subsystem with a loss of ability to completely respond to an event and a potential loss of ability to remain energized during normal operation. It is therefore imperative that the operator's attention focus on stabilizing the unit, minimizing the potential for complete loss of 250 VDC power to the affected buses. The 2 hour limit is consistent with the allowed time for an inoperable DC Distribution System subsystem.

If one 250 VDC electrical power subsystem is inoperable (e.g., inoperable battery, inoperable required battery charger(s), or inoperable required battery charger and associated inoperable battery), the remaining DC electrical power subsystems have the capacity to support a safe shutdown of one unit and to mitigate an accident condition. Since a subsequent worst case single failure could, however, result in the loss of minimum necessary DC electrical subsystems to mitigate a worst case accident, continued power operation should not exceed 2 hours. The 2 hour Completion Time is based on Regulatory Guide 1.93 (Ref. 7) and reflects a reasonable time to assess unit status as a function of the inoperable DC electrical power subsystem and, if the DC electrical power subsystem is not restored to OPERABLE status, to prepare to effect an orderly and safe unit shutdown.

(continued)

BASES

ACTIONS (continued)

D.1 and D.2

Condition D, Division 1 or 2 125 VDC battery inoperable as a result of maintenance or testing, represents one division with a loss of ability to completely respond to an event. It is therefore imperative that the operator's attention focus on stabilizing the unit, minimizing the potential for complete loss of DC power to the affected division. Operation in this Condition is needed during the operating cycle to ensure the battery is maintained OPERABLE. Condition D is modified by a Note indicating that the Condition is only applicable when the opposite unit is in MODE 1, 2, or 3.

If one of the 125 VDC batteries is inoperable, the remaining 125 VDC electrical power subsystem has the capacity to support a safe shutdown of one unit and to mitigate an accident condition in the other unit. Since a subsequent worst case single failure could, however, result in the loss of minimum necessary DC electrical subsystems to mitigate a worst case accident, continued power operation is limited. Required Action D.2 limits the time the unit can operate in this condition to 7 cumulative days per operating cycle, for any one battery. Therefore, each 125 VDC battery can be removed from service to perform maintenance or testing as long as the cumulative time is not exceeded for that battery. In addition, Required Action D.1 requires the associated OPERABLE alternate 125 VDC electrical power subsystem to be placed in service. An OPERABLE alternate 125 VDC electrical power subsystem means that all SR requirements associated with the 125 VDC battery and charger must be met. Therefore, placement of the OPERABLE alternate 125 VDC electrical power subsystem will help ensure that the design basis can be met. However, the design configuration of the alternate battery is susceptible to single failure and hence, is not as reliable as the normal circuit. Therefore, a limited time of operation is allowed in this condition.

The 2 hour Completion Time to place the associated OPERABLE alternate 125 VDC electrical power subsystem in service provides sufficient time to safely remove the Division 1 or 2 125 VDC electrical power subsystem from service and place the alternate supply in service. The 7 day cumulative

(continued)

BASES

ACTIONS

D.1 and D.1 (continued)

Completion Time is based on the capacity and capability of the remaining DC Sources, including the enhanced capability afforded by the capability of the alternate 125 VDC electrical power subsystem to supply the required loads.

E.1 and E.2

Condition E, Division 1 or 2 125 VDC battery inoperable due to the need to replace the battery as determined by maintenance or testing, represents one division with a loss of ability to completely respond to an event. It is therefore imperative that the operator's attention focus on stabilizing the unit, minimizing the potential for complete loss of DC power to the affected division. Operation in this Condition may be needed during the operating cycle to completely replace a battery to maintain the Division 1 or 2 VDC subsystem OPERABLE for the remainder of the cycle. Condition E is modified by a Note indicating that the Condition is only applicable when the opposite unit is in MODE 1, 2, or 3.

If one of the 125 VDC batteries is inoperable, the remaining 125 VDC electrical power subsystem has the capacity to support a safe shutdown of one unit and to mitigate an accident condition in the other unit. Since a subsequent worst case single failure could, however, result in the loss of minimum necessary DC electrical subsystems to mitigate a worst case accident, continued power operation is limited. Required Action E.2 limits the time the unit can operate in this condition to 7 days. Therefore, each 125 VDC battery can be removed from service to completely replace a battery. In addition, Required Action E.1 requires the associated OPERABLE alternate 125 VDC electrical power subsystem to be placed in service. An OPERABLE alternate 125 VDC electrical power subsystem means that all SR requirements associated with the 125 VDC battery and charger must be met. Therefore, placement of the OPERABLE alternate 125 VDC electrical power subsystem will help ensure that the design basis can be met. However, the design configuration of the alternate battery is susceptible to single failure and hence, is not as reliable as the normal circuit. Therefore, a limited time of operation is allowed in this condition.

(continued)

BASES

ACTIONS

E.1 and E.2 (continued)

The 2 hour Completion Time to place the associated OPERABLE alternate 125 VDC electrical power subsystem in service provides sufficient time to safely remove the Division 1 or 2 125 VDC electrical power subsystem from service and place the alternate supply in service. The 7 day Completion Time to restore the 125 VDC battery is based on the capacity and capability of the remaining DC Sources, including the enhanced capability afforded by the capability of the alternate 125 VDC electrical power subsystem to supply the required loads.

F.1

With one Division 1 or Division 2 125 VDC electrical power subsystem inoperable for reasons other than Conditions D or E, Condition F represents one division with a loss of ability to completely respond to an event, and a potential loss of ability to remain energized during normal operation. It is therefore imperative that the operator's attention focus on stabilizing the unit, minimizing the potential for complete loss of DC power to the affected division. The 2 hour limit is consistent with the allowed time for an inoperable DC Distribution System division.

If one 125 VDC electrical power subsystem is inoperable (e.g., inoperable battery, inoperable required battery charger(s), or inoperable required battery charger and associated inoperable battery), the remaining DC electrical power subsystems have the capacity to support a safe shutdown and to mitigate an accident condition. Since a subsequent worst case single failure could, however, result in the loss of minimum necessary DC electrical subsystems to mitigate a worst case accident, continued power operation should not exceed 2 hours. The 2 hour Completion Time is based on Regulatory Guide 1.93 (Ref. 7) and reflects a reasonable time to assess unit status as a function of the inoperable DC electrical power subsystem and, if the DC electrical power subsystem is not restored to OPERABLE status, to prepare to effect an orderly and safe unit shutdown.

(continued)

BASES

ACTIONS (continued)

G.1

With the opposite unit Division 2 125 VDC electrical power system inoperable, certain redundant Division 2 features (e.g., Standby Gas Treatment System) will not function if a design basis event were to occur. With a standby gas treatment subsystem inoperable, LCO 3.6.4.3, "Standby Gas Treatment System" requires restoration of the inoperable SGT subsystem to OPERABLE status in 7 days. Therefore, a 7 day Completion Time is provided to restore the opposite unit Division 2 125 VDC electrical power subsystem to OPERABLE status. The 7 day Completion Time is based on consideration of such factors as the availability of the OPERABLE redundant system(s) and the low probability of a DBA occurring during this time period.

H.1 and H.2

If the DC electrical power subsystem cannot be restored to OPERABLE status within the required Completion Time, the unit must be brought to a MODE in which the LCO does not apply. To achieve this status, the unit must be brought to at least MODE 3 within 12 hours and to MODE 4 within 36 hours. The allowed Completion Times are reasonable, based on operating experience, to reach the required plant conditions from full power conditions in an orderly manner and without challenging plant systems. The Completion Time to bring the unit to MODE 4 is consistent with the time required in Regulatory Guide 1.93 (Ref. 7).

SURVEILLANCE REQUIREMENTS

SR 3.8.4.1

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. Float charge is the condition in which the charger is supplying the continuous charge required to overcome the internal losses of a battery and maintain the battery in a fully charged state. 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. The 7 day Frequency is conservative when compared with manufacturers recommendations and IEEE-450 (Ref. 8).

(continued)

BASES

SURVEILLANCE REQUIREMENTS (continued)

SR 3.8.4.2

Visual inspection to detect corrosion of the battery cells and connections, or measurement of the resistance of each intercell and terminal connection, provides an indication of physical damage or abnormal deterioration that could potentially degrade battery performance.

The connection resistance limits established for this SR are within the values established by industry practice. The connection resistance limits of this SR are related to the resistance of individual bolted connections, and do not include the resistance of conductive components (e.g., cables or conductors located between cells, racks, or tiers).

The Frequency for these inspections, which can detect conditions that can cause power losses due to resistance heating, is 92 days. This Frequency is considered acceptable based on operating experience related to detecting corrosion trends.

SR 3.8.4.3 and SR 3.8.4.7

Battery charger capability requirements are based on the design capacity of the chargers (Ref. 4). According to Regulatory Guide 1.32 (Ref. 9), the battery charger supply is required to be based on the largest combined demands of the various steady state loads and the charging capacity to restore the battery from the design minimum charge state to the fully charged state, irrespective of the status of the unit during these demand occurrences. The minimum required amperes and duration ensures that these requirements can be satisfied.

The 18 month Frequency for SR 3.8.4.3 is acceptable based on engineering judgement. Operating experience has shown that the 250 V battery chargers usually pass the SR when performed at the 18 month Frequency. Therefore, the Frequency was concluded to be acceptable from a reliability standpoint.

(continued)

BASES

SURVEILLANCE REQUIREMENTS

SR 3.8.4.3 and SR 3.8.4.7 (continued)

The 24 Frequency for SR 3.8.4.7 is acceptable given the administrative controls existing to ensure adequate charger performance during these 24 month intervals. In addition, this Frequency is intended to be consistent with expected fuel cycle lengths.

SR 3.8.4.4

Visual inspection of the battery cells, cell plates, and battery racks provides an indication of physical damage or abnormal deterioration that could potentially degrade battery performance. The presence of physical damage or deterioration does not necessarily represent a failure of this SR, provided an evaluation determines that the physical damage or deterioration does not affect the OPERABILITY of the battery (its ability to perform its design function).

The 24 month Frequency for the Surveillance is based on engineering judgement. Operating experience has shown that these components usually pass the SR when performed at the 24 month Frequency. Therefore, the Frequency was concluded to be acceptable from a reliability standpoint.

SR 3.8.4.5 and SR 3.8.4.6

Visual inspection and resistance measurements of intercell and terminal connections provides an indication of physical damage or abnormal deterioration that could indicate degraded battery condition. The anti-corrosion material is used to help ensure good electrical connections and to reduce terminal deterioration. The visual inspection for corrosion is not intended to require removal of and inspection under each terminal connection.

The removal of visible corrosion is a preventive maintenance SR. The presence of visible corrosion does not necessarily represent a failure of this SR, provided visible corrosion is removed during performance of this Surveillance.

(continued)

BASES

SURVEILLANCE REQUIREMENTS

SR 3.8.4.5 and SR 3.8.4.6 (continued)

The connection resistance limits are within the values established by industry practice. The connection resistance limits of this SR are related to the resistance of individual bolted connections, and do not include the resistance of conductive components (e.g., cables or conductors located between cells, racks, or tiers).

The 24 month Frequency for the Surveillance is based on engineering judgement. Operating experience has shown that these components usually pass the SR when performed at the 24 month Frequency. Therefore, the Frequency was concluded to be acceptable from a reliability standpoint.

SR 3.8.4.8

A battery service test is a special test of the battery's capability, as found, to satisfy the design requirements (battery duty cycle) of the DC electrical power system. The test can be performed using simulated or actual loads. The discharge rate and test length corresponds to the design duty cycle requirements as specified in Reference 4.

The Frequency of 24 months is acceptable, given unit conditions required to perform the test and the other requirements existing to ensure adequate battery performance during these 24 month intervals. In addition, this Frequency is intended to be consistent with expected fuel cycle lengths.

This SR is modified by a Note. The Note allows the performance of a modified performance discharge test in lieu of a service test provided the modified performance discharge test completely envelopes the service test. This substitution is acceptable because a modified performance discharge test represents a more severe test of battery capacity than SR 3.8.4.8.

(continued)

BASES

SURVEILLANCE REQUIREMENTS (continued)

SR 3.8.4.9

A battery performance discharge test is a test of constant current capacity of a battery, normally done in the as found condition, after having been in service, to detect any change in the capacity determined by the acceptance test. The test is intended to determine overall battery degradation due to age and usage.

A battery modified performance discharge test is a simulated duty cycle normally consisting of just two rates; the one minute rate published for the battery or the largest current load of the duty cycle, followed by the test rate employed for the performance discharge test, both of which envelope the duty cycle of the service test. (The test can consist of a single rate if the test rate employed for the performance discharge test exceeds the 1 minute rate.) Since the ampere-hours removed by a rated one minute discharge represents a very small portion of the battery capacity, the test rate can be changed to that for the performance test without compromising the results of the performance discharge test. The battery terminal voltage for the modified performance discharge test should remain above the minimum battery terminal voltage specified in the battery service test for the duration of time equal to that of the service test.

A modified performance discharge test is a test of the battery capacity and its ability to provide a high rate, short duration load (usually the highest rate of the duty cycle). This will often confirm the battery's ability to meet the critical period of the load duty cycle, in addition to determining its percentage of rated capacity. Initial conditions for the modified performance discharge test should be identical to those specified for a service test when the modified performance discharge test is performed in lieu of a service test. Either the battery performance discharge test or the modified performance discharge test is acceptable for satisfying SR 3.8.4.9; however, only the modified performance discharge test may be used to satisfy SR 3.8.4.9 while satisfying the requirements of SR 3.8.4.8 at the same time.

(continued)

BASES

SURVEILLANCE REQUIREMENTS

SR 3.8.4.9 (continued)

The acceptance criteria for this Surveillance is consistent with IEEE-450 (Ref. 8) and IEEE-485 (Ref. 10). These references recommend that the battery be replaced if its capacity is below 80% of the manufacturer's rating, since IEEE-485 (Ref. 10) recommends using an aging factor of 125% in the battery size calculation. A capacity of 80% shows that the battery rate of deterioration is increasing, even if there is ample capacity to meet the load requirements.

The Frequency for this test is normally 60 months. If the battery shows degradation, or if the battery has reached 85% of its expected life and capacity is < 100% of the manufacturer's rating, the Surveillance Frequency is reduced to 12 months. However, if the battery shows no degradation but has reached 85% of its expected life, the Surveillance Frequency is only reduced to 24 months for batteries that retain capacity ≥ 100% of the manufacturer's rating. Degradation is indicated, consistent with IEEE-450 (Ref. 8), when the battery capacity drops by more than 10% relative to its capacity on the previous performance test or when it is ≥ 10% below the manufacturer's rating. The 12 month and 60 month Frequencies are consistent with the recommendations in IEEE-450 (Ref. 8). The 24 month Frequency is derived from the recommendations of IEEE-450 (Ref. 8).

REFERENCES

1. UFSAR, Section 3.1.2.2.8.
2. Safety Guide 6, March 10, 1971.
3. IEEE Standard 308, 1974.
4. UFSAR, Section 8.3.2.
5. UFSAR, Chapter 6.
6. UFSAR, Chapter 15.
7. Regulatory Guide 1.93, Revision 0, December 1974.
8. IEEE Standard 450, 1995.
9. Regulatory Guide 1.32, Revision 2, February 1977.
10. IEEE Standard 485, 1978.

B 3.8 ELECTRICAL POWER SYSTEMS

B 3.8.5 DC Sources - Shutdown

BASES

BACKGROUND

A description of the DC sources is provided in the Bases for LCO 3.8.4, "DC Sources - Operating."

APPLICABLE SAFETY ANALYSES

The initial conditions of Design Basis Accident and transient analyses in the UFSAR, Chapter 6 (Ref. 1) and Chapter 15 (Ref. 2), assume that Engineered Safety Feature systems are OPERABLE. The DC electrical power system provides normal and emergency DC electrical power for the diesel generators (DGs), emergency auxiliaries, and control and switching during all MODES of operation and during movement of irradiated fuel assemblies in the secondary containment.

The OPERABILITY of the DC subsystems is consistent with the initial assumptions of the accident analyses and the requirements for the supported systems' OPERABILITY.

The OPERABILITY of the minimum DC electrical power sources during MODES 4 and 5 and during movement of irradiated fuel assemblies in the secondary containment ensures that:

a. The facility can be maintained in the shutdown or refueling condition for extended periods;

b. Sufficient instrumentation and control capability is available for monitoring and maintaining the unit status; and

c. Adequate DC electrical power is provided to mitigate events postulated during shutdown, such as an inadvertent draindown of the vessel or a fuel handling accident.

The DC sources satisfy Criterion 3 10 CFR 50.36(c)(2)(ii).

(continued)

BASES (continued)

LCO

The DC electrical power subsystems - with: a) each 250 VDC subsystem consisting of one 250 VDC battery, one battery charger, and the corresponding control equipment and interconnecting cabling supplying power to the associated buses; b) the Division 1 and 2 125 VDC subsystem each consisting of one battery, one battery charger, and the corresponding control equipment and interconnecting cabling supplying power to the associated buses; and c) opposite unit Division 2 125 VDC subsystem consisting of one battery, one charger, and the corresponding control equipment, buses and interconnecting cabling supplying power to the associated opposite unit buses - are required to be OPERABLE to support required DC distribution subsystems required OPERABLE by LCO 3.8.8, "Distribution Systems - Shutdown." This requirement ensures the availability of sufficient DC electrical power sources to operate the unit in a safe manner and to mitigate the consequences of postulated events during shutdown (e.g., fuel handling accidents and inadvertent reactor vessel draindown). The associated alternate 125 VDC electrical power subsystem may be used to satisfy the requirements of the Division 1 and 2 125 VDC subsystems as well as the opposite unit Division 2 125 VDC subsystem.

APPLICABILITY

The DC electrical power sources required to be OPERABLE in MODES 4 and 5 and during movement of irradiated fuel assemblies in the secondary containment provide assurance that:

a. Required features to provide adequate coolant inventory makeup are available for the irradiated fuel assemblies in the core in case of an inadvertent draindown of the reactor vessel;

b. Required features needed to mitigate a fuel handling accident are available;

c. Required features necessary to mitigate the effects of events that can lead to core damage during shutdown are available; and

d. Instrumentation and control capability is available for monitoring and maintaining the unit in a cold shutdown condition or refueling condition.

(continued)

BASES

APPLICABILITY (continued)	The DC electrical power requirements for MODES 1, 2, and 3 are covered in LCO 3.8.4.

ACTIONS

LCO 3.0.3 is not applicable while in MODE 4 or 5. However, since irradiated fuel assembly movement can occur in MODE 1, 2, or 3, the ACTIONS have been modified by a Note stating that LCO 3.0.3 is not applicable. If moving irradiated fuel assemblies while in MODE 4 or 5, LCO 3.0.3 would not specify any action. If moving irradiated fuel assemblies while in MODE 1, 2, or 3, the fuel movement is independent of reactor operations. Entering LCO 3.0.3 while in MODE 1, 2, or 3 would require the unit to be shutdown, but would not require immediate suspension of movement of irradiated fuel assemblies. The Note to the ACTIONS, "LCO 3.0.3 is not applicable," ensures that the actions for immediate suspension of irradiated fuel assembly movement are not postponed due to entry into LCO 3.0.3.

<u>A.1, A.2.1, A.2.2, A.2.3, and A.2.4</u>

If more than one DC distribution subsystem is required according to LCO 3.8.8, the DC electrical power subsystems remaining OPERABLE with one or more DC electrical power subsystems inoperable may be capable of supporting sufficient required features to allow continuation of CORE ALTERATIONS, fuel movement, and operations with a potential for draining the reactor vessel. By allowance of the option to declare required features inoperable with associated DC electrical power subsystem(s) inoperable, appropriate restrictions are implemented in accordance with the affected system LCOs' ACTIONS. However, in many instances, this option may involve undesired administrative efforts. Therefore, the allowance for sufficiently conservative actions is made (i.e., to suspend CORE ALTERATIONS, movement of irradiated fuel assemblies in the secondary containment, and any activities that could result in inadvertent draining of the reactor vessel).

Suspension of these activities shall not preclude completion of actions to establish a safe conservative condition. These actions minimize the probability of the occurrence of postulated events. It is further required to immediately initiate action to restore the required DC electrical power

(continued)

BASES

ACTIONS

A.1, A.2.1, A.2.2, A.2.3, and A.2.4 (continued)

subsystems and to continue this action until restoration is accomplished in order to provide the necessary DC electrical power to the plant safety systems.

The Completion Time of immediately is consistent with the required times for actions requiring prompt attention. The restoration of the required DC electrical power subsystems should be completed as quickly as possible in order to minimize the time during which the plant safety systems may be without sufficient power.

SURVEILLANCE REQUIREMENTS

SR 3.8.5.1

SR 3.8.5.1 requires all Surveillances required by SR 3.8.4.1 through SR 3.8.4.9 to be applicable. Therefore, see the corresponding Bases for LCO 3.8.4 for a discussion of each SR.

This SR is modified by a Note. The reason for the Note is to preclude requiring the OPERABLE 250 VDC sources from being discharged below their capability to provide the required power supply or otherwise rendered inoperable during the performance of SRs. It is the intent that these SRs must still be capable of being met, but actual performance is not required.

REFERENCES

1. UFSAR, Chapter 6.

2. UFSAR, Chapter 15.

B 3.8 ELECTRICAL POWER SYSTEMS

B 3.8.6 Battery Cell Parameters

BASES

BACKGROUND

This LCO delineates the limits on electrolyte temperature, level, float voltage, and specific gravity for the DC electrical power subsystems batteries. A discussion of these batteries and their OPERABILITY requirements is provided in the Bases for LCO 3.8.4, "DC Sources - Operating," and LCO 3.8.5, "DC Sources - Shutdown."

APPLICABLE SAFETY ANALYSES

The initial conditions of Design Basis Accident (DBA) and transient analyses in UFSAR, Chapter 6 (Ref. 1) and Chapter 15 (Ref. 2), assume Engineered Safety Feature systems are OPERABLE. The DC electrical power subsystems provide normal and emergency DC electrical power for the diesel generators (DGs), emergency auxiliaries, and control and switching during all MODES of operation.

The OPERABILITY of the DC subsystems is consistent with the initial assumptions of the accident analyses and is based upon meeting the design basis of the unit as discussed in the Bases for LCO 3.8.4 and LCO 3.8.5.

Since battery cell parameters support the operation of the DC electrical power subsystems, they satisfy Criterion 3 of 10 CFR 50.36(c)(2)(ii).

LCO

Battery cell parameters must remain within acceptable limits to ensure availability of the required DC power to shut down the reactor and maintain it in a safe condition after an anticipated operational occurrence or a postulated DBA. Electrolyte limits are conservatively established, allowing continued DC electrical system function even with Category A and B limits not met.

APPLICABILITY

The battery cell parameters are required solely for the support of the associated DC electrical power subsystem. Therefore, these cell parameters are only required when the associated DC electrical power subsystem is required to be OPERABLE. Refer to the Applicability discussions in Bases for LCO 3.8.4 and LCO 3.8.5.

(continued)

BASES (continued)

ACTIONS

The ACTIONS Table is modified by a Note which indicates that separate Condition entry is allowed for each battery. This is acceptable, since the Required Actions for each Condition provide appropriate compensatory actions for each inoperable DC electrical power subsystem. Complying with the Required Actions for one inoperable DC electrical power subsystem may allow for continued operation, and subsequent inoperable DC electrical power subsystem(s) are governed by separate Condition entry and application of associated Required Actions.

A.1, A.2, and A.3

With parameters of one or more cells in one or more batteries not within Table 3.8.6-1 limits (i.e., Category A limits not met or Category B limits not met, or Category A and B limits not met) but within the Category C limits specified in Table 3.8.6-1, the battery is degraded but there is still sufficient capacity to perform the intended function. Therefore, the affected battery is not required to be considered inoperable solely as a result of Category A or B limits not met, and continued operation is permitted for a limited period.

The pilot cell(s) electrolyte level and float voltage are required to be verified to meet the Category C limits within 1 hour (Required Action A.1). This check provides a quick indication of the status of the remainder of the battery cells. One hour provides time to inspect the electrolyte level and to confirm the float voltage of the pilot cell(s). One hour is considered a reasonable amount of time to perform the required verification.

Verification that the Category C limits are met (Required Action A.2) provides assurance that during the time needed to restore the parameters to the Category A and B limits, the battery is still capable of performing its intended function. A period of 24 hours is allowed to complete the initial verification because specific gravity measurements must be obtained for each connected cell. Taking into consideration both the time required to perform the required verification and the assurance that the battery cell parameters are not severely degraded, this time is

(continued)

BASES

ACTIONS

A.1, A.2, and A.3 (continued)

considered reasonable. The verification is repeated at 7 day intervals until the parameters are restored to Category A and B limits. This periodic verification is consistent with the normal Frequency of pilot cell Surveillances.

Continued operation is only permitted for 31 days before battery cell parameters must be restored to within Category A and B limits. Taking into consideration that, while battery capacity is degraded, sufficient capacity exists to perform the intended function and to allow time to fully restore the battery cell parameters to normal limits, this time is acceptable for operation prior to declaring the associated DC batteries inoperable.

B.1

When any battery parameter is outside the Table 3.8.6-1 Category C limit for any connected cell, sufficient capacity to supply the maximum expected load requirement is not ensured and the corresponding DC electrical power subsystem must be declared inoperable. Additionally, other potentially extreme conditions, such as any Required Actions of Condition A and associated Completion Time not met or average electrolyte temperature of representative cells $\leq$ 65°F, also are cause for immediately declaring the associated DC electrical power subsystem inoperable.

SURVEILLANCE REQUIREMENTS

SR 3.8.6.1

This SR verifies that Table 3.8.6-1 Category A battery cell parameters are consistent with IEEE-450 (Ref. 3), which recommends regular battery inspections (at least one per month) including voltage, specific gravity, and electrolyte level of pilot cells.

SR 3.8.6.2

The quarterly inspection of specific gravity, voltage, and electrolyte level for each connected cell is consistent with IEEE-450 (Ref. 3). In addition, within 7 days of a battery

(continued)

BASES

SURVEILLANCE REQUIREMENTS

SR 3.8.6.2 (continued)

discharge < 105 V for a 125 V battery and < 210 V for a 250 V battery, or a battery overcharge > 150 V for a 125 V battery and > 300 V for a 250 V battery, the battery must be demonstrated to meet Table 3.8.6-1 Category B limits. Transients, such as motor starting transients, which may momentarily cause battery voltage to drop to < 105 V or < 210 V, as applicable, do not constitute a battery discharge provided the battery terminal voltage and float current return to pre-transient values. This inspection is also consistent with IEEE-450 (Ref. 3), which recommends special inspections following a severe discharge or overcharge, to ensure that no significant degradation of the battery occurs as a consequence of such discharge or overcharge. The 7 day requirement is based on engineering judgement.

SR 3.8.6.3

This Surveillance verification that the average temperature of representative cells is within limits is consistent with a recommendation of IEEE-450 (Ref. 3) that states that the temperature of electrolytes in representative cells should be determined on a quarterly basis. For this SR, a check of 10% of the connected cells is considered representative.

Lower than normal temperatures act to inhibit or reduce battery capacity. This SR ensures that the operating temperatures remain within an acceptable operating range. This limit is based on manufacturer's recommendations and the battery sizing calculation.

Table 3.8.6-1

This Table delineates the limits on electrolyte level, float voltage, and specific gravity for three different categories. The meaning of each category is discussed below.

Category A defines the normal parameter limit for each designed pilot cell in each battery. The cells selected as pilot cells are those whose temperature, voltage, and

(continued)

BASES

SURVEILLANCE REQUIREMENTS

Table 3.8.6-1 (continued)

electrolyte specific gravity approximate the state of charge of the entire battery.

The Category A limits specified for electrolyte level are based on manufacturer's recommendations and are consistent with the guidance in IEEE-450 (Ref. 3), with the extra ¼ inch allowance above the high water level indication for operating margin to account for temperature and charge effects. In addition to this allowance, footnote (a) to Table 3.8.6-1 permits the electrolyte level to be temporarily above the specified maximum level during and following an equalizing charge (i.e., for up to 3 days following the completion of an equalize charge), provided it is not overflowing. These limits ensure that the plates suffer no physical damage, and that adequate electron transfer capability is maintained in the event of transient conditions. IEEE-450 (Ref. 3) recommends that electrolyte level readings should be made only after the battery has been at float charge for at least 72 hours.

The Category A limit specified for float voltage is ≥ 2.13 V per cell. This value is based on the recommendation of IEEE-450 (Ref. 3), which states that prolonged operation of cells below 2.13 V can reduce the life expectancy of cells.

The Category A limit specified for specific gravity for each pilot cell is ≥ 1.200 (0.015 below the manufacturer's fully charged nominal specific gravity or a battery charging current that had stabilized at a low value). This value is characteristic of a charged cell with adequate capacity. According to IEEE-450 (Ref. 3), the specific gravity readings are based on a temperature of 77°F (25°C).

The specific gravity readings are corrected for actual electrolyte temperature and level. For each 3°F (1.67°C) above 77°F (25°C), 1 point (0.001) is added to the reading; 1 point is subtracted for each 3°F below 77°F. The specific gravity of the electrolyte in a cell increases with a loss of water due to electrolysis or evaporation. Level correction will be in accordance with manufacturer's recommendations.

(continued)

BASES

SURVEILLANCE REQUIREMENTS

Table 3.8.6-1 (continued)

Category B defines the normal parameter limits for each connected cell. The term "connected cell" excludes any battery cell that may be jumpered out.

The Category B limits specified for electrolyte level and float voltage are the same as those specified for Category A and have been discussed above. The Category B limit specified for specific gravity for each connected cell is $\geq$ 1.195 (0.020 below the manufacturer's fully charged, nominal specific gravity) with the average of all connected cells 1.205 (0.010 below the manufacturer's fully charged, nominal specific gravity). These values are based on manufacturer's recommendations. The minimum specific gravity value required for each cell ensures that a cell with a marginal or unacceptable specific gravity is not masked by averaging with cells having higher specific gravities.

Category C defines the limits 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 C limits, the assurance of sufficient capacity described above no longer exists, and the battery must be declared inoperable.

The Category C limit specified for electrolyte level (above the top of the plates and not overflowing) ensures that the plates suffer no physical damage and maintain adequate electron transfer capability. The Category C limit for voltage is based on IEEE-450 (Ref. 3), which states that a cell voltage of 2.07 V or below, under float conditions and not caused by elevated temperature of the cell, indicates internal cell problems and may require cell replacement.

The Category C limit on average specific gravity $\geq$ 1.195, is based on manufacturer's recommendations (0.020 below the manufacturer's recommended fully charged, nominal specific gravity). In addition to that limit, it is required that the specific gravity for each connected cell must be no more than 0.020 below the average of all connected cells. This limit ensures that a cell with a marginal or unacceptable specific gravity is not masked by averaging with cells having higher specific gravities.

(continued)

BASES

SURVEILLANCE REQUIREMENTS

Table 3.8.6-1 (continued)

The footnotes to Table 3.8.6-1 that apply to specific gravity are applicable to Category A, B, and C specific gravity. Footnote (b) requires the above mentioned correction for electrolyte level and temperature.

Because of specific gravity gradients that are produced during the recharging process, delays of several days may occur while waiting for the specific gravity to stabilize. A stabilized charging current is an acceptable alternative to specific gravity measurement for determining the state of charge of the designated pilot cell. This phenomenon is discussed in IEEE-450 (Ref. 3). Footnote (c) allows the float charge current to be used as an alternate to specific gravity for up to 7 days following a battery recharge. Within 7 days, each connected cell's specific gravity must be measured to confirm the state of charge. Following a minor battery recharge (such as equalizing charge that does not follow a deep discharge) specific gravity gradients are not significant, and confirming measurements may be made in less than 7 days.

REFERENCES

1. UFSAR, Chapter 6.

2. UFSAR, Chapter 15.

3. IEEE Standard 450, 1995.

B 3.8 ELECTRICAL POWER SYSTEMS

B 3.8.7 Distribution Systems - Operating

BASES

BACKGROUND

The onsite Class 1E AC electrical power distribution system for each unit is, for the most part, divided into redundant and independent AC electrical power distribution subsystems (Divisions 1 and 2).

Each AC distribution subsystem consists of two 4160 V Essential Service System (ESS) buses having an offsite source of power as well as an onsite diesel generator (DG) source. During normal operation, each subsystem's ESS buses are connected such that power is supplied to the Division 1 4160 V loads from the unit's main generator through a unit auxiliary transformer (UAT) and from the offsite circuit (via the 138 kV switchyard for Unit 2 and the 345 kV switchyard for Unit 3) through the reserve auxiliary transformer (RAT) to supply the Division 2 4160 V loads. The RAT is the primary (normal) offsite power source to the ESS buses of a given unit. The RAT of the opposite unit provides the alternate qualified offsite source through bus ties provided between the corresponding ESS buses of the two units. During a loss of the normal offsite power source to the 4160 V ESS buses, the alternate supply breaker attempts to close. If all offsite sources are unavailable, the onsite emergency unit DGs supply power to the 4160 V ESS buses.

Each AC distribution subsystem also includes 480 VAC ESS buses 28 and 29 (Unit 2) and buses 38 and 39 (Unit 3), associated motor control centers, transformers, and distribution panels.

The 120 VAC instrument bus is normally powered from 480 VAC bus 28-2 for Unit 2 and 480 VAC bus 38-2 for Unit 3. The alternate power supply for the Unit 2 120 VAC instrument bus is supplied from 480 VAC MCC 25-2 and the Unit 3 120 VAC instrument bus is supplied from 480 VAC MCC 35-2. On a loss of normal power to the instrument bus an automatic bus transfer (ABT) switches to the alternate supply and automatically switches back to the normal supply when the normal supply is restored.

(continued)

BASES

BACKGROUND (continued)

The 120 VAC essential service bus is normally supplied by a static uninterruptible power supply (UPS). Power to the UPS is supplied in order of preference; for Unit 2 by 480 VAC bus 29, 250 VDC bus 2, or 480 VAC bus 25; and for Unit 3 by 480 VAC bus 39, 250 VDC bus 3, or 480 VAC bus 36. An alternate supply via an ABT for the Unit 2 120 VAC essential service bus is supplied from 480 VAC bus 28-2 and the Unit 3 120 VAC essential service bus is supplied from 480 VAC bus 38-2.

There is one 250 VDC station service electrical power distribution subsystem (i.e., the 250 VDC system consists of one subsystem) and two independent 125 VDC electrical power distribution subsystems that support the necessary power for ESF functions. The 250 VDC electrical power distribution subsystem provides motive power to the larger Division 2 DC loads such as DC motor-driven pumps and valves. The power source for the reactor building 250 VDC buses (2A/2B and 3A/3B) is the opposite unit's battery. Division 1 and 2 125 VDC electrical power distribution subsystems provide control power to selected safety related equipment as well as circuit breaker control power for 4160 V, 480 V, control relays, and annunciators. The Division 2 125 VDC subsystem for each unit is provided power by the opposite unit's battery and provides control power to a shared standby gas treatment subsystem.

The list of required distribution buses is presented in Table B 3.8.7-1.

APPLICABLE SAFETY ANALYSES

The initial conditions of Design Basis Accident (DBA) and transient analyses in the UFSAR, Chapter 6 (Ref. 1) and Chapter 15 (Ref. 2), assume ESF systems are OPERABLE. The AC and DC electrical power distribution systems 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. These limits are discussed in more detail in the Bases for Section 3.2, Power Distribution Limits; Section 3.5, Emergency Core Cooling Systems (ECCS) and Isolation Condenser (IC) System; and Section 3.6, Containment Systems.

(continued)

BASES

APPLICABLE SAFETY ANALYSES (continued)

The OPERABILITY of the AC and DC electrical power distribution subsystems is consistent with the initial assumptions of the accident analyses and is based upon meeting the design basis of the unit. This includes maintaining distribution systems OPERABLE during accident conditions in the event of:

a. An assumed loss of all offsite power or all onsite AC electrical power; and

b. A worst case single failure.

The AC and DC electrical power distribution system satisfies Criterion 3 of 10 CFR 50.36(c)(2)(ii).

LCO

The required electrical power distribution subsystems listed in Table B 3.8.7-1 ensure the availability of AC and DC electrical power for the systems required to shut down the reactor and maintain it in a safe condition after an anticipated operational occurrence (AOO) or a postulated DBA. The AC and DC electrical power distribution subsystems are required to be OPERABLE. As noted in Table B 3.8.7-1 (Footnote a), each division of the AC and DC electrical power distribution systems is a subsystem.

Maintaining the Division 1 and 2 AC and DC electrical power distribution subsystems OPERABLE, as well as portions of the opposite unit's Division 2 AC and DC electrical power distribution subsystems necessary to support equipment required to be OPERABLE by LCO 3.6.4.3, "Standby Gas Treatment (SGT) System," LCO 3.7.4, "Control Room Emergency Ventilation (CREV) System" (Unit 3 only), LCO 3.7.5, "Control Room Emergency Ventilation Air Conditioning (AC) System" (Unit 3 only), and LCO 3.8.1, "AC Sources—Operating," ensures that the redundancy incorporated into the design of ESF is not defeated. Therefore, a single failure within any system or within the electrical power distribution subsystems will not prevent safe shutdown of the reactor.

The AC electrical power distribution subsystems require the associated buses and electrical circuits to be energized to their proper voltages. OPERABLE DC electrical power

(continued)

BASES

LCO (continued)

distribution subsystems require the associated buses to be energized to their proper voltage from either the associated battery or charger.

Based on the number of safety significant electrical loads associated with each bus listed in Table B 3.8.7-1, if one or more of the buses becomes inoperable, entry into the appropriate ACTIONS of LCO 3.8.7 is required. Some buses, such as distribution panels, which help comprise the AC and DC distribution systems are not listed in Table B 3.8.7-1. The loss of electrical loads associated with these buses may not result in a complete loss of a redundant safety function necessary to shut down the reactor and maintain it in a safe condition. Therefore, should one or more of these buses become inoperable due to a failure not affecting the OPERABILITY of a bus listed in Table B 3.8.7-1 (e.g., a breaker supplying a single distribution panel fails open), the individual loads on the bus would be considered inoperable, and the appropriate Conditions and Required Actions of the LCOs governing the individual loads would be entered. However, if one or more of these buses is inoperable due to a failure also affecting the OPERABILITY of a bus listed in Table B 3.8.7-1 (e.g., loss of 4160 V ESS bus, which results in de-energization of all buses powered from the 4160 V ESS bus), then although the individual loads are still considered inoperable, the Conditions and Required Actions of the LCO for the individual loads are not required to be entered, since LCO 3.0.6 allows this exception (i.e., the loads are inoperable due to the inoperability of a support system governed by a Technical Specification; the 4160 V ESS bus).

In addition, tie breakers between redundant safety related AC and DC power distribution subsystems must be open. This prevents any electrical malfunction in any power distribution subsystem from propagating to the redundant subsystem, which could cause the failure of a redundant subsystem and a loss of essential safety function(s). If any tie breakers are closed, the electrical power distribution subsystems that are not being powered from their normal source (i.e., they are being powered from their redundant electrical power distribution subsystem) are considered inoperable. This applies to the onsite, safety related, redundant electrical power distribution subsystems. It does not, however, preclude redundant Class 1E 4160 V ESS buses from being powered from the same offsite circuit.

(continued)

BASES (continued)

APPLICABILITY

The electrical power distribution subsystems are required to be OPERABLE in MODES 1, 2, and 3 to ensure that:

a. Acceptable fuel design limits and reactor coolant pressure boundary limits are not exceeded as a result of AOOs or abnormal transients; and

b. Adequate core cooling is provided, and containment OPERABILITY and other vital functions are maintained in the event of a postulated DBA.

Electrical power distribution subsystem requirements for MODES 4 and 5 and other conditions in which AC and DC electrical power distribution subsystems are required are covered in the Bases for LCO 3.8.8, "Distribution Systems – Shutdown."

ACTIONS

A.1

With one or more required AC buses, motor control centers, or distribution panels inoperable and a loss of function has not yet occurred, the remaining AC electrical power distribution subsystems are capable of supporting the minimum safety functions necessary to shut down the reactor and maintain it in a safe shutdown condition, assuming no single failure. The overall reliability is reduced, however, because a single failure in the remaining electrical power distribution subsystems could result in the minimum required ESF functions not being supported. Therefore, the required AC buses, motor control centers, and distribution panels must be restored to OPERABLE status within 8 hours.

The Condition A worst scenario is one division without AC power (i.e., no offsite power to the division and the associated DG inoperable). In this situation, the unit is more vulnerable to a complete loss of AC power. It is, therefore, imperative that the unit operators' attention be focused on minimizing the potential for loss of power to the remaining division by stabilizing the unit and restoring power to the affected division. The 8 hour time limit before requiring a unit shutdown in this Condition is acceptable because of:

(continued)

BASES

ACTIONS

A.1 (continued)

a. The potential for decreased safety if the unit operators' attention is diverted from the evaluations and actions necessary to restore power to the affected division to the actions associated with taking the unit to shutdown within this time limit.

b. The low potential for an event in conjunction with a single failure of a redundant component in the division with AC power. (The redundant component is verified OPERABLE in accordance with Specification 5.5.11, "Safety Function Determination Program (SFDP).")

The second Completion Time for Required Action A.1 establishes a limit on the maximum time allowed for any combination of required distribution subsystems to be inoperable during any single contiguous occurrence of failing to meet LCO 3.8.7.a or b. If Condition A is entered while, for instance, a DC electrical power distribution subsystem is inoperable and subsequently returned OPERABLE, LCO 3.8.7.a or b may already have been not met for up to 2 hours. This situation could lead to a total duration of 10 hours, since initial failure of LCO 3.8.7.a or b to restore the AC electrical power distribution subsystem. At this time a DC electrical power distribution subsystem could again become inoperable, and the AC electrical power distribution subsystem could be restored OPERABLE. This could continue indefinitely.

This Completion Time allows for an exception to the normal "time zero" for beginning the allowed outage time "clock." This results in establishing the "time zero" at the time LCO 3.8.7.a or b was initially not met, instead of at the time Condition A was entered. The 16 hour Completion Time is an acceptable limitation on this potential to fail to meet LCO 3.8.7.a or b indefinitely.

B.1

With the essential service 120 VAC bus inoperable, the opposite unit's OPERABLE electrical power distribution systems are capable of supporting the minimum safety

(continued)

BASES

ACTIONS

B.1 (continued)

functions (i.e., a standby gas treatment subsystem) necessary to shut down the unit and maintain it in the safe shutdown condition. Overall reliability is reduced, however, since an additional single failure could result in the minimum required ESF functions not being supported. Therefore, the essential service 120 VAC bus must be restored to OPERABLE status within 8 hours by powering the bus from the associated uninterruptible power supply (UPS) inverter via inverted DC, inverter using internal AC source/rectifier, or Class 1E constant voltage transformer.

Condition B represents the essential service 120 VAC bus without power; potentially both the DC source and the associated AC source are nonfunctioning. In this situation it is imperative that the operator's attention focus on stabilizing the plant and restoring power to the essential service bus.

This 8 hour limit is more conservative than Completion Times allow for the components supporting ESF functions that are without essential service 120 VAC power. Taking exception to LCO 3.0.2 for components without essential service 120 VAC power, that would have Required Action Completion Times shorter than 8 hours if declared inoperable, is acceptable because of:

a. The potential for decreased safety when requiring a change in plant conditions (i.e., requiring a shutdown) while not allowing stable operations to continue;

b. The potential for decreased safety when requiring entry into numerous applicable Conditions and Required Actions for components without essential service 120 VAC power, while not providing sufficient time for the operators to perform the necessary evaluations and actions to restore power to the essential service bus; and

c. The potential for an event in conjunction with a single failure of a redundant component.

(continued)

BASES

ACTIONS

B.1 (continued)

The 8 hour Completion Time takes into account the importance to safety of restoring the essential service 120 VAC bus to OPERABLE status, the redundant capability afforded by the opposite unit's OPERABLE essential service bus, and the low probability of a DBA occurring during this period.

The second Completion Time for Required Action B.1 establishes a limit on the maximum time allowed for any combination of required distribution subsystems to be inoperable during any single contiguous occurrence of failing to meet LCO 3.8.7.a or b. If Condition B is entered while, for instance, an AC electrical power distribution subsystem is inoperable and subsequently returned OPERABLE, LCO 3.8.7.a or b may already have been not met for up to 8 hours. This situation could lead to a total duration of 16 hours, since initial failure of LCO 3.8.7.a or b, to restore the essential service 120 VAC bus distribution subsystem. At this time an AC electrical power distribution subsystem could again become inoperable, and essential service 120 VAC bus distribution could be restored OPERABLE. This could continue indefinitely.

This Completion Time allows for an exception to the normal "time zero" for beginning the allowed outage time "clock." This allowance results in establishing the "time zero" at the time that LCO 3.8.7.a or b was initially not met, instead of at the time that Condition B was entered. The 16 hour Completion Time is an acceptable limitation on this potential to fail to meet LCO 3.8.7.a or b indefinitely.

C.1

With the instrument 120 VAC bus inoperable, the unit will still remain capable of supporting the minimum safety functions necessary to shut down the unit and maintain it in the safe shutdown condition. Overall reliability is reduced, however, since an additional single failure could result in the minimum required ESF functions not being supported. Therefore, the instrument 120 VAC bus must be restored to OPERABLE status within 8 hours by powering the bus from the associated automatic bus transfer (ABT) normal Class 1E power source.

(continued)

BASES

ACTIONS

C.1 (continued)

Condition C represents the instrument 120 VAC bus without power; potentially both the associated Class 1E AC source and the non-Class 1E source are nonfunctioning. In this situation it is imperative that the operator's attention focus on stabilizing the plant and restoring power to the instrument bus.

This 8 hour limit is equivalent to or more conservative than the Completion Times allowed for the majority of the components that are without instrument 120 VAC power. Taking exception to LCO 3.0.2 for components without instrument 120 VAC power, that would have Required Action Completion Times shorter than 8 hours if declared inoperable, is acceptable because of:

a. The potential for decreased safety when requiring a change in plant conditions (i.e., requiring a shutdown) while not allowing stable operations to continue;

b. The potential for decreased safety when requiring entry into numerous applicable Conditions and Required Actions for components without instrument 120 VAC power, while not providing sufficient time for the operators to perform the necessary evaluations and actions to restore power to the instrument bus; and

c. The potential for an event in conjunction with a single failure of a redundant component.

The 8 hour Completion Time takes into account the importance to safety of restoring the instrument 120 VAC bus to OPERABLE status, the existing capability to support the minimum ESF functions, and the low probability of a DBA occurring during this period.

The second Completion Time for Required Action C.1 establishes a limit on the maximum time allowed for any combination of required distribution subsystems to be inoperable during any single contiguous occurrence of failing to meet LCO 3.8.7.a or b. If Condition C is entered while, for instance, an AC electrical power distribution

(continued)

BASES

ACTIONS

C.1 (continued)

subsystem is inoperable and subsequently returned OPERABLE, LCO 3.8.7.a or b may already have been not met for up to 8 hours. This situation could lead to a total duration of 16 hours, since initial failure of LCO 3.8.7.a or b to restore the instrument 120 VAC bus distribution subsystem. At this time an AC electrical power distribution subsystem could again become inoperable, and instrument 120 VAC bus distribution could be restored OPERABLE. This could continue indefinitely.

This Completion Time allows for an exception to the normal "time zero" for beginning the allowed outage time "clock." This allowance results in establishing the "time zero" at the time that LCO 3.8.7.a or b was initially not met, instead of at the time that Condition C was entered. The 16 hour Completion Time is an acceptable limitation on this potential to fail to meet LCO 3.8.7.a or b indefinitely.

D.1

With one or more DC buses inoperable and a loss of safety function has not yet occurred, the remaining DC electrical power distribution subsystem (which may be the opposite unit's subsystem for a loss of the 250 VDC turbine building bus) is capable of supporting the minimum safety functions necessary to shut down the reactor and maintain it in a safe shutdown condition, assuming no single failure. The overall reliability is reduced, however, because a single failure in the remaining DC electrical power distribution subsystem could result in the minimum required ESF functions not being supported. Therefore, the required DC electrical power distribution subsystem(s) must be restored to OPERABLE status within 2 hours by powering the bus from the associated battery or charger.

Condition D worst scenario is one subsystem without adequate DC power, potentially with both the battery significantly degraded and the associated charger nonfunctioning. In this situation the plant is significantly more vulnerable to a complete loss of all DC power. It is, therefore, imperative that the operator's attention focus on stabilizing the

(continued)

BASES

ACTIONS

D.1 (continued)

plant, minimizing the potential for loss of power to the remaining subsystem, and restoring power to the affected subsystem.

This 2 hour limit is more conservative than Completion Times allowed for the majority of components that would be without power. Taking exception to LCO 3.0.2 for components without adequate DC power, which would have Required Action Completion Times shorter than 2 hours, is acceptable because of:

a. The potential for decreased safety when requiring a change in plant conditions (i.e., requiring a shutdown) while not allowing stable operations to continue;

b. The potential for decreased safety when requiring entry into numerous applicable Conditions and Required Actions for components without DC power, while not providing sufficient time for the operators to perform the necessary evaluations and actions for restoring power to the affected division;

c. The potential for an event in conjunction with a single failure of a redundant component.

The 2 hour Completion Time for DC electrical power distribution subsystems is consistent with Regulatory Guide 1.93 (Ref. 3).

The second Completion Time for Required Action D.1 establishes a limit on the maximum time allowed for any combination of required distribution subsystems to be inoperable during any single contiguous occurrence of failing to meet LCO 3.8.7.a or b. If Condition D is entered while, for instance, an AC electrical power distribution subsystem is inoperable and subsequently restored OPERABLE, LCO 3.8.7.a or b may already have been not met for up to 8 hours. This situation could lead to a total duration of 10 hours, since initial failure of LCO 3.8.7.a or b, to restore the DC electrical power distribution subsystem. At this time, an AC electrical power distribution subsystem

(continued)

BASES

ACTIONS

D.1 (continued)

could again become inoperable, and DC electrical power distribution could be restored OPERABLE. This could continue indefinitely.

This Completion Time allows for an exception to the normal "time zero" for beginning the allowed outage time "clock." This allowance results in establishing the "time zero" at the time LCO 3.8.7.a or b was initially not met, instead of at the time Condition D was entered. The 16 hour Completion Time is an acceptable limitation on this potential of failing to meet LCO 3.8.7.a or b indefinitely.

E.1

With the required opposite unit Division 2 AC and DC electrical power distribution subsystem inoperable, the redundant required features of the standby gas treatment (SGT) subsystem may not function if a design basis event were to occur. In addition, Unit 2 and Unit 3 share the single train Control Room Emergency Ventilation (CREV) and the associated Air Conditioning (AC) System. Since these systems are powered only from Unit 2, an inoperable Unit 2 Division 2 AC electrical power distribution subsystem could result in a loss of the CREV System and Control Room Emergency Ventilation AC System functions (for both units).

With a standby gas treatment (SGT) subsystem inoperable, LCO 3.6.4.3 requires restoration of the inoperable SGT subsystem to OPERABLE status in 7 days. Similarly, with the CREV System inoperable, LCO 3.7.4 requires restoration of the inoperable CREV System to OPERABLE status within 7 days. With the Control Room Emergency Ventilation AC System inoperable, LCO 3.7.5 requires restoration of the inoperable Control Room Emergency Ventilation AC System to OPERABLE status in 30 days. Therefore, a 7 day Completion Time is provided to restore the required opposite unit Division 2 AC and DC electrical power subsystem to OPERABLE status. The 7 day Completion Time is based on consideration of such factors as the availability of the OPERABLE redundant system(s) and the low probability of a DBA occurring during this time period.

(continued)

BASES

ACTIONS (continued)

F.1 and F.2

If the inoperable distribution subsystem cannot be restored to OPERABLE status within the associated Completion Time, the unit must be brought to a MODE in which the LCO does not apply. To achieve this status, the plant must be brought to at least MODE 3 within 12 hours and to MODE 4 within 36 hours. The allowed Completion Times are reasonable, based on operating experience, to reach the required plant conditions from full power conditions in an orderly manner and without challenging plant systems.

G.1

Condition G corresponds to a level of degradation in the electrical distribution system that causes a required safety function to be lost (single division systems are not included). When two or more AC or DC electrical power distribution subsystems are lost, and this results in the loss of a required function, the plant is in a condition outside the accident analysis. Therefore, no additional time is justified for continued operation. LCO 3.0.3 must be entered immediately to commence a controlled shutdown.

SURVEILLANCE REQUIREMENTS

SR 3.8.7.1

This Surveillance verifies that the AC and DC electrical power distribution subsystems and the essential service and instrument 120 VAC buses are functioning properly, with the correct circuit breaker alignment. The correct breaker alignment ensures the appropriate separation and independence of the electrical divisions are maintained, and the appropriate voltage is available to each required bus. The verification of proper voltage availability on the buses ensures that the required voltage is readily available for motive as well as control functions for critical system loads connected to these buses. The 7 day Frequency takes into account the redundant capability of the AC and DC electrical power distribution subsystems, redundant power supplies available to the essential service and instrument 120 VAC buses, and other indications available in the control room that alert the operator to bus and subsystem malfunctions.

(continued)

BASES (continued)

REFERENCES

1. UFSAR, Chapter 6.
2. UFSAR, Chapter 15.
3. Regulatory Guide 1.93, December 1974.

Table B 3.8.7-1 (page 1 of 1)
AC and DC Electrical Power Distribution Systems

TYPE	VOLTAGE	DIVISION 1[a]	DIVISION 2[a][b]
AC safety bus	4160 V (Unit 2)	ESS buses 23, 23-1	ESS buses 24, 24-1
	4160 V (Unit 3)	ESS buses 33, 33-1	ESS bus 34, 34-1
	480 V (Unit 2)	ESS bus 28	ESS bus 29
	480 V (Unit 3)	ESS bus 38	ESS bus 39
	120 V (Units 2 and 3)	Unit instrument bus	Unit essential service bus
250 VDC buses	250 V (Unit 2)	NA	TB MCC 2, RB MCC 2A, RB MCC 2B
	250 V (Unit 3)	NA	TB MCC 3, RB MCC 3A, RB MCC 3B
125 VDC buses	125 V (Unit 2)	TB main buses 2, 2A-1; RB distribution panel 2	TB reserve buses 2, 2B, 2B-1
	125 V (Unit 3)	TB main bus 3, 3A, 3A-1; RB distribution panel 3	TB reserve buses 3B, 3B-1

(a) Each division of the AC and DC electrical power distribution systems is a subsystem. The 250 VDC buses constitute a single subsystem (Division 2).

(b) OPERABILITY requirements of the opposite unit's Division 2 AC and DC electrical power distribution subsystem require OPERABILITY of the opposite unit's Division 2 4160 VAC, 480 VAC, essential services 120 VAC, and 125 VDC buses.

B 3.8 ELECTRICAL POWER SYSTEMS

B 3.8.8 Distribution Systems - Shutdown

BASES

BACKGROUND

A description of the AC and DC electrical power distribution systems is provided in the Bases for LCO 3.8.7, "Distribution Systems - Operating."

APPLICABLE SAFETY ANALYSES

The initial conditions of Design Basis Accident and transient analyses in the UFSAR, Chapter 6 (Ref. 1) and Chapter 15 (Ref. 2), assume Engineered Safety Feature (ESF) systems are OPERABLE. The AC and DC electrical power distribution systems 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 OPERABILITY of the AC and DC electrical power distribution system is consistent with the initial assumptions of the accident analyses and the requirements for the supported systems' OPERABILITY.

The OPERABILITY of the minimum AC and DC electrical power sources and associated power distribution subsystems during MODES 4 and 5, and during movement of irradiated fuel assemblies in the secondary containment ensures that:

a. The facility can be maintained in the shutdown or refueling condition for extended periods;

b. Sufficient instrumentation and control capability is available for monitoring and maintaining the unit status; and

c. Adequate power is provided to mitigate events postulated during shutdown, such as an inadvertent draindown of the vessel or a fuel handling accident.

The AC and DC electrical power distribution systems satisfy Criterion 3 of 10 CFR 50.36(c)(2)(ii).

(continued)

BASES (continued)

LCO

Various combinations of subsystems, equipment, and components are required OPERABLE by other LCOs, depending on the specific plant condition. Implicit in those requirements is the required OPERABILITY of necessary support features. This LCO explicitly requires energization of the portions of the electrical distribution system necessary to support OPERABILITY of Technical Specifications required systems, equipment, and components - both specifically addressed by their own LCO, and implicitly required by the definition of OPERABILITY.

Maintaining these portions of the distribution system energized ensures the availability of sufficient power to operate the plant in a safe manner to mitigate the consequences of postulated events during shutdown (e.g., fuel handling accidents and inadvertent reactor vessel draindown).

APPLICABILITY

The AC and DC electrical power distribution subsystems required to be OPERABLE in MODES 4 and 5 and during movement of irradiated fuel assemblies in the secondary containment provide assurance that:

a. 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;

b. Systems needed to mitigate a fuel handling accident are available;

c. Systems necessary to mitigate the effects of events that can lead to core damage during shutdown are available; and

d. Instrumentation and control capability is available for monitoring and maintaining the unit in a cold shutdown condition or refueling condition.

The AC and DC electrical power distribution subsystem requirements for MODES 1, 2, and 3 are covered in LCO 3.8.7.

(continued)

BASES (continued)

ACTIONS

LCO 3.0.3 is not applicable while in MODE 4 or 5. However, since irradiated fuel assembly movement can occur in MODE 1, 2, or 3, the ACTIONS have been modified by a Note stating that LCO 3.0.3 is not applicable. If moving irradiated fuel assemblies while in MODE 4 or 5, LCO 3.0.3 would not specify any action. If moving irradiated fuel assemblies while in MODE 1, 2, or 3, the fuel movement is independent of reactor operations. Entering LCO 3.0.3 while in MODE 1, 2, or 3 would require the unit to be shutdown, but would not require immediate suspension of movement of irradiated fuel assemblies. The Note to the ACTIONS, "LCO 3.0.3 is not applicable," ensures that the actions for immediate suspension of irradiated fuel assembly movement are not postponed due to entry into LCO 3.0.3.

A.1, A.2.1, A.2.2, A.2.3, A.2.4, and A.2.5

Although redundant required features may require redundant divisions of electrical power distribution subsystems to be OPERABLE, one OPERABLE distribution subsystem division may be capable of supporting sufficient required features to allow continuation of CORE ALTERATIONS, fuel movement, and operations with a potential for draining the reactor vessel. By allowing the option to declare required features associated with an inoperable distribution subsystem inoperable, appropriate restrictions are implemented in accordance with the affected distribution subsystem LCO's Required Actions. In many instances this option may involve undesired administrative efforts. Therefore, the allowance for sufficiently conservative actions is made, (i.e., to suspend CORE ALTERATIONS, movement of irradiated fuel assemblies in the secondary containment, and any activities that could result in inadvertent draining of the reactor vessel).

Suspension of these activities shall not preclude completion of actions to establish a safe conservative condition. These actions minimize the probability of the occurrence of postulated events. It is further required to immediately initiate action to restore the required AC and DC electrical power distribution subsystems and to continue this action until restoration is accomplished in order to provide the necessary power to the plant safety systems.

(continued)

BASES

ACTIONS

A.1, A.2.1, A.2.2, A.2.3, A.2.4, and A.2.5 (continued)

Notwithstanding performance of the above conservative Required Actions, a required shutdown cooling (SDC) subsystem may be inoperable. In this case, Required Actions A.2.1 through A.2.4 do not adequately address the concerns relating to coolant circulation and heat removal. Pursuant to LCO 3.0.6, the SDC ACTIONS would not be entered. Therefore, Required Action A.2.5 is provided to direct declaring SDC inoperable, which results in taking the appropriate SDC ACTIONS.

The Completion Time of immediately is consistent with the required times for actions requiring prompt attention. The restoration of the required distribution subsystems should be completed as quickly as possible in order to minimize the time the plant safety systems may be without power.

SURVEILLANCE REQUIREMENTS

SR 3.8.8.1

This Surveillance verifies that the required AC and DC electrical power distribution subsystems are functioning properly, with the buses energized. 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 7 day Frequency takes into account the redundant capability of the electrical power distribution subsystems, as well as other indications available in the control room that alert the operator to subsystem malfunctions.

REFERENCES

1. UFSAR, Chapter 6.

2. UFSAR, Chapter 15.

A.1

3.9 - LIMITING CONDITIONS FOR OPERATION

A. A.C. Sources - Operating

LCO 3.8.1 As a minimum, the following A.C. electrical power sources shall be OPERABLE:

LA.1 qualified

1. Two ~~physically independent~~ circuits between the offsite transmission network and the onsite Class 1E distribution system, and LCO 3.8.1.a

LA.1

2. Two ~~separate and independent~~ diesel generators~~, each with:~~ LCO 3.8.1.b

A.2 SR 3.8.1.4

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

LA.1

c. A separate fuel oil transfer pump.

M.1 add proposed LCO 3.8.1.c and d

APPLICABILITY:

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

add proposed Applicability Note

ACTION:

add proposed ACTIONS Note

1. With one of the above required offsite circuit power sources inoperable:

ACTION A

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.

add proposed Required Action A.2 M.2

4.9 - SURVEILLANCE REQUIREMENTS

A. A.C Sources - Operating

add proposed Surveillance Table Notes 1 and 2 M.1

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 SR 3.8.1.1

24 LD.1

b. At least once per ~~18~~ months by manually transferring the power supply from the normal circuit to the alternate circuit. SR 3.8.1.9

2. Each of the required diesel generators shall be demonstrated OPERABLE[a] at least once per 31 days by:

a. Verifying the fuel levels in both the fuel oil day tank and the bulk fuel storage tank. SR 3.8.1.4

b. Verifying the fuel transfer pump starts and transfers fuel from the bulk fuel storage system to the fuel oil day tank. SR 3.8.1.6

SR 3.8.1.2 Note 1

a All diesel generator starts may be preceded by an engine prelube period. All diesel generator starts that require loading may be preceded by an engine prelube period and followed by a warmup period prior to loading. Diesel generator loadings may include gradual loading as recommended by the manufacturer/vendor.

SR 3.8.1.3 Note 1

A.1

A.3 add proposed Note 2 to SR 3.8.1.2

3.9 - LIMITING CONDITIONS FOR OPERATION

ACTION A

b. 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.

L.1 add proposed Required Action A.3 2nd Completion Time

ACTION F

2. With one of the above required diesel generator power sources inoperable:

ACTION B

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 an inoperable support system, an independently testable component, or preplanned preventive maintenance or testing, demonstrate the OPERABILITY of the remaining OPERABLE diesel generator by performing Surveillance Requirement 4.9.A.2.c[(b)] within 24 hours unless the absence of any potential common mode failure for the remaining diesel generator is demonstrated (if it has not been successfully tested within the past 24 hours) and within the subsequent 72 hours, and

L.2

L.3

4.9 - SURVEILLANCE REQUIREMENTS

SR 3.8.1.2 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.

add proposed Note 3 to SR 3.8.1.2

A.5 A.4

208 A.13

SR 3.8.1.3 d. Verifying the diesel generator is synchronized, loaded to between 2470 and 2600 kW[(d)] in accordance with the manufacturer's/vendor's recommendations, and operates with this load for ≥60 minutes.

M.3 add proposed Note 4 to SR 3.8.1.3

2340 L.12

add proposed Note 5 to SR 3.8.1.3

A.4

e. Verifying the diesel generator is aligned to provide standby power to the associated emergency busses.

L.4

f. Verifying the pressure in required starting air receiver tanks to be ≥220 psig.

A.6 moved to ITS 3.8.3

SR 3.8.1.5 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.

L.5

SR 3.8.1.7 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.

L.2

c Surveillance Requirement 4.9.A.7 may be substituted for Surveillance Requirement 4.9.A.2.c.

A.5

Notes 1, 2, and 3 to SR 3.8.1.3

d Momentary transients outside of the load range do not invalidate this test. Diesel generator loadings may include gradual loading as recommended by the manufacturer/vendor. This surveillance shall be conducted on only one diesel generator at a time.

3.9 - LIMITING CONDITIONS FOR OPERATION

Required Action B.4

c. Restore the diesel generator to OPERABLE status within 7 days ~~or~~

add proposed Required Action B.4 2nd Completion Time

ACTION F

L.1

be in at least HOT SHUTDOWN within the next 12 hours and in COLD SHUTDOWN within the following 24 hours.

A.7

add proposed ACTION D Note

Condition D

3. With one of the above offsite circuit power sources and one of the above required diesel generator power sources inoperable:

Required Actions A.1 and B.1

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.

A.8

Required Action B.3.2

b. If the diesel generator is inoperable due to any cause other than preplanned preventive maintenance or testing, demonstrate the OPERABILITY(a) of the remaining OPERABLE diesel generator by performing Surveillance Requirement 4.9.A.2.c(b) within

L.2

L.3

Required Action B.3.1

24 ~~8~~ hours unless the absence of any potential common mode failure for the remaining diesel generator is demonstrated ~~(if it has not been successfully tested within the past 24 hours) and within the subsequent 72 hours for each OPERABLE diesel generator.~~

L.3

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

A.6

moved to ITS 3.8.3

b. Verifying prior to addition to the storage tanks that the sample meets the applicable ASTM standards for API gravity, water and sediment, and the visual test for free water and particulate contamination, and

c. Verifying within 31 days of obtaining the sample that the kinematic viscosity is within applicable ASTM limits.

6. Each of the required diesel generators shall be demonstrated OPERABLE by:

a. Sampling and analyzing the bulk fuel storage tanks at least once per 31 days in accordance with applicable ASTM standards, and

b. Verifying that the sample meets the applicable ASTM standards for water and sediment, kinematic viscosity, and ASTM particulate contaminant is <10 mg/liter.

~~a 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.~~ A.8

~~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.~~ L.2

A.1

A.4 add proposed Note 2 to SR 3.8.1.8

3.9 - LIMITING CONDITIONS FOR OPERATION

Required Actions D.1 and D.2

c. Restore at least one of the inoperable A.C. power sources to OPERABLE status within 12 hours

Action F

or be in at least HOT SHUTDOWN within the next 12 hours and in COLD SHUTDOWN within the following 24 hours, and

Required Actions A.3 and B.4

d. Restore both offsite circuits and both diesel generators to OPERABLE status within 7 days ~~from the time of the initial loss~~ or

Action F

be in at least HOT SHUTDOWN within the next 12 hours and in COLD SHUTDOWN within the following 24 hours.

Required Action B.2

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~~ 4 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. L.6

   b. Otherwise, take the applicable ACTIONs for both systems, subsystems, trains, components or devices inoperable, ~~or~~

Action F

be in at least HOT SHUTDOWN within the next 12 hours and in COLD SHUTDOWN within the following 24 hours.

4.9 - SURVEILLANCE REQUIREMENTS

SR 3.8.1.8

7. Each of the required diesel generators shall be demonstrated OPERABLE(a) at least once per 184 days by verifying(c) the diesel starts and accelerates to ~~synchronous speed~~ steady state in ≤13 seconds. The generator voltage and frequency ≥ 58.8 Hz and ≥ 3952 V shall be verified to reach 4160 ± ~~420~~ 208 volts and 60 ± 1.2 Hz, respectively, ~~in ≤13 seconds after the start signal~~.

A.9 A.5 L.7 A.13 L.7

8. Each of the required diesel generators shall be demonstrated OPERABLE(a) at least once per ~~18~~ 24 months by: LD.1

   ~~a. Deleted.~~

add proposed Required Action A.3 2nd Completion Time and Required Action B.4 2nd Completion Time L.1

SR 3.8.1.8 Note 1
SR 3.8.1.12 Note
SR 3.8.1.13 Note
SR 3.8.1.16 Note 2
SR 3.8.1.19 Note

a All diesel generator starts may be preceded by an engine prelube period. ~~All diesel generator starts that require loading may be preceded by an engine prelube period and followed by a warmup period prior to loading. Diesel generator loadings may include gradual loading as recommended by the manufacturer/vendor.~~ A.9

~~c Surveillance Requirement 4.9.A.7 may be substituted for Surveillance Requirement 4.9.A.2.c.~~ A.5

3.9 - LIMITING CONDITIONS FOR OPERATION

M.2

Action C

5. With two of the above required offsite circuit power sources inoperable:

add proposed Required Action C.1

a. 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 in COLD SHUTDOWN within the following 24 hours, and

Action F

Action A

b. 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.

L.1

Action F

Action E

6. With both of the above required diesel generator power sources inoperable:

Required Action B.1

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.

4.9 - SURVEILLANCE REQUIREMENTS

add proposed Note to SR 3.8.1.10

SR 3.8.1.10.a
SR 3.8.1.10.b

b. Verifying the diesel generator capability to reject its largest single emergency load (≥642 kW) while maintaining frequency ≤66.73 Hz and voltage at 4160 ± 420 208 volts.

LA.2 A.4 within 3 seconds A.13

add proposed SR 3.8.1.10.c

SR 3.8.1.11

c. Verifying the diesel generator capability to reject a load between 2470 2340 and 2600 kw[d], without tripping on overspeed. The generator voltage shall not exceed 5000 volts[g] during or following the load rejection.

L.12 A.9 L.13 A.10 A.4

add proposed Note 1 to SR 3.8.1.11

SR 3.8.1.12

d. Simulating a loss of offsite power by itself, and:

Actual or

L.8

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 ± 420 208 volts and 60 ± 1.2 Hz, respectively, during this test.

A.11

A.13

A.10 A.9 L.13

d ~~Momentary transients outside of the load range do not invalidate this test.~~ ~~Diesel generator loadings may include gradual loading as recommended by the manufacturer/vendor.~~ ~~This surveillance shall be conducted on only one diesel generator at a time.~~

SR 3.8.1.11 Note 2

g Momentary transients outside of the voltage limit do not invalidate this test.

3.9 - LIMITING CONDITIONS FOR OPERATION

A.8

Required Action E.1

b. Within 2 hours, restore at least one of the above required diesel generators to OPERABLE[a] status

Required Action B.2

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,

add 4 hour Completion Time

L.6

ACTION F

or be in at least HOT SHUTDOWN within the next 12 hours and in COLD SHUTDOWN within the following 24 hours.

Required Actions B.3.1 and B3.2

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

L.3

L.1

Required Action B.4

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

ACTION F

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

SR 3.8.1.13

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.

actual or

L.8

L.7

208

A.13

M.7

add proposed SR 3.8.1.13.d and e

SR 3.8.1.19

f. ~~Simulating~~ a loss of offsite power in conjunction with an ECCS actuation ~~test~~ signal, and

Actual or

L.8

actual or

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.

LA.3

208

A.13

A.6

moved to ITS 3.8.3

add ACTION G

A.12

~~a 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.~~

A.8

A.1

3.9 - LIMITING CONDITIONS FOR OPERATION **4.9 - SURVEILLANCE REQUIREMENTS**

SR 3.8.1.14

g. Verifying that all automatic diesel generator trips, except engine overspeed and generator differential current are automatically bypassed upon an emergency actuation signal. actual or simulated L.8 A.4

add proposed Note 2 to SR 3.8.1.15 M.4

add proposed Note 3 to SR 3.8.1.15

SR 3.8.1.15

h. Verifying the diesel generator operates for ≥24 hours. within the power factor limit During the first 2 hours of this test, the diesel generator shall be loaded to between 2730 and 2860 kW(e) and A.9 during the remaining 22 hours of this test, the diesel generator shall be loaded to between ~~2470~~ 2340 L.12 and 2600 kW(e). A.9 ~~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.~~ L.9 A.4 add proposed Note 3 to SR 3.8.1.16 Within 5 minutes after completing this 24 hour test, perform Surveillance Requirement 4.9.A.2.c(f). M.8

SR 3.8.1.16

~~i. Verifying that the auto-connected loads to each diesel generator do not exceed the 2000 hour rating of 2860 kW.~~ LA.4

SR 3.8.1.15 Note 1

d Momentary transients outside of the load range or power factor M.4 do not invalidate this test. ~~Diesel generator loadings may include gradual loading as recommended by the manufacturer/vendor.~~ A.9 ~~This surveillance shall be conducted on only one diesel generator at a time.~~ L.13

SR 3.8.1.16 Note 1

f If Surveillance Requirement 4.9.A.2.c 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~~ ≥ 2340 kW for ≥ 2 hours ~~or until the operating temperature has stabilized.~~ M.9

Momentary transients below the load limit do not invalidate the test.

A.1

3.9 - LIMITING CONDITIONS FOR OPERATION

4.9 - SURVEILLANCE REQUIREMENTS

j. Verifying the diesel generator's capability to:

SR 3.8.1.17

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 logic is OPERABLE with the interval between each load block within ± 10% of its design interval. SR 3.8.1.18

SR 3.8.1.20

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~~ 58.8 Hz in ≤13 seconds. A.9 L.10 L.11

add proposed minimum voltage in ≤ 13 sec M.10

~~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.6 moved to ITS 3.8.3

add proposed SR 3.8.1.21 M.1

SR 3.8.1.20 Note

a All diesel generator starts may be preceded by an engine prelube period. ~~All diesel generator starts that require loading may be preceded by an engine prelube period and followed by a warmup period prior to loading. Diesel generator loadings may include gradual loading as recommended by the manufacturer/vendor.~~ A.9

~~TABLE 4.9.A-1~~

~~DIESEL GENERATOR TEST SCHEDULE~~

~~(NOT USED)~~

ADMINISTRATIVE

A.1 In the conversion of the Dresden 2 and 3 current Technical Specifications (CTS) to the proposed plant specific Improved Technical Specifications (ITS), certain wording preferences or conventions are adopted that do not result in technical changes (either actual or interpretational). Editorial changes, reformatting, and revised numbering are adopted to make the ITS consistent with the BWR Standard Technical Specifications, NUREG-1433, Rev. 1 (i.e, the Improved Standard Technical Specifications (ISTS)).

A.2 The details relating to the required fuel oil day tank level in CTS 3.9.A.2.a and b have been moved to proposed SR 3.8.1.4. No technical changes are being made; therefore, this change is considered administrative in nature.

A.3 Note 2 has been added to CTS 4.9.A.2.c for clarity. The proposed Note allows a modified DG start involving idling and gradual acceleration to synchronous speed as recommended by the manufacturer. When modified start procedures are not used, the time, voltage, and frequency tolerance of CTS 4.9.A.7 (SR 3.8.1.8) must be met. Since CTS 4.9.A.2.c currently allows this (a time requirement is not specified), this change is considered to be administrative.

A.4 CTS 4.9.A.2.c, 4.9.A.2.d, 4.9.A.7, 4.9.A.8.b, 4.9.A.8.c, 4.9.A.8.h specify requirements for testing of the DG associated with both units. DG 2/3 is common to both units, and therefore, a Note is added to the ITS SRs (SR 3.8.1.2, SR 3.8.1.3, SR 3.8.1.8, SR 3.8.1.10, SR 3.8.1.11, SR 3.8.1.15, and SR 3.8.1.16) to clearly state current plant interpretation of Technical Specifications; i.e., a single test of the common DG at the specified Frequency will satisfy the Surveillance for both units. This is acceptable since the main purpose of the Surveillance can be met by performing the test on either unit. If the DG fails one of these Surveillances, the DG is considered inoperable on both units, unless the cause of the failure can be directly related to only one unit.

A.5 CTS 4.9.A.2.c footnote c and CTS 4.9.A.7 footnote c, which state that Surveillance Requirement 4.9.A.7 (the DG start with a 13 second time requirement) may be substituted for Surveillance Requirement 4.9.A.2.c (the slow start), has been deleted. This type of Note does not exist for other CTS requirements where another test may be credited. This is standard practice and fully satisfies the requirements with or without such specified identification. A specific Note in proposed SR 3.8.1.2 would present confusion for other SRs which may be satisfied by alternate testing but for which the specific SR does not contain a similar note. Since no technical changes are being made this change is considered to be administrative. This change is consistent with the approved changes in TSTF-253.

ADMINISTRATIVE (continued)

A.6 The technical content of CTS 3.9.A Action 7, 4.9.A.2.f. 4.9.A.5, 4.9.A.6, and 4.9.A.10 is being moved to ITS 3.8.3. This is in accordance with the format of the BWR ISTS, NUREG-1433, Rev. 1. Any technical changes to these requirements are addressed in the Discussion of Changes for ITS: 3.8.3.

A.7 AC Sources in CTS 3.9.A (ITS 3.8.1) are considered a support system to the Distribution System in CTS 3.9.E (ITS 3.8.7). In the event AC Sources are inoperable such that a distribution subsystem were inoperable, ITS LCO 3.0.6 would allow taking only the AC Sources ACTIONS; taking exception to complying with the AC Distribution System ACTIONS. Since the AC Sources ACTIONS may not be sufficiently conservative in this event (an entire division may be without power), specific direction to take appropriate ACTIONS for the Distribution System is added (ITS 3.8.1, Note to ACTION D) when there is no power for a division. This format and construction implements the existing treatment of this condition within the framework of the Dresden 2 and 3 Improved Technical Specification methods.

A.8 The CTS 3.9.A Action 3.b footnote e and CTS 3.9.A Action 6.b footnote e detail that 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 (one offsite circuit inoperable) or 2 (one DG inoperable) above has been deleted. ITS 1.3 (Completion Times) specifies the rules for entry into Conditions and how Completion Times must be applied. In the ITS, the allowances of this Note will be retained without the need to retain this explicit Note in CTS 3.9.A Action 3.b (ITS 3.8.1 ACTION D) or in CTS 3.9.A Action 6.b (ITS 3.8.1 ACTION E), since entry into all applicable ITS ACTIONs will be required. Since CTS 4.9.A.2.c (SR 3.8.1.2) is required by ITS 3.8.1 Required Action B.3.2, the requirement is covered. The CTS reference to Action 1 is incorrect since there are no diesel generator testing requirements with an offsite circuit inoperable. Therefore, since no technical changes have been made, this change is considered administrative.

A.9 CTS 4.9.A.7 footnote a allows "All diesel generator starts that require loading may be preceded by an engine prelube period and followed by a warmup period prior to loading. Diesel generator loadings may include gradual loading as recommended by the manufacturer/vendor." This footnote is consistent with current footnotes associated with CTS 4.9.A.2 (footnote a) and CTS 4.9.A.2.d (footnote d). CTS 4.9.A.2.d is the Surveillance in which loading is explicitly required. Since these Notes are retained in proposed SR 3.8.1.3 consistent with the current allowances, there is no need to retain them in CTS 4.9.A.7 (SR 3.8.1.8) since this Surveillance Requirement does not specify any explicit

ADMINISTRATIVE

A.9 (cont'd) loading requirements. Similarly, a portion of CTS 4.9.A.8.c footnote d, 4.9.A.8.h footnote d, and CTS 4.9.A.9 footnote a have been deleted for the same reason. Since these changes do not change any technical requirements, the removal of this Note is considered administrative.

A.10 CTS 4.9.A.8.c footnote d allows momentary transients outside of the load range during the full load reject test. This Note is not needed since the requirement specifies a load range which must be rejected and does not specify any explicit transient requirements for load. Since the Note is not necessary, its removal is considered administrative.

A.11 The requirement in CTS 4.9.A.8.d.2) to verify the energization of the auto-connected shutdown loads during the loss of offsite power test has been deleted. The Dresden 2 and 3 design does not include any auto-connected shutdown loads on a loss of offsite power by itself. All loads which are loaded during a loss of offsite power accident are considered to be "permanently connected loads." Since this change simply deletes inapplicable wording, this change is considered administrative.

A.12 The format of the ITS allows multiple Conditions to be simultaneously entered. With three or more AC sources inoperable (e.g., two offsite circuits and one DG), ACTIONS would be taken in accordance with ITS 3.8.1, and ITS LCO 3.0.3 entry conditions would not be met. However, CTS 3.9.A does not provide Actions for these conditions. Therefore, a CTS 3.0.C entry would be required. To preserve the existing intent for CTS 3.0.C entry, ITS 3.8.1 ACTION G is added to direct entry into ITS LCO 3.0.3.

A.13 These changes to CTS 3/4.9.A are provided in the Dresden 2 and 3 ITS consistent with the Technical Specification Change Request submitted to the NRC for approval per ComEd letter [, dated]. As such, these changes are considered administrative.

TECHNICAL CHANGES - MORE RESTRICTIVE

M.1 Two additional AC sources have been added to the minimum requirements in CTS 3.9.A for AC Sources — Operating. The requirements were added to ensure the appropriate AC sources are OPERABLE during unit operation in MODES 1, 2, and 3 to satisfy the requirements of UFSAR, Section 3.1.2.2.8. The new requirements were added as LCO 3.8.1.c and LCO 3.8.1.d. LCO 3.8.1.c will require one qualified circuit between the offsite transmission network and the opposite unit's Division 2 onsite Class 1E AC electrical power

TECHNICAL CHANGES - MORE RESTRICTIVE

M.1 (cont'd) distribution subsystem capable of supporting the equipment required to be OPERABLE by LCO 3.6.4.3, "Standby Gas Treatment (SGT) System," LCO 3.7.4, "Control Room Emergency Ventilation (CREV) System" (Unit 3 only), and LCO 3.7.5, "Control Room Emergency Ventilation Air Conditioning (AC) System" (Unit 3 only) and LCO 3.8.1.d will require the opposite unit's DG capable of supporting the equipment required to be OPERABLE by LCO 3.6.4.3, "Standby Gas Treatment (SGT) System," LCO 3.7.4, "Control Room Emergency Ventilation (CREV) System" (Unit 3 only), and LCO 3.7.5, "Control Room Emergency Ventilation Air Conditioning (AC) System" (Unit 3 only). These added requirements are necessary since safety related equipment is shared between both units (e.g., Standby Gas Treatment System and Control Room Emergency Ventilation System). The added requirements will help ensure the requirements of UFSAR, Section 3.1.2.2.8 are met for both offsite and onsite electrical power sources.

A Note has also been added to the Applicability which allows the opposite unit's AC electrical power sources in LCO 3.8.1.c and d to not be required when the associated equipment (SGT subsystem, CREV System (Unit 3 only), and Control Room Emergency Ventilation AC System (Unit 3 only)) is inoperable. This is an exception that is intended to allow declaring the opposite unit's Division 2 supported equipment inoperable either in lieu of declaring the opposite unit's Division 2 power source inoperable, or at any time subsequent to entering ACTIONS for an inoperable opposite unit's Division 2 power source. This exception is acceptable since, with some or all of the opposite unit Division 2 equipment inoperable and the associated ACTIONS entered, the opposite Division 2 AC sources provide no additional assurance of meeting the safety criteria of the given unit's AC sources.

An additional Note has been added to the ACTIONS which excludes the applicability of LCO 3.0.4 for inoperable opposite unit AC electrical power sources. This proposed Note allows entry into the applicable MODE while relying on the ACTIONS even though the ACTIONS may eventually require a plant shutdown. This allowance is acceptable due to the low probability of an event requiring the opposite unit equipment.

In addition, since the Specification has been prepared for both units consistent with existing Technical Specifications, two Notes have been added to the Surveillance Requirements (ITS Surveillance Table Notes 1 and 2) to clearly define the applicability of the Surveillances to both units. An additional Surveillance (SR 3.8.1.21) has also been added to ensure the opposite unit's power sources are properly tested.

TECHNICAL CHANGES - MORE RESTRICTIVE

M.1 (cont'd) Since additional explicit requirements have been added, this change is considered more restrictive on plant operation.

M.2 Two new Required Actions, ITS Required Actions A.2 and C.1, have been added to cover the situation when an offsite circuit is inoperable concurrent with a "redundant required feature." These Required Actions are similar to those required when a DG and a system, subsystem, train, component, or device are concurrently inoperable (CTS 3.9.A Action 4). Limiting these situations to 24 hours when one offsite circuit is inoperable (ITS 3.8.1 Required Action A.2) and 12 hours when both offsite circuits are inoperable (ITS 3.8.1 Required Action C.1) adds a restriction not currently imposed in the Dresden 2 and 3 CTS and will ensure that the necessary equipment remains powered to meet the UFSAR, Section 3.1.2.2.8 requirements.

M.3 Note 4 has been added to CTS 4.9.A.2.d. This Note requires that SR 3.8.1.3 be immediately preceded by a successful performance of SR 3.8.1.2 or SR 3.8.1.8 (the DG start Surveillances). This will ensure the DG load carrying capability is tested subsequent to a successful DG start test. While this Note clearly represents current Dresden 2 and 3 practice, it is more restrictive than the CTS since the SR could currently be performed without this restriction.

M.4 Limitations on the operating power factor are added to CTS 4.9.A.8.h, the 24-hour run Surveillance (proposed SR 3.8.1.15, including Note 2). These limitations ensure the DG is conservatively tested at as close to accident conditions as reasonable, provided the power factor can be attained. The actual power factor values have been added to the Bases. A Note has been also added to CTS 4.9.A.8.h (proposed SR 3.8.1.15 Note 1) to ensure a momentary transient that results in the power factor not being met does not invalidate the 24 hour run. These changes are more restrictive on plant operation.

M.5 Not used.

M.6 Not used.

M.7 Two new requirements have been added to CTS 4.9.A.8.e. SR 3.8.1.13.d and SR 3.8.1.13.e ensure that permanently connected loads remain energized from the offsite power system and that emergency loads are auto-connected to the offsite power system. This is an additional restriction on plant operation.

M.8 CTS 4.9.A.8.h requires a slow restart of each DG after the diesel has been loaded for a period of time. The requirement has been changed to require a fast restart test. The proposed requirement (SR 3.8.1.16) will require the

TECHNICAL CHANGES - MORE RESTRICTIVE

M.8 (cont'd) verification that each DG starts and achieves in ≤ 13 seconds, voltage ≥ 3952 V and frequency ≥ 58.8 Hz; and steady state voltage of ≥ 3952 V and ≤ 4368 V and frequency ≥ 58.8Hz and ≤ 61.2 Hz. The proposed requirement is consistent with RG 1.9, Rev. 3. This is an additional restriction on plant operation.

M.9 If CTS 4.9.A.8.h (the DG restart test portion) fails after the performance of the 24 hours DG load test, CTS 4.9.A.8.h footnote f currently allows the DG to be operated at "approximately" full load for 2 hours or until the operating temperature has stabilized. The proposed requirement provides an explicit load limit of ≥ 2340 kW and specifies that the DG operate for ≥ 2 hours at this load. The load limit is 90% of the continuous rating of the DG, consistent with the minimum load proposed for the monthly DG test (see Discussion of Change L.12 below). The 2 hour time limit at this load ensures operating temperatures are stabilized. Since an explicit load limit is provided and the option to monitor temperature conditions for stability has been deleted, this change places additional restrictions on plant operation. The proposed requirement is consistent with RG 1.9, Rev 3. In addition, due to the addition of an explicit load limit, an allowance has been provided to allow momentary transients below the 2340 kW load limit to not invalidate the 2 hour run requirement.

M.10 CTS 4.9.A.9, the 10 year DG simultaneous start test, does not provide a minimum voltage the DGs must attain within the 13 second DG start time assumed in the accident analysis. Proposed SR 3.8.1.20 requires the minimum voltage to be 3952 V. The new minimum voltage limit ensures that components powered by the associated bus will have sufficient voltage to perform their required function. These acceptance criteria are consistent with all other DG start acceptance criteria. This is an added restriction on plant operation.

TECHNICAL CHANGES - LESS RESTRICTIVE

"Generic"

LA.1 The CTS 3.9.A.1, 3.9.A.2, and CTS 3.9.A.2.c details relating to system design and OPERABILITY (i.e., that the offsite circuits are "physically independent," the DGs are "separate and independent," and that each DG has "a separate fuel oil transfer pump") are proposed to be relocated to the Bases. The details for system OPERABILITY are not necessary in the LCO. The definition of OPERABILITY suffices. The design details are not necessary to be included in the Technical Specifications to ensure the OPERABILITY of the AC Sources

TECHNICAL CHANGES - LESS RESTRICTIVE

LA.1 (cont'd) since OPERABILITY requirements are adequately addressed in ITS 3.8.1, "AC Sources—Operating." As such, the relocated details are not required to be in the ITS to provide adequate protection of the public health and safety. Changes to the Bases will be controlled by the provisions of the proposed Bases Control Program described in Chapter 5 of the ITS.

LA.2 The CTS 4.9.A.8.b detail that the largest single emergency load is ≥ 642 kW is proposed to be relocated to the Bases. Also, the value for the largest emergency load has been increased to the proper value. The proposed requirement in SR 3.8.1.10 that the DG rejects a load greater than or equal to its associated single largest post-accident load is sufficient to ensure the test is properly performed. As such, the relocated details are not required to be in the ITS to provide adequate protection of the public health and safety. Changes to the Bases will be controlled by the provisions of the Bases Control Program described in Chapter 5 of the ITS.

LA.3 The requirement of CTS 4.9.A.8.f.2) that the auto-connected loads be energized "through the load sequencer" is proposed to be relocated to the Bases in a discussion of the DG loading logic. The loads are designed to be connected only through the loading logic, thus if they are not energized, the SR has failed. Therefore, this detail is not necessary to ensure the OPERABILITY of the diesel generators. The requirements of ITS 3.8.1, and the associated Surveillance Requirements for the diesel generators are adequate to ensure the diesel generators are maintained OPERABLE. Therefore, the relocated requirements are not required to be in the ITS to provide adequate protection of the public health and safety. Changes to the Bases will be controlled by the provisions of the proposed Bases Control Program described in Chapter 5 of the ITS.

LA.4 CTS 4.9.A.8.i, which addresses the specific load value for the auto-connected loads, is proposed to be relocated to the UFSAR. The specific load value for the auto-connected loads on the diesel generators is a design detail. These details are not necessary to ensure the OPERABILITY of the diesel generators. The definition of OPERABILITY, the requirements of ITS 3.8.1, and the associated Surveillance Requirements for the diesel generators are adequate to ensure the diesel generators are maintained OPERABLE. Changes to the UFSAR are controlled by 10 CFR 50.59. In addition, any change to the loads placed on the DG will be controlled by 10 CFR 50.59 (a design change is required to change the actual loads). As such, the relocated details are not required to be in the ITS to provide adequate protection of the public health and safety.

TECHNICAL CHANGES - LESS RESTRICTIVE (continued)

LD.1 The Frequency for performing CTS 4.9.A.1.b, 4.9.A.8.b, 4.9.A.8.c, 4.9.A.8.d, 4.9.A.8.e, 4.9.A.8.f, 4.9.A.8.g, 4.9.A.8.h, 4.9.A.8.j, and 4.9.A.8.k (proposed SRs 3.8.1.9, 3.8.1.10, 3.8.1.11, 3.8.1.12, 3.8.1.13, 3.8.1.19, 3.8.1.14, 3.8.1.15, 3.8.1.16, 3.8.1.17, and 3.8.1.18, respectively) has been extended from 18 months to 24 months to facilitate a change to the Dresden 2 and 3 refuel cycle from 18 months to 24 months. The proposed change will allow these Surveillances to extend their Surveillance Frequency from the current 18 month Surveillance Frequency (i.e., a maximum of 22.5 months accounting for the allowable grace period specified in CTS 4.0.B and proposed SR 3.0.2) to a 24 month Surveillance Frequency (i.e., a maximum of 30 months accounting for the allowable grace period specified in CTS 4.0.B and proposed SR 3.0.2). This proposed change was evaluated in accordance with the guidance provided in NRC Generic Letter No. 91-04, "Changes in Technical Specification Surveillance Intervals to Accommodate a 24-Month Fuel Cycle," dated April 2, 1991.

SR 3.8.1.9 requires the transfer of each 4.16 kV emergency bus power supply from the normal offsite circuit to the alternate offsite circuit to demonstrate the OPERABILITY of the alternate circuit. Extending the Surveillance interval for this SR is acceptable for the following reasons: the design, in conjunction with Technical Specification requirements which limit the extent and duration of inoperable AC sources, provides substantial redundancy in AC sources; breaker verification and periodic breaker maintenance is based on performance history for the breakers and is designed for maximum availability.

The portions of the test not directly associated with the functioning of the offsite source and breaker movement are equivalent to a LOGIC SYSTEM FUNCTIONAL TEST. For these logic tests, the NRC Safety Evaluation Report (dated August 2, 1993) related to extension of the Peach Bottom Atomic Power Station, Unit Numbers 2 and 3, surveillance intervals from 18 to 24 months documents the following conclusion:

> "Industry reliability studies for boiling water reactors (BWRs), prepared by the BWR Owners Group (NEDC-30936P) show that the overall safety systems' reliabilities are not dominated by the reliabilities of the logic system, but by that of the mechanical components, (e.g., pumps and valves), which are consequently tested on a more frequent basis. Since the probability of a relay or contact failure is small relative to the probability of mechanical component failure, increasing the Logic System Functional Test interval represents no significant change in the overall safety system unavailability."

TECHNICAL CHANGES - LESS RESTRICTIVE

LD.1 (cont'd) Therefore, based on the above discussion, the impact of this change, if any, on system availability is minimal.

SR 3.8.1.10 verifies each required DG rejects a load greater than or equal to its associated single largest post-accident load and following load rejection, the specified frequency is achieved. This SR verifies the proper operation of the governor and load control circuits.

SR 3.8.1.11 verifies each required DG does not trip and the specified voltage is maintained during and following a load rejection of the specified load. This SR verifies the proper operation of the governor and load control circuits.

SR 3.8.1.12 verifies on an actual or simulated loss of offsite power signal: a) de-energization of emergency buses, b) load shedding from emergency buses, and c) DG auto-starts from standby condition and 1) energizes permanently connected loads in the specified time, 2) maintains the specified steady state voltage, 3) maintains the specified steady state frequency, and 4) supplies permanently connected loads for greater than the specified time. This Surveillance demonstrates the as designed operation of the standby power sources during loss of the offsite source. This test verifies all actions encountered from the loss of offsite power, including shedding of the nonessential loads and energization of the emergency buses and respective loads from the DG. It further demonstrates the capability of the DG to automatically achieve the required voltage and frequency within the specified time.

SR 3.8.1.13 verifies on actual or simulated Emergency Core Cooling (ECCS) initiation signal each required DG auto-starts from standby condition and: a) within the specified time after auto-start, achieves the specified voltage and frequency, b) achieves the specified steady state voltage and frequency, c) operates for the specified minimum time, d) permanently connected loads remain energized from the offsite source, and e) emergency loads are auto-connected to the offsite power system. This Surveillance demonstrates that the DG automatically starts and achieves the required voltage and frequency within the specified time from the design basis actuation signal (LOCA signal) and operates for greater than the specified time period which provides sufficient time to demonstrate stability.

SR 3.8.1.14 verifies each required DG's automatic trips are bypassed on an actual or simulated ECCS initiation signal except: a) engine overspeed, and b) generator differential current. This SR is essentially a LOGIC SYSTEM FUNCTIONAL TEST since the normal operation of the DG has all automatic trips active, and the trips are only bypassed with a ECCS initiation signal.

TECHNICAL CHANGES - LESS RESTRICTIVE

LD.1 (cont'd)

SR 3.8.1.15 verifies each required DG operates greater than or equal to 24 hours: a) for 2 hours greater than the specified load, b) for the remaining hours of the test at the specified load. This Surveillance demonstrates that the DG meets Regulatory Guide 1.108 paragraph 2.a.(3), which requires that the DGs can start and run continuously at full load capability for an interval of not less than 24 hours - 22 hours of which is at a load equivalent to the continuous rating of the DG, and 2 hours of which is at a load equivalent to 110% of the continuous duty rating of the DG.

SR 3.8.1.16 verifies each required DG starts and achieves: a) in the specified time the required voltage and frequency, b) specified steady state voltage and frequency. This Surveillance demonstrates that the diesel engine can restart from a hot condition, such as subsequent to shutdown from normal Surveillances, and achieve the required voltage and frequency within the required time.

SR 3.8.1.17 verifies each required DG: a) synchronizes with offsite power source while loaded with emergency loads upon a simulated restoration of offsite power, b) transfers loads to offsite power source, c) and returns to ready-to-load operation. This Surveillance ensures that the manual synchronization and load transfer from the DG to each required offsite power source can be made and that the DG can be returned to ready-to-load status when offsite power is restored. It also ensures that the undervoltage logic is reset to allow the DG to reload if a subsequent loss of offsite power occurs.

SR 3.8.1.18 verifies the interval between each sequenced load block is within the specified design interval for each time delay relay. Under accident conditions, loads are sequentially connected to the bus by the time delay relays. The time delay relays control the permissive and starting signals to motor breakers to prevent overloading of the bus power supply due to high motor starting currents. The load sequence time tolerance ensures that sufficient time exists for the bus power supply to restore frequency and voltage prior to applying the next load and that safety analysis assumptions regarding emergency equipment time delays are not violated.

SR 3.8.1.19 verifies on an actual or simulated loss of offsite power signal in conjunction with an actual or simulated ECCS initiation signal: a) de-energization of emergency buses; b) load shedding from emergency buses; and c) DG auto-starts from standby condition and; 1) energizes permanently connected loads in less than the specified time, 2) energizes auto-connected emergency loads, 3) maintains steady state voltages specified, 4) maintains

TECHNICAL CHANGES - LESS RESTRICTIVE

LD.1 (cont'd) specified frequency, and 5) supplies permanently connected and auto-connected emergency loads for greater than specified time. This Surveillance demonstrates the DG operation, as discussed in the Bases for SR 3.8.1.12, during a loss of offsite power actuation test signal in conjunction with an ECCS initiation signal. In lieu of actual demonstration of connection and energization of loads, testing that adequately shows the capability of the DG system to perform these functions is acceptable.

Extending SRs 3.8.1.10, 3.8.1.11, 3.8.1.12, 3.8.1.13, 3.8.1.14, 3.8.1.15, 3.8.1.16, 3.8.1.17, 3.8.1.18 and 3.8.1.19 surveillance intervals are acceptable for the following reasons: 1) During the operating cycle, the diesel generators are subjected to operational testing every 31 days and fast start testing every 184 days. This testing provides confidence of diesel generator operability and the capability to perform its intended function. The testing will also provide prompt identification of any substantial DG degradation or failure. 2) DGs are not operated except for the performance of the monthly demonstration of operability so there is minimal risk of wear related degradation. 3) DG attributes subject to degradation due to aging, such as fuel oil quality, are subject to its requirements for replenishment and testing.

The portions of the test not directly associated with the functioning of the Diesel Generator and breaker movement are equivalent to a LOGIC SYSTEM FUNCTIONAL TEST. For these logic tests, the NRC Safety Evaluation Report (dated August 2, 1993) related to extension of the Peach Bottom Atomic Power Station, Unit Numbers 2 and 3, surveillance intervals from 18 to 24 months documents the following conclusion:

> "Industry reliability studies for boiling water reactors (BWRs), prepared by the BWR Owners Group (NEDC-30936P) show that the overall safety systems' reliabilities are not dominated by the reliabilities of the logic system, but by that of the mechanical components, (e.g., pumps and valves), which are consequently tested on a more frequent basis. Since the probability of a relay or contact failure is small relative to the probability of mechanical component failure, increasing the Logic System Functional Test interval represents no significant change in the overall safety system unavailability."

Therefore, based on the above discussion, the impact of this change, if any, on system availability is minimal.

TECHNICAL CHANGES - LESS RESTRICTIVE

LD.1 (cont'd) Reviews of historical maintenance and surveillance data have shown that these tests normally pass their Surveillances at the current Frequency. An evaluation has been performed using this data, and it has been determined that the effect on safety due to the extended Surveillance Frequency will be minimal. In addition, the proposed 24 month Surveillance Frequencies, if performed at the maximum interval allowed by proposed SR 3.0.2 (30 months) do not invalidate any assumptions in the plant licensing basis.

"Specific"

L.1 In the event of multiple concurrent AC Source inoperabilities (i.e., one Division 1 or 2 DG and one offsite circuit) the existing Actions limit restoration time to 7 days from the time of initial loss of the first AC Source (CTS 3.9.A Action 3.d). When a second inoperability occurs just prior to restoration of the initial inoperability and close to the expiration of the initial 7 days, this limitation can provide little or no time to effect repair. The result would be a forced shutdown of the unit. While these simultaneous inoperabilities are expected to be rare, it is also expected that any AC source inoperability would be repaired in a reasonable time (≤ 7 days). Given the minimal risk of an event during the repair of the subsequent inoperability, the likelihood of a satisfactory return to OPERABLE, and the risks involved with introducing plant transients associated with a forced shutdown, it is proposed to allow a separate time period for this subsequent repair. Since this rationale can be taken to extreme with continuous multiple overlapping inoperabilities, a maximum restoration time limit is imposed. The ITS format presents this as an additional Completion Time of "14 days from discovery of failure to meet LCO" in ITS 3.8.1 Required Actions A.3 and B.4 (CTS 3.9.A Action 1.b and Action 2.c, respectively).

In addition, in the event of multiple DG inoperabilities (Division 1 and 2) or multiple offsite circuit inoperabilities, the existing Actions limit restoration time to 7 days from the time of initial loss (CTS 3.9.A Actions 5.b and 6.d). The consequences and occurrences of the multiple inoperabilities is similar to that described in the first paragraph. Therefore, a separate time period is allowed for the subsequent repair. This time period is described in ITS 1.3, and essentially allows extension of the initial restoration time by 24 hours, not to exceed the actual time if the subsequent inoperability were tracked from its time of loss. The ITS 1.3 limits the subsequent inoperability extension to one use, i.e., the second inoperability can be extended, but not a third or subsequent inoperability. This is fully described in ITS 1.3.

TECHNICAL CHANGES - LESS RESTRICTIVE (continued)

L.2 CTS 3.9.A Action 2.b footnote b states "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." This requirement (to verify the cause of the inoperable DG does not impact the other DG) is proposed to be deleted. The intent of this requirement is related to the determination that no common cause failure exists, whether or not the originally discovered inoperable DG has already been restored. "Common cause" evaluations are required by the ComEd nuclear station Corrective Action Program for all significant safety related deficiencies (as would be the case for inoperable DGs). The program requires "prompt" investigation of potential common mode failures and timely evaluations and corrective actions to preclude their recurrence. The Corrective Action Program (required by 10 CFR 50, Appendix B) provides assurance that the necessary evaluations are completed in a timely manner without necessitating abnormal requirements within the ITS.

L.3 CTS 3.9.A Actions 2.b and 3.b require a verification that the cause of a DG inoperability does not affect the remaining DGs. In Action 2.b (one DG inoperable), this is required within 24 hours and within the subsequent 72 hours by an evaluation or test. In Action 3.b (one DG and offsite circuit inoperable), this is required every 8 hours and within the subsequent 72 hours. In both Actions, the initial evaluation or test is not required if a test was performed in the past 24 hours. In addition, when two DGs are inoperable, CTS 3.9.A Action 6.c requires the performance of CTS 4.9.A.2.c (DG slow start) within the subsequent 72 hours after a DG is restored to service. ITS 3.8.1 Required Actions B.3.1 and B.3.2 will continue to require this verification, but will allow 24 hours to perform the verification in all cases. There will be no requirement to re-test the OPERABILITY of the OPERABLE DG in the proposed Required Actions. The current and proposed normal Surveillances are considered adequate to ensure the DGs remain OPERABLE. The proposed Completion Time is consistent with GL 84-15, which stated that the 24 hours was a reasonable time to perform the verification. This will allow more attention to be focused on restoring the inoperable DG, in lieu of testing the remaining OPERABLE DGs. This proposed time is also consistent with that provided in CTS 3.9.A Action 2.b (first performance), when one DG is inoperable. The extension for CTS 3.9.A Action 3.b (8 hours to 24 hours) is acceptable since the remaining DGs are routinely found to be OPERABLE during this verification. The proposed allowances are consistent with the recent ITS amendments approved at WNP-2, Brunswick, and Cooper.

TECHNICAL CHANGES - LESS RESTRICTIVE (continued)

L.4 CTS 4.9.A.2.e requires verification that each DG is aligned to provide standby power to the associated emergency buses. The requirements of ITS 3.8.1, which require the DGs to be OPERABLE, and the associated Surveillance Requirements for the DGs are adequate to ensure the DGs are maintained OPERABLE. In addition, the definition of OPERABILITY and procedural controls on DG standby alignment are sufficient to ensure the DG remains aligned to provide standby power. In general, this type of requirement is addressed by plant specific processes which continuously monitor plant conditions to ensure that changes in the status of plant equipment that require entry into ACTIONS (as a result of failure to maintain equipment OPERABLE) are identified in a timely manner. This verification is an implicit part of using Technical Specifications and determining the appropriate Conditions to enter and Actions to take in the event of inoperability of Technical Specification equipment. In addition, plant and equipment status is continuously monitored by control room personnel. The results of this monitoring process are documented in records/logs maintained by control room personnel, as required. The continuous monitoring process includes re-evaluating the status of compliance with Technical Specification requirements when Technical Specification equipment becomes inoperable using the control room records/logs as aids. Therefore, the explicit requirement to periodically verify that each DG is aligned to provide standby power to the associated emergency buses is considered to be unnecessary for ensuring compliance with the applicable Technical Specification OPERABILITY requirements and is to be removed from the Technical Specifications.

L.5 CTS 4.9.A.3 requires removing accumulated water from the DG day tanks every 31 days and "after each operation of the diesel where the period of operation was ≥ 1 hour." Proposed SR 3.8.1.5 only requires the removal every 31 days; the frequency of "after each operation of the diesel where the period of operation was ≥ 1 hour" has been deleted. Water condensation within the fuel oil tanks is a time dependent process, not a process dependent on the transfer of fuel oil during DG operation. Since it is the expectation that the DG will not be operated except for the nominal monthly OPERABILITY tests (and based on experience), no increased Frequency is necessary.

L.6 The Completion Time for CTS 3.9.A Actions 4.a and 6.b, to verify that required systems, subsystems, trains, components, and devices powered from the redundant DG(s) are OPERABLE has been extended from 2 hours to 4 hours in ITS 3.8.1 Required Action B.2. This Completion Time will allow the operator time to evaluate and repair any discovered inoperabilities, which minimizes the

TECHNICAL CHANGES - LESS RESTRICTIVE

L.6 (cont'd) risk due to subjecting the unit to transients associated with a shutdown. The Completion Time also considers the capacity and capability of the remaining AC sources and the low probability of a DBA occurring during this period.

L.7 CTS 4.9.A.7, the 184 day DG start test, requires each DG to accelerate to synchronous speed in ≤ 13 seconds. The CTS requirement further states that the generator frequency and voltage must be 60 ± 1.2 Hz and 4160 ± 208 V, respectively, in ≤ 13 seconds after the start signal. CTS 4.9.A.8.e, the ECCS actuation test without a loss of offsite power, requires that the generator frequency and voltage be 60 ± 1.2 Hz and 4160 ± 208 V, respectively, in ≤ 13 seconds after the auto-start signal. The requirements of CTS 4.9.A.7 and 4.9.A.8.e (proposed SR 3.8.1.8 and SR 3.8.1.13) have been changed to only require the minimum voltage and frequency limits to be met within the appropriate time limits. Once steady state conditions are reached, the minimum and maximum voltage and frequency limits must be maintained. The proposed requirement will, therefore, require that the DG start and achieve, in ≤ 13 seconds, voltage ≥ 3952 V and frequency ≥ 58.8 Hz; and steady state voltage ≥ 3952 V and ≤ 4368 V and frequency ≥ 58.8 Hz and ≤ 61.2 Hz. The tests in question are those that automatically start the DG but do not tie it to a bus. Verification that the minimum voltage and frequency limits are met within the proper time is sufficient to ensure the DG can perform its design function. When called upon, the DG must start and tie within the proper time. Once the minimum voltage and frequency limits are met, the DG can tie to the bus. When a test is performed that does not result in tying the DG to the bus, a voltage or frequency overshoot can occur since no loads are being tied (the loading tends to minimize the overshoot). This overshoot could be such that the voltage or frequency is outside the band high when the time limit expires. This condition however, is not indicative of an inoperable DG, provided that steady state voltage and frequency are maintained. The time to reach the minimum voltage and frequency has not been changed. The DG start times are monitored and trend evaluated to identify degradation of governor and voltage regulator performance as described in the Bases. This change is consistent with TSTF-163.

L.8 The phrase "actual or", in reference to the loss of offsite power signal or the ECCS actuation signal, as applicable, has been added to CTS 4.9.A.8.d, 4.9.A.8.e, 4.9.A.8.f, and 4.9.A.8.g (proposed SRs 3.8.1.12, 3.8.1.13, 3.8.1.19, and 3.8.1.14, respectively) for verifying the proper response of the DG. This allows satisfactory loss of offsite power or ECCS actuations for other than Surveillance purposes to be used to fulfill the Surveillance Requirement. OPERABILITY is adequately demonstrated in either case since the DG cannot discriminate between "actual" or "simulated" signals.

TECHNICAL CHANGES - LESS RESTRICTIVE (continued)

L.9 The manner in which the DG is started for CTS 4.9.A.8.h (i.e., that the DG must be within the proper voltage and frequency within a certain time limit after the start signal) has not been included in proposed SR 3.8.1.15. While this test can be performed only after a fast start, the manner in which the DG is started does not affect the test. In addition, maintaining voltage and frequency (as required by CTS 4.9.A.8.h) is routine for this test to ensure the loads are maintained within the necessary limits, and does not need to be specified. Other Surveillance Requirements being maintained in the ITS (e.g., CTS 4.9.A.7, proposed SR 3.8.1.8) continue to require verifying the DG start time and voltage and frequency limits. If these limits are found not to be met during the performance of proposed SR 3.8.1.15, then the DG would be declared inoperable. As a result, these requirements are not necessary to be included in the Technical Specifications to ensure the diesel generators are maintained OPERABLE.

L.10 Explicit post maintenance Surveillance Requirements as required by CTS 4.9.A.9 (i.e., after any modifications which could affect DG interdependence) have been deleted. Any time the OPERABILITY of a system or component has been affected by repair, maintenance, or replacement of a component, post maintenance testing is required to demonstrate OPERABILITY of the system or component. After restoration of a component that caused a required SR to be failed, ITS SR 3.0.1 requires the appropriate SRs (in this case, SR 3.8.1.20) to be performed to demonstrate the OPERABILITY of the affected components. Therefore, explicit post maintenance Surveillance Requirements are not required and have been deleted from the Technical Specifications.

L.11 CTS 4.9.A.9 requires the DGs to accelerate to 900 rpm in ≤ 13 seconds. For these DGs, 900 rpm is equivalent to a frequency of 60 Hz. The ITS will require the minimum frequency to be 58.8 Hz, as shown in proposed SR 3.8.1.21. The accident analysis requires the DG to be capable of being loaded within 13 seconds. This can be accomplished at 58.8 Hz. It is not necessary to require the DG frequency to be at 60 Hz in order to load the DG. In addition, the steady state frequency is already allowed to be at a minimum of 58.8 Hz for the fast start Surveillance (CTS 4.9.A.7). This new minimum frequency is also consistent with Regulatory Guide 1.9, Rev. 3, from which the ITS SR is derived.

L.12 The load range requirements of CTS 4.9.A.2.d (monthly full load test), CTS 4.9.A.8.c (full load rejection test), and CTS 4.9.A.8.h (24 hour endurance test, only the 22 hour full load test portion is affected) have been relaxed slightly to provide margin to the DG's continuous rating. This change provides

TECHNICAL CHANGES - LESS RESTRICTIVE

L.12 (cont'd) additional assurance that the DGs will not become degraded due to overloading caused by exceeding the continuous rating during required full load testing. The current load range of 95% to 100% of the continuous rating of the DGs (2470 kW to 2600 kW) was based on engineering judgment and manufacturer/vendor recommendations (as stated in CTS 4.9.A.2.d). The new load range in proposed ITS SRs 3.8.1.3, 3.8.1.11, and 3.8.1.15 is 90% to 100% of the continuous rating (2340 kW to 2600 kW), which is consistent with the recommendations of Regulatory Guide 1.9, Revision 3. The slight (5%) increase in the allowable load range is not considered significant relative to demonstrating DG full load carrying capability and the DG's response to a full load rejection transient. This change minimizes the manual operator actions required to maintain DG operation within the specified load range during grid fluctuations. Therefore, this change is considered acceptable since it reduces the potential for degradation of the DGs due to overloading during testing while still demonstrating that the DGs can carry and reject their full rated load as designed. Furthermore, it will still be required to demonstrate on a 24 month basis that the DGs are capable of being loaded to 105% to 110% of their continuous rating for 2 hours in accordance with proposed ITS SR 3.8.1.15 (2 hour overload test portion). This provides additional assurance that the DGs maintain the capability to carry their full design load.

L.13 CTS 4.9.A.8, footnote d, restricts the performance of CTS 4.9.A.8.c, the DG full load rejection test, and CTS 4.9.A.8.h, the DG 24 hour endurance run, to only one DG at a time. This restriction is not included in proposed ITS SR 3.8.1.11 for the DG full load rejection test or ITS SR 3.8.1.15 for the DG 24 hour endurance run. This restriction was included in the Technical Specifications to avoid common cause failures that might result from offsite circuit or grid perturbations. Although the practice of performing this test on only one DG at a time will continue to be followed, it is not necessary to include this restriction in the ITS. Since the plant has demonstrated the ability to safely control the performance of other DG tests without the associated Technical Specification restriction, the restriction has been deleted. In addition, this change is consistent with BWR ISTS, NUREG-1433, Rev. 1.

RELOCATED SPECIFICATIONS

None

A.1

3.9 - LIMITING CONDITIONS FOR OPERATION

B. A.C. Sources - Shutdown

LCO 3.8.2 As a minimum, the following A.C. electrical power sources shall be OPERABLE:

M.1

LCO 3.8.2.a 1. One circuit between the offsite transmission network and the onsite Class 1E distribution system, and

M.2

LCO 3.8.2.b 2. One diesel generator with:

A.2

SR 3.8.2.1 a. A fuel oil day tank containing ≥205 gallons of available fuel,

SR 3.8.2.1 b. A bulk fuel storage system containing ≥10,000 gallons of available fuel, and

LA.1 c. A fuel/oil transfer pump.

APPLICABILITY:

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

ACTION: add proposed ACTION A Note A.3

1. With less than the above required A.C. electrical power sources OPERABLE:

ACTIONS A and B add proposed Required Action A.1 M.1

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

L.1

B. A.C Sources - Shutdown add proposed SR 3.8.2.1 Note 1

add proposed SR 3.8.2.1 Note 2 L.2

SR 3.8.2.1 Note 1 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 L.1

except SR 3.8.1.9, SR 3.8.1.20, and SR 3.8.1.21 A.4

3.9 - LIMITING CONDITIONS FOR OPERATION

LA.2 d. ~~Suspend crane operations over the spent fuel storage pool if fuel assemblies are stored therein.~~

M.3 Required Actions A.2.4 and B.4 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.

ACTIONS Note 3. The provisions of Specification 3.0.C are not applicable.

4.9 - SURVEILLANCE REQUIREMENTS

ADMINISTRATIVE

A.1 In the conversion of the Dresden 2 and 3 current Technical Specifications (CTS) to the proposed plant specific Improved Technical Specifications (ITS), certain wording preferences or conventions are adopted that do not result in technical changes (either actual or interpretational). Editorial changes, reformatting, and revised numbering are adopted to make the ITS consistent with the BWR Standard Technical Specifications, NUREG-1433, Rev. 1 (i.e., the Improved Standard Technical Specifications (ISTS)).

A.2 The details relating to the required day tank level in CTS 3.9.B.2.a and the bulk fuel storage tank in CTS 3.9.B.2.b have been moved to proposed SR 3.8.2.1, which requires performance of SR 3.8.1.4. No technical changes are being made; therefore, this change is considered administrative in nature.

A.3 AC Sources are considered a support system to the Distribution System (ITS 3.8.8). In the event AC Sources are inoperable such that a distribution subsystem were inoperable, ITS LCO 3.0.6 would allow taking only the AC Sources ACTIONS; taking exception to complying with the AC Distribution System ACTIONS. Since the AC Sources ACTIONS may not be sufficiently conservative in this event (e.g., SDC could be inoperable), specific direction to take appropriate ACTIONS for the Distribution System is added (proposed Note to ITS 3.8.2 ACTION A). This format and construction implements the existing treatment of this condition within the framework of the Dresden 2 and 3 ITS methods.

A.4 For clarity, an exception to CTS 4.9.A.9 (proposed SR 3.8.1.20) has been added. This Surveillance is currently not required since it ensures all the DGs are OPERABLE (and no more than one DG is required while in MODES 4 and 5 and handling irradiated fuel assemblies in the secondary containment). In addition, two other exceptions have been included for clarity. CTS 4.9.A.1.b (proposed SR 3.8.1.9) is excluded since only one offsite circuit is required to be OPERABLE. Furthermore, proposed SR 3.8.1.21, the added requirement for the opposite units power sources, is excluded because the opposite unit's DG is not required to be OPERABLE by LCO 3.8.2.

TECHNICAL CHANGES - MORE RESTRICTIVE

M.1 The existing requirement of CTS LCO 3.9.B.1 for one offsite circuit to be OPERABLE during shutdown conditions is not specific as to what that circuit must be powering. The requirement in ITS LCO 3.8.2.a specifies that the circuit must be available to supply power to all equipment required to be

TECHNICAL CHANGES - MORE RESTRICTIVE

M.1 (cont'd) OPERABLE in the current plant condition. This added restriction conservatively assures the needed offsite circuit is powering all AC loads required to be OPERABLE.

Since the ITS 3.8.2 circuit OPERABILITY requirements are proposed to require supplying power to all necessary electrical power distribution subsystems, if one or more subsystems are not powered via an offsite circuit, that circuit is inoperable. In this event it may not be necessary to suspend all CORE ALTERATIONS, irradiated fuel handling, and OPDRVs as required by CTS 3.9.B Action 1. Conservative actions can be assured if all required equipment without offsite power is declared inoperable and the associated ACTIONS of the individual equipment taken (ITS 3.8.2 Required Action A.1). Therefore, along with the conservative additional requirements placed on the OPERABLE circuit, Required Action A.1, which requires the associated supported equipment to be declared inoperable, is also added. These additions represent restrictions consistent with implicit assumptions for operation in shutdown conditions (required equipment powered from offsite power as opposed to being powered by a DG); restrictions which are not currently imposed via the Technical Specifications.

M.2 Similar to the added restrictions for an OPERABLE offsite circuit (refer to Discussion of Change M.1 above), the single unit DG required OPERABLE during shutdown conditions by CTS LCO 3.9.B.2, is not specific as to what Division that DG must be associated with. The requirement in ITS LCO 3.8.2 will ensure the OPERABLE DG is associated with one or more systems, subsystems, or components required to be OPERABLE. This added restriction enforces a level of Technical Specification control which currently is enforced only via administrative procedures.

M.3 CTS 3.9.B Action 2 requires that, when in MODE 5 with the water level less than 23 feet above the RPV flange, action is to be initiated to restore the required AC power sources to OPERABLE status. ITS 3.8.2 Required Actions A.2.4 and B.4 implement a requirement to initiate action to restore the required power sources to OPERABLE status in MODES 4 and 5 and during movement of irradiated fuel assemblies in the secondary containment. This will ensure actions are taken at all times when an AC Source is inoperable, not just in MODE 5 with water level less than 23 feet above the RPV flange. Therefore, this change is an additional restriction on plant operation.

TECHNICAL CHANGES - LESS RESTRICTIVE

"Generic"

LA.1 The CTS 3.9.B.2.c detail relating to system design and OPERABILITY (i.e., that each DG has a fuel oil transfer pump) is proposed to be relocated to the Bases. The details for system OPERABILITY are not necessary in the LCO. The definition of OPERABILITY suffices. The design details are not necessary to be included in the Technical Specifications to ensure the OPERABILITY of the DGs since OPERABILITY requirements are adequately addressed in ITS 3.8.2, "AC Sources — Shutdown." As such, the relocated detail is not required to be in the ITS to provide adequate protection of the public health and safety. Changes to the Bases will be controlled by the provisions of the proposed Bases Control Program described in Chapter 5 of the ITS.

LA.2 CTS 3.9.B Action 1.d requires suspension of crane operations over the spent fuel storage pool if fuel assemblies are stored therein when an AC Source is inoperable. Crane operation is not directly affected by the loss of safety related power sources. Therefore, CTS 3.9.B Action 1.d associated with crane operation following a loss of AC power sources is proposed to be relocated to the UFSAR. Movement of loads other than fuel assemblies is administratively controlled based on heavy loads analyses. The bounding design basis fuel handling accident assumes an irradiated fuel assembly is dropped onto an array of irradiated fuel assemblies seated within the RPV. The movement of other loads over irradiated fuel assemblies is administratively controlled based on available analysis for the individual load. In addition, Dresden 2 and 3 commitments regarding NRC Generic Letter 80-113, "Control of Heavy Loads," and NUREG-0612, "Control of Heavy Loads at Nuclear Power Plants - Resolution of TAP A-36," documented in the NRC Safety Evaluation Report dated July 11, 1983, associated Technical Evaluation Report, and the submittals referenced therein. Therefore, the relocated requirement is not required to be in the ITS to provide adequate protection of the public health and safety. Changes to the UFSAR will be controlled by the provisions of 10 CFR 50.59.

"Specific"

L.1 Many of the currently required Surveillances specified in CTS 4.9.B involve tests that would require the DG to be paralleled to offsite power. This condition (the only required DG and the only required offsite circuit connected) presents a significant risk of a single fault resulting in a station blackout. The NRC has previously recognized this in the exception stated in CTS 4.9.B (4.9.A.2.d) and provided a surveillance exception to the 1 hour DG load test to avoid this

TECHNICAL CHANGES - LESS RESTRICTIVE

L.1 (cont'd) condition. In an effort to consistently address this concern and to avoid potential conflicting Technical Specifications, the Surveillances that would require the DG to be connected to the offsite source are excepted from performance requirements. The exception does not take exception to the requirement for the DG to be capable of performing the particular function; just to the requirement to demonstrate it while that source of power is being relied on to support meeting the LCO. The exception is being presented as Note 1 to proposed SR 3.8.2.1 and excludes proposed SR 3.8.1.3 (the DG 1 hour load test), SR 3.8.1.10 (the DG single largest load reject test), SR 3.8.1.11 (DG full load rejection test), SR 3.8.1.12 (the loss of power test), SR 3.8.1.14 (bypass of automatic trips), SR 3.8.1.15 (the DG 24 hour run), SR 3.8.1.16 (hot start test), SR 3.8.1.17 (DG synchronization test), SR 3.8.1.18 (the DG load block test), and SR 3.8.1.19 (the ECCS simulation test).

L.2 CTS 4.9.B, which provides the Surveillance Requirements for the AC Sources while in Modes 4 and 5 and during handling of irradiated fuel in the secondary containment, requires the Surveillances of CTS 4.9.A to be performed. Two of the Surveillances of CTS 4.9.B are the DG start on an ECCS initiation signal (4.9.A.8.e) and the DG start and load on an ECCS initiation signal concurrent with a loss of offsite power signal (4.9.A.8.f). Proposed Note 2 to SR 3.8.2.1 will exempt these two Surveillances (proposed SRs 3.8.1.13 and 3.8.1.19) when the associated ECCS subsystem(s) are not required to be Operable. The CTS and ITS do not require the ECCS subsystem(s) to be Operable in Mode 5 when the spent fuel storage pool gates are removed and water level is ≥ 23 ft over the top of the reactor pressure vessel flange. The CTS and ITS also do not require the ECCS subsystem(s) to be Operable when defueled. The DGs are required to support the equipment powered from the emergency buses. However, when the ECCS subsystem(s) are not required to be Operable, then there is no reason to require the DGs to autostart on an ECCS initiation signal. In addition, the ECCS initiation signal is only an anticipatory start signal; the DGs are only needed during a LOCA if a loss of offsite power occurs concurrently. The DGs are also required to autostart if a loss of offsite power occurs. The requirement to autostart the required DG(s) on a loss of offsite power signal is being maintained in the ITS (proposed SR 3.8.1.12). Thus, when in these conditions (associated ECCS subsystem(s) not required to be Operable), there is no reason to require the DGs to be capable of automatically starting on an ECCS actuation signal (either by itself or concurrent with a loss of offsite power signal).

RELOCATED SPECIFICATIONS

None

A.2 <General Description>

<Add proposed fuel oil and starting air LCO>

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: A.2

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

ACTION: <Add proposed ACTIONS Note> A.3

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. At least once per 18 months by manually transferring the power supply from the normal circuit to the alternate circuit.

SR 3.8.3.2

2. Each of the required diesel generators shall be demonstrated OPERABLE[a] at least once per 31 days 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.

<See ITS 3.8.1>

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a All diesel generator starts may be preceded by an engine prelube period. All diesel generator starts that require loading may be preceded by an engine prelube period and followed by a warmup period prior to loading. Diesel generator loadings may include gradual loading as recommended by the manufacturer/vendor.

A.1 ITS 3.8.3

3.9 - LIMITING CONDITIONS FOR OPERATION

b. 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 an inoperable support system, an independently testable component or preplanned preventive maintenance or testing, demonstrate the OPERABILITY of the remaining OPERABLE diesel generator by performing Surveillance Requirement 4.9.A.2.c[b] within 24 hours unless the absence of any potential common mode failure for the remaining diesel generator is demonstrated (if it has not been successfully tested within the past 24 hours) and within the subsequent 72 hours, and

See ITS 3.8.1

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 the diesel generator is synchronized, loaded to between 2470 and 2600 kW[d] in accordance with the manufacturer's/vendor's recommendations, and operates with this load for ≥60 minutes.

e. Verifying the diesel generator is aligned to provide standby power to the associated emergency busses.

SR 3.8.3.2

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 Requirement 4.9.A.7 may be substituted for Surveillance Requirement 4.9.A.2.c.

d Momentary transients outside of the load range do not invalidate this test. Diesel generator loadings may include gradual loading as recommended by the manufacturer/vendor. This surveillance shall be conducted on only one diesel generator at a time.

A.4

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.

See ITS 3.8.1

b. If the diesel generator is inoperable due to any cause other than preplanned preventive maintenance or testing, demonstrate the OPERABILITY[a] of the remaining OPERABLE diesel generator by performing Surveillance Requirement 4.9.A.2.c[b] within 8 hours unless the absence of any potential common mode failure for the remaining diesel generator is demonstrated (if it has not been successfully tested within the past 24 hours) and within the subsequent 72 hours for each OPERABLE diesel generator.

4.9 - SURVEILLANCE REQUIREMENTS

add proposed SR 3.8.3.1

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.

A.4

6. Each of the required diesel generators shall be demonstrated OPERABLE by:

a. Sampling and analyzing the bulk fuel storage tanks at least once per 31 days in accordance with applicable ASTM standards, and

b. Verifying that the sample meets the applicable ASTM standards for water and sediment, kinematic viscosity, and ASTM particulate contaminant is <10 mg/liter.

a 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

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.

ACTIONS A and B

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. L.1

ACTION D

Otherwise, declare the associated diesel generator(s) inoperable.

Add proposed ACTION C and ACTIONS Note L.2

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.

<See ITS 3.8.1>

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.

A.1 ITS 3.8.3

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 logic 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.

See ITS 3.8.1

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.~~ L.3

a All diesel generator starts may be preceded by an engine prelube period. All diesel generator starts that require loading may be preceded by an engine prelube period and followed by a warmup period prior to loading. Diesel generator loadings may include gradual loading as recommended by the manufacturer/vendor.

A.2 <General Description>

Add proposed fuel oil and starting air LCO

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.

<See ITS 3.8.2>

APPLICABILITY:

OPERATIONAL MODE(s) 4 and 5, and when handling irradiated fuel in the secondary containment. A.2

ACTION:

A.3 Add proposed ACTIONS Note

L.1 Add proposed ACTIONS A and B

Add proposed ACTION C and ACTIONS Note L.2

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

SR 3.8.3.1 and SR 3.8.3.2

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.

for portions not applicable to fuel oil or starting air

DISCUSSION OF CHANGES
ITS: 3.8.3 - DIESEL FUEL OIL and STARTING AIR

ADMINISTRATIVE

A.1 In the conversion of the Dresden 2 and 3 current Technical Specifications (CTS) to the proposed plant specific Improved Technical Specifications (ITS), certain wording preferences or conventions are adopted that do not result in technical changes (either actual or interpretational). Editorial changes, reformatting, and revised numbering are adopted to make the ITS consistent with the BWR Standard Technical Specifications, NUREG-1433, Rev. 1 (i.e., the Improved Standard Technical Specifications (ISTS)).

A.2 The fuel oil and starting air requirements of CTS 3/4.9.A and 3/4.9.B have been moved to a new ITS LCO 3.8.3. An LCO Statement has been provided requiring fuel oil and starting air. The Applicability of this new LCO is "when associated DG is required to be OPERABLE." This covers the current MODES 1, 2, 3, 4, and 5 and fuel handling requirements of CTS 3/4.9.A and 3/4.9.B. These changes are considered administrative in nature. In addition, technical changes have been made, as discussed in the Discussion of Changes below.

A.3 This proposed change to the CTS 3.9.A and CTS 3.9.B Actions provides more explicit instructions for proper application of the Actions for Technical Specification compliance. In conjunction with the proposed Specification 1.3, "Completion Times," the ITS 3.8.3 ACTIONS Note ("Separate Condition entry is allowed for each DG") provides direction consistent with the intent of the existing Actions for inoperable fuel oil storage tank properties. It is intended that each fuel oil storage tank is allowed a certain time to complete the Required Actions for properties not within limits. Since this change only provides more explicit direction of the current interpretation of the existing specification, this change is considered administrative.

A.4 The technical content of CTS 4.9.A.5 and 4.9.A.6 is being moved to proposed Specification 5.5.9 in accordance with the BWR ISTS, NUREG-1433, Rev. 1. Any technical changes will be addressed in the Discussion of Changes for ITS Section 5.5. A Surveillance Requirement is added (proposed SR 3.8.3.1) to clarify that the tests of the Diesel Fuel Oil Testing Program must also be completed and passed for determining operability of the DGs. Since this is a presentation preference that maintains current requirements, this change is considered administrative.

TECHNICAL CHANGES - MORE RESTRICTIVE

None

TECHNICAL CHANGES - LESS RESTRICTIVE

"Generic"

None

"Specific"

L.1 CTS 3.9.A Action 7 provides a 7 day restoration period for the new fuel oil parameters tested by CTS 4.9.A.5 when they are found not within specified limits. In addition, CTS 3.9.B provides no restoration time when the fuel oil parameters are not within the limits of CTS 4.9.A.5 and 4.9.A.6 in MODES 4 and 5 and when handling irradiated fuel in the secondary containment. ITS 3.8.3 ACTION B will allow 30 days to restore new fuel properties to within the specified limits. If the new fuel oil is found to exceed the specified limits, this period provides sufficient time to test the stored fuel to determine if new fuel when mixed with stored fuel oil remains acceptable or to restore the stored fuel oil properties. Even if a DG start and load was required during this restoration period, there is a high likelihood that the DG would still be capable of performing its function since when new fuel oil is added to a stored fuel oil tank it normally only replaces a small portion of the tank volume. ITS 3.8.3 ACTION D is provided to declare the DG inoperable if the previous action is not met. During the proposed period for restoration of these parameters, the DG would still be capable of performing its intended function. In addition, a 7 day time has been provided in ITS 3.8.3 ACTION A to restore stored fuel oil total particulates to within limits when in MODE 4 or 5, or when handling irradiated fuel in the secondary containment. This time is consistent with the current time in CTS 3.9.A Action 7, which was previously approved by the NRC, and found to be acceptable.

L.2 The ITS LCO 3.8.3, "Diesel Fuel Oil and Starting Air," reformats some of the existing CTS requirements by providing a separate LCO with requirements for each of the named parameters. The starting air requirements are currently presented as attributes of compliance with the DG LCO, via their presentation as Surveillances. This parameter, while supporting DG OPERABILITY, contains substantial margin in addition to the limits which would be absolutely necessary for DG OPERABILITY. Therefore, certain levels of degradation in air start receiver pressure are justified to extend the allowances for restoration (presented as ITS 3.8.3 ACTION C and ACTIONS Note). During the extended restoration period for this parameter, the DG would still be capable of performing its intended function. ITS 3.8.3 ACTION C, which is entered on a per DG basis (as allowed by the ACTIONS NOTE), allows 48 hours to restore starting air

TECHNICAL CHANGES - LESS RESTRICTIVE

L.2 (cont'd) pressure prior to declaring the DG inoperable, provided a one start capacity remains. ITS 3.8.3 ACTION D is provided to declare the DG inoperable if the previous ACTION is not met. During the proposed extended periods for restoration of this parameter, the DG would still be capable of performing its intended function.

L.3 The 10 year Surveillances of CTS 4.9.A.10 to drain, remove sediment, and clean each fuel oil tank are proposed to be deleted. These Surveillances are preventive maintenance type requirements. Sediment in the tank, or failure to perform these Surveillances, do not necessarily result in an inoperable storage tank. Performance of proposed SR 3.8.3.1 (fuel oil testing) and the limits of the Diesel Fuel Oil Testing Program help ensure tank sediment is minimized. Performance of proposed SR 3.8.1.4 (fuel oil volume verification) once per 31 days ensures that any degradation of the tank wall surface that results in a fuel oil volume reduction is detected and corrected in a timely manner. In addition, another government agency provides regulations for the maintenance of below ground fuel oil tanks. These maintenance requirements are currently implemented in the Dresden 2 and 3 predefined maintenance identifications. As a result, adequate controls exist such that these requirements are unnecessary to maintain in the Technical Specifications.

RELOCATED SPECIFICATIONS

None

3.9 - LIMITING CONDITIONS FOR OPERATION

C. D.C. Sources - Operating

LCO 3.8.4 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: A.2 moved to ITS 3.8.6

LCO 3.8.4.a 1. Two station 250 volt batteries, each with a full capacity charger.

Division I and 2 LA.1

LCO 3.8.4.b 2. Two station 125 volt batteries, each with a full capacity charger.

add proposed LCO 3.8.4.c M.2

DC electrical power subsystems

APPLICABILITY:

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

ACTION:

ACTION A
ACTION B 1. With one of the above required 250 volt station batteries and/or chargers inoperable, restore the inoperable equipment to OPERABLE status within 2 hours[b].
ACTION C

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]: LA.2

1. At least once per 7 days by verifying that: moved to ITS 3.8.6 A.2

   a. The parameters in Table 4.9.C-1 meet Category A limits, and

SR 3.8.4.1 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. A.4 L.1

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,

SR 3.8.4.2 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 M.3

LA.2

a An alternate 125 volt battery shall adhere to these same Surveillance Requirements to be considered OPERABLE
SR 3.8.4.1 except the Unit 2 total battery terminal voltage on float charge shall be verified weekly as ≥130.2 volts.

ACTION A b Each 250 volt battery may be inoperable for a maximum of seven days per operating cycle for maintenance or testing. If it is determined that a 250 volt battery need be replaced as a result of maintenance or testing, a
ACTION B specific battery may be inoperable for an additional seven days per operating cycle.

A.1

ITS 3.8.4

3.9 - LIMITING CONDITIONS FOR OPERATION

ACTION D
ACTION E
ACTION F

2. With one of the above required 125 volt station batteries and/or chargers inoperable, within 2 hours[c], either restore the inoperable equipment to OPERABLE status, or place an OPERABLE corresponding alternate 125 volt battery (with an OPERABLE full capacity charger) in service.

M.2 add proposed ACTION G

ACTION H

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.

A.2 moved to ITS 3.8.6

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.

4.9 - SURVEILLANCE REQUIREMENTS

moved to ITS 3.8.6 A.2

c. The average electrolyte temperature of all connected cells is above 65°F.

LD.1

3. At least every ~~18~~ 24 months by verifying that:

a. SR 3.8.4.4 The cells, cell plates and battery racks show no visual indication of physical damage or abnormal deterioration.

L.2

b. SR 3.8.4.5 The cell-to-cell and terminal connections are clean, tight, free of corrosion and coated with anti-corrosion material.

c. SR 3.8.4.6 The resistance of each cell-to-cell and terminal connection is ≤150 x10⁻⁶ ohms ~~or ≤20% above baseline connection resistance whichever is higher~~.

M.3 A.5 add proposed limits

d. SR 3.8.4.3 SR 3.8.4.7 The ~~battery chargers~~ will supply a ~~load equal to the manufacturer's rating~~ for at least 4 hours.

A.5

LD.1

4. SR 3.8.4.8 At least every ~~18~~ 24 months, by verifying that the battery capacity is adequate to supply and maintain in OPERABLE status all of ~~the actual or simulated~~ required emergency loads for design duty cycle when the battery is subjected to a battery service test.

LA.3

ACTION D — c With Unit 2 and 3 in OPERATIONAL MODE(s) 1, 2 or 3, each 125 volt battery may be inoperable for up to a maximum of seven days per operating cycle for maintenance or testing provided the alternate 125 volt battery is placed into service and is OPERABLE. If it is determined that a 125 volt battery need be replaced as a result of

ACTION E — maintenance or testing, a specific battery may be inoperable for an additional seven days provided the alternate 125 volt battery is placed into service and is OPERABLE. With the other Unit in MODE(s) 4 or 5, operations may

ACTION F — continue with one of the two 125 volt battery systems inoperable provided the alternate 125 volt battery is placed into service and is OPERABLE.

A.1 ITS 3.8.4

3.9 - LIMITING CONDITIONS FOR OPERATION

Moved to ITS 3.8.6 A.2

6. With any Category B parameter not within its allowable value(s), immediately declare the battery inoperable.

4.9 - SURVEILLANCE REQUIREMENTS

SR3.8.4.9 1st Frequency

5. At least once per 60 months, verify that the battery capacity is at least 80% of the manufacturer's rating when subjected to either a performance discharge test or a modified performance discharge test.

SR 3.8.4.8 Note

The modified performance discharge test satisfies the requirements of both the service test and performance test and therefore, may be performed in lieu of a service test.

SR 3.8.4.9 2nd Frequency

6. For any battery that shows signs of degradation or has reached 85% of the service life for the expected application and delivers a capacity of less than 100% of the manufacturer's rated capacity, a performance discharge test or a modified performance test of battery capacity shall be performed at least once every 12 months ~~or the battery shall be replaced or restored to 100% or greater of the manufacturer's rated capacity during the next refuel outage.~~ M.1 ~~Degradation is indicated when the battery capacity drops more than 10% from its capacity on the previous performance test, or is below 90% of the manufacturer's rating.~~ LA.4 If the battery has reached 85% of service life, delivers a capacity of 100% or greater of the manufacturer's rated capacity and has shown no signs of degradation, a performance test or a modified performance test of battery capacity shall be performed at least once every two years.

3rd Frequency

A.2 moved to ITS 3.8.6

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.

ADMINISTRATIVE

A.1 In the conversion of the Dresden 2 and 3 current Technical Specifications (CTS) to the proposed plant specific Improved Technical Specifications (ITS), certain wording preferences or conventions are adopted that do not result in technical changes (either actual or interpretational). Editorial changes, reformatting, and revised numbering are adopted to make the ITS consistent with the BWR Standard Technical Specifications, NUREG-1433, Rev. 1 (i.e., the Improved Standard Technical Specifications (ISTS)).

A.2 The ITS present the battery cell parameter limits in a separate LCO (ITS 3.8.6). The battery hardware components (battery and charger) remain in a DC Sources LCO (ITS 3.8.4). This is in accordance with the format of the BWR ISTS, NUREG-1433, Rev. 1. Any technical changes to the battery cell parameter requirements of Table 4.9.C-1 (including CTS 4.9.C.1.a and 4.9.C.2.a), the average electrolyte temperature requirements of CTS 4.9.C.2.c and CTS 3.9.C Actions 4, 5, and 6 are addressed in the Discussion of Changes for ITS: 3.8.6.

A.3 Not used.

A.4 The explicit requirement in CTS 4.9.C.1.b to verify correct breaker alignment to each battery charger has been deleted. The ITS SR 3.8.4.1 requirement to verify battery terminal voltage, on float charge is adequate. Float charge is the condition in which the charger is supplying the continuous charge required to overcome the internal losses of a battery and to maintain the battery in a fully charged state. Therefore, the charger must be in service and aligned correctly to meet this surveillance. Therefore, the explicit requirement to periodically verify breaker alignment to each charger is considered to be unnecessary for ensuring compliance with the applicable Technical Specification OPERABILITY requirements and its removal is considered administrative.

A.5 CTS 4.9.C.3.d requires verifying the battery charger will supply a load equal to the manufacturer's rating for at least 4 hours. Since battery charger ratings do not change, the appropriate values have been included in ITS SRs 3.8.4.3 and 3.8.4.7. The Surveillance Frequency for SR 3.8.4.3 is being maintained at 18 months for the 250 V battery chargers in accordance with the current licensing basis based on battery charger performance. However, as discussed in Discussion of Change LD.1 below, the Surveillance Frequency for SR 3.8.4.7 is proposed to be extended from 18 months to 24 months for the 125 V battery chargers. Replacing the current statement with the specific manufacturer's ratings and establishing separate SRs based on Surveillance Frequencies are presentation preferences consistent with the format of the BWR ISTS, NUREG-1433, Rev. 1, and is considered an administrative change.

TECHNICAL CHANGES - MORE RESTRICTIVE

M.1 CTS 4.9.C.6 provides an allowance to replace or restore the battery to 100% or greater of manufacturer's rated capacity during the next refuel outage, for a battery that has shown signs of degradation or reached 85% service life and delivers a capacity of less than 100% of manufacturer's rated. This allowance is in lieu of performing either a performance discharge test or a modified performance test to verify battery capacity every 12 months. ITS 3.8.4 does not retain this allowance. This change deletes the alternative to performing a 12 month capacity test, and establishes requirements consistent with IEEE-450 and BWR ISTS, NUREG-1433, Rev. 1, and is considered more restrictive.

M.2 ITS LCO 3.8.4.c requires the opposite unit's 125 VDC electrical power subsystem capable of supporting equipment required to be OPERABLE by LCO 3.6.4.3, "Standby Gas Treatment (SGT) System, LCO 3.7.4, "Control Room Emergency Ventilation (CREV) System" (Unit 3 only), LCO 3.7.5, "Control Room Emergency Ventilation Air Conditioning (AC) System" (Unit 3 only), and LCO 3.8.1, "AC Sources-Operating." This is required to ensure that all necessary electrical power is available to support operation of equipment common to both units. An Action (ITS 3.8.4 ACTION G) has been added, which requires the restoration of the opposite unit's electrical power subsystems to OPERABLE status within 7 days. This Action is required based on the definition of OPERABILITY and provides assurance that electrical power is available to the equipment within an acceptable time period. Existing requirements in the CTS would require entry into CTS 3.7.P Action 1 (one standby gas treatment subsystem inoperable) and CTS 3.8.D Action 1.a (Control Room Emergency Ventilation System) where restoration is required in 7 days. In addition, existing requirements would also require entry into CTS 3.8.D Action 1.b (Control Room Emergency Ventilation AC System) where restoration is required in 30 days. Thus, the same inoperability conditions would result in CTS Actions (CTS 3.7.P Action 1 and CTS 3.8.D Action 1.a) and allowed outage times that are equivalent to those proposed for ITS 3.8.4 ACTION G and its associated Completion Time. Therefore, the portion of the change (with respect to Standby Gas Treatment System and Control Room Emergency Ventilation System) is a presentation preference change and can be considered administrative. However, the addition of the requirement to support the requirements of LCO 3.8.1, "AC Sources - Operating" and the limitation placed on the Completion Time for restoration of DC electrical power for the Control Room Emergency Ventilation AC System are considered more restrictive since the opposite unit AC sources requirements are not currently required by CTS 3.9.A and since the Completion Time for restoration of Control Room Emergency Ventilation AC System DC related inoperabilities has been reduced from 30 days to 7 days. Therefore, this change is considered more restrictive.

TECHNICAL CHANGES - MORE RESTRICTIVE

M.3 The CTS 4.9.C.2.b and 4.9.C.3.c provisions which allow the battery terminal and connector resistance to be ≤ 20% above the baseline connection resistance is not being retained in ITS 3.8.4. This allowance is an alternative to demonstrating that the measured battery terminal and connector resistance is ≤ 150 X 10^{-6} ohms, and is not needed to ensure battery OPERABILITY. The ≤ 150 X 10^{-6} ohm limit is based on the battery manufacturer's recommendations. This change deletes the alternative to meeting the 150 X 10^{-6} ohm battery terminal and connector resistance limit and establishes requirements consistent with IEEE-450 recommendations and BWR ISTS, NUREG-1433, Rev. 1. As such, this change is considered more restrictive.

TECHNICAL CHANGES - LESS RESTRICTIVE

"Generic"

LA.1 LCO 3.8.4 has been written to require the two 250 VDC electrical power subsystems, the Division 1 and 2 125 VDC electrical power subsystems, and the opposite unit's Division 2 125 VDC electrical power subsystem, to be OPERABLE and the details relating to system OPERABILITY (what constitutes a DC Source division) in CTS 3.9.C.1 and 2 are proposed to be relocated to the Bases. The details for system OPERABILITY are not necessary in the LCO. The definition of OPERABILITY suffices. As such, the relocated details are not required to be in the ITS to provide adequate protection of the public health and safety. Changes to the Bases will be controlled by the provisions of the proposed Bases Control Program described in Chapter 5 of the ITS.

LA.2 The detail of CTS 4.9.C footnote a that an alternate 125 volt battery shall adhere to these same Surveillance Requirements to be considered OPERABLE is proposed to be relocated to the Bases, in the form of a discussion that states the alternate 125 VDC battery can be used to meet the requirements of the LCO. This requirement is not necessary to ensure the OPERABILITY of the alternate batteries since the proposed Required Action D.1 and E.1 will require an "OPERABLE alternate 125 VDC electrical power subsystem." This requirement, the definition of OPERABILITY, and the proposed Surveillances are sufficient to ensure that the requirement will be met. As such, the relocated detail is not required to be in the ITS to provide adequate protection of the public health and safety. Changes to the Bases will be controlled by the provisions of the proposed Bases Control Program described in Chapter 5 of the ITS.

TECHNICAL CHANGES - LESS RESTRICTIVE (continued)

LA.3 The details of the method (actual or simulated) to perform the battery service test (CTS 4.9.C.4) are proposed to be relocated to the Bases. The ITS requirements that the battery capacity be adequate to supply and maintain in OPERABLE status "the required emergency loads" is adequate to convey that the DC loads must be consistent with the plant specific DC load profile. The plant will be able to use a load bank or utilize actual plant loads to perform the required testing. These details are not necessary to ensure the OPERABILITY of the batteries. The requirements of ITS 3.8.4 and proposed SR 3.8.4.8 are adequate to ensure the batteries are maintained OPERABLE. As such, the relocated details are not required to be in the ITS to provide adequate protection of public health and safety. Changes to the Bases will be controlled by the provisions of the proposed Bases Control Program discussed in Chapter 5 of the ITS.

LA.4 The format of the proposed Technical Specifications does not include specific limits on degradation, currently described in CTS 4.9.C.6, in the conditional Frequency for proposed SR 3.8.4.9. This information is proposed to be relocated to the Bases where it provides guidance regarding the intent of the term "degradation" as used in this ITS Frequency. This information is not necessary for performance of proposed SR 3.8.4.9 since proposed SR 3.8.4.9 continues to use the term "degradation" in the Frequency. As such, the relocated detail is not required to be in the ITS to provide adequate protection of the public health and safety. Changes to the Bases will be controlled by the provisions of the proposed Bases Control Program described in Chapter 5 of the ITS.

LD.1 The Frequencies for performing CTS 4.9.C.3 and 4.9.C.4 (proposed SRs 3.8.4.4, 3.8.4.5, 3.8.4.6, 3.8.4.7, and 3.8.4.8) have been extended from 18 months to 24 months to facilitate a change to the Dresden 2 and 3 refuel cycle from 18 months to 24 months. The proposed change will allow these Surveillances to extend their Surveillance Frequency from the current 18 month Surveillance Frequency (i.e., a maximum of 22.5 months accounting for the allowable grace period specified in CTS 4.0.B and proposed SR 3.0.2) to a 24 month Surveillance Frequency (i.e., a maximum of 30 months accounting for the allowable grace period specified in CTS 4.0.B and proposed SR 3.0.2). This proposed change was evaluated in accordance with the guidance provided in NRC Generic Letter No. 91-04, "Changes in Technical Specification Surveillance Intervals to Accommodate a 24-Month Fuel Cycle," dated April 2, 1991.

SR 3.8.4.4 verifies battery cells, cell plates, and racks show no visual indication of physical damage or abnormal deterioration that degrades battery performance.

TECHNICAL CHANGES - LESS RESTRICTIVE

LD.1 (cont'd)

SR 3.8.4.5 states to remove visible corrosion and verify battery cell to cell and terminal connections are coated with anti-corrosion material.

SR 3.8.4.6 verifies battery connection resistance is less than the value specified for inter-cell connections and terminal connections.

SR 3.8.4.7 verifies each required 125 V battery charger supplies the specified amps and volts for greater than the required time.

SR 3.8.4.8 verifies battery capacity is adequate to supply, and maintain in OPERABLE status, the required emergency loads for the design duty cycle when subjected to a battery service test.

The purpose of these tests are to ensure the availability of necessary power to ESF systems from Class 1E battery sources. Batteries are required for the mitigation of an accident during conditions in the event of a loss of all offsite power and a worst case single failure. Extending the Surveillance interval for these Surveillances is acceptable for the following reasons: 1) the design, in conjunction with Technical Specification requirements which limit the extent and duration of inoperable DC sources, provides substantial redundancy in DC sources; 2) battery parameters such as float voltage (which verifies battery charger Operability), electrolyte level, and specific gravity are monitored during the operating cycle to verify battery Operability and will provide prompt identification of any substantial battery or battery charger degradation or failure; 3) batteries are not discharged except for the performance of the operating cycle test demonstrations of Operability, so there is minimal risk of age related degradation; and 4) battery attributes subject to degradation due to aging, such as terminal corrosion and cell deterioration, are monitored every 92 days during the operating cycle. Therefore, any substantial degradation of the subject components will be evident prior to the scheduled performance of these tests.

Reviews of historical maintenance and surveillance data have shown that these tests normally pass their Surveillances at the current Frequency. An evaluation has been performed using this data, and it has been determined that the effect on safety due to the extended Surveillance Frequency will be minimal. In addition, the proposed 24 month Surveillance Frequencies, if performed at the maximum interval allowed by proposed SR 3.0.2 (30 months) do not invalidate any assumptions in the plant licensing basis.

TECHNICAL CHANGES - LESS RESTRICTIVE (continued)

"Specific"

L.1 The requirement of CTS 4.9.C.2 to verify, within 7 days after a battery discharge or overcharge, that there is no visible corrosion at either terminals or connectors, or that connection resistance is $\leq 150 \times 10^{-6}$ ohms or $\leq 20\%$ above baseline connection resistance has been removed. This is consistent with the nature of the condition being verified, i.e., that the battery resistance has not degraded significantly, since corrosion rates and connection resistance are not immediately and significantly effected by a severe discharge or overcharge condition.

L.2 CTS 4.9.C.3.b requires the cell-to-cell and terminal connections to be "clean, tight." The confirmation that the connection is "tight" is typically performed by application of a torque, which results in unnecessary stress being applied to the bolted connection. When a battery cell is installed or replaced, plant maintenance procedures require the connections to be torqued within prescribed limits as specified by the manufacturer. After being torqued, the connections remain tight and rarely need to be retorqued. This change is acceptable since, the use of connection resistance readings obtained by either digital low-resistance ohmmeters, or measurement of millivolt drop during capacity testing, to determine that connections are not loose is consistent with the guidelines in IEEE-450 Section 4.4.1, Corrective Actions. Therefore, if the connection satisfies the resistance requirements of proposed SR 3.8.4.6 (performed at the same Frequency), it can be assumed to be sufficiently "tight." As a result, it is not necessary to verify the connections are "tight." The "clean" requirement has been deleted since it is redundant to the "free of corrosion" requirement. In addition, the requirement to verify that connections are "clean" and "tight" is only applicable to nickel cadmium batteries. The DC electrical power subsystem batteries are lead calcium batteries.

RELOCATED SPECIFICATIONS

None

A.1

ITS 3.8.5

A.2 <GENERAL DESCRIPTION>

3.9 - LIMITING CONDITIONS FOR OPERATION

D. D.C. Sources - Shutdown

LCO 3.8.5

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

to support the electrical power distribution subsystem(s) required by LCO 3.8.8, "Distribution Systems - Shutdown."

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

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

LA.1

APPLICABILITY:

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

M.2 add proposed ACTIONS Note

ACTION:

ACTION A

With ~~any of the above~~ one or more 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.

M.1 add proposed Required Action A.1

M.3 add proposed Required Action A.2.4

4.9 - SURVEILLANCE REQUIREMENTS

L.1

D. D.C. Sources - Shutdown

add proposed Note

SR 3.8.5.1

The required batteries and chargers shall be demonstrated OPERABLE[a] per the surveillance requirements in Specification 4.9.C.

LA.2

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

SR 3.8.5.1 except the Unit 2 total battery terminal voltage on float charge shall be verified weekly as ≥130.2 volts.

DISCUSSION OF CHANGES
ITS: 3.8.5 - DC SOURCES — SHUTDOWN

ADMINISTRATIVE

A.1 In the conversion of the Dresden 2 and 3 current Technical Specifications (CTS) to the proposed plant specific Improved Technical Specifications (ITS), certain wording preferences or conventions are adopted that do not result in technical changes (either actual or interpretational). Editorial changes, reformatting, and revised numbering are adopted to make the ITS consistent with the BWR Standard Technical Specifications, NUREG-1433, Rev. 1 (i.e., the Improved Standard Technical Specifications (ISTS)).

A.2 The ITS present the battery hardware components (battery and charger) in the DC Sources LCO (ITS 3.8.5). The battery cell parameters are presented in a separate LCO (ITS 3.8.6).

TECHNICAL CHANGES - MORE RESTRICTIVE

M.1 The existing requirement of CTS 3.9.D for the 250 VDC and 125 VDC electrical power sources to be OPERABLE during shutdown conditions is not specific as to what the sources must be powering. The requirement in ITS LCO 3.8.5 specifies that the sources necessary to supply DC power to all equipment required to be OPERABLE in the current plant condition must be OPERABLE. This added restriction conservatively assures the needed sources of power are OPERABLE, even if this results in both the 250 VDC and 125 VDC sources being required. CTS 3.9.D Action has been subsequently modified to be "one or more required" instead of the current "any of the above," to account for this potential addition.

Since the ITS DC source OPERABILITY requirements require supplying power to all necessary loads, if one or more required DC loads are not being supplied the required DC power, the DC source is inoperable. In this event it may not be necessary to suspend all CORE ALTERATIONS, irradiated fuel handling, and OPDRVs as required by CTS 3.9.D Action. Conservative actions can be assured if all required equipment without the necessary DC power is declared inoperable and the associated ACTIONS of the individual equipment taken (ITS 3.8.5 Required Action A.1). Therefore, along with the conservative additional requirements placed on the DC systems, Required Action A.1, which requires the associated supported equipment to be declared inoperable, is also added. These additions represent restrictions consistent with implicit assumptions for operation in shutdown conditions (required equipment receiving the necessary required power); restrictions which are not currently imposed via the Technical Specifications.

TECHNICAL CHANGES - MORE RESTRICTIVE (continued)

M.2 CTS 3.9.D, "DC Sources — Shutdown" Actions have been modified by a Note stating that LCO 3.0.3 is not applicable (ITS 3.8.5 ACTIONS Note). If moving irradiated fuel assemblies while in MODE 4 or 5, LCO 3.0.3 would not specify any action. If moving irradiated fuel assemblies while in MODE 1, 2, or 3, the fuel movement is independent of reactor operations. This clarification is necessary because defaulting to LCO 3.0.3 during irradiated fuel assembly movement in MODE 1, 2, or 3 would require the reactor to be shutdown, but would not require suspension of movement of irradiated fuel assemblies. Therefore, the proposed Note ensures that proper actions are taken when moving irradiated fuel assemblies in MODE 1, 2, or 3 (i.e., LCO 3.0.3 is not applicable and cannot be used in lieu of suspending fuel movement as required by the ACTIONS of the LCO). This change is also consistent with TSTF-36, Rev. 3.

M.3 In the event the necessary DC sources are not OPERABLE, plant conditions are conservatively restricted in CTS 3.9.D Action (ITS 3.8.5 Required Actions A.2.1, A.2.2, and A.2.3) by suspending CORE ALTERATIONS, irradiated fuel handling, and OPDRVs. However, continued operation without the necessary DC sources should not be considered acceptable. Therefore, ITS 3.8.5 Required Action A.2.4 is added to commence and continue attempts to restore the necessary DC sources. (Note that if actions are taken in accordance with ITS 3.8.5 Required Action A.1, sufficiently conservative measures are assured by the ACTIONS for the individual components declared inoperable without requiring the efforts to restore the inoperable source.) ITS 3.8.5 Required Action A.2.4 results in an action which does not allow continued operation in the existing plant condition. This has the effect of not allowing MODE changes per LCO 3.0.4. Therefore this existing implicit requirement is explicitly addressed in the ITS 3.8.5 ACTIONS.

TECHNICAL CHANGES - LESS RESTRICTIVE

"Generic"

LA.1 The requirements for OPERABLE DC electrical power distribution subsystems are contained in ITS 3.8.8, "Distribution Systems—Shutdown." Thus, ITS LCO 3.8.5 has been written to require the DC electrical power distribution subsystem(s) required to support the electrical distribution subsystem(s) required by LCO 3.8.8 (see Discussion of Change M.1 above), and the details relating to system OPERABILITY in CTS 3.9.D (what constitutes a required DC electrical power source) are proposed to be relocated to the Bases. The details for system

TECHNICAL CHANGES - LESS RESTRICTIVE

LA.1 (cont'd) OPERABILITY are not necessary in the LCO. The definition of OPERABILITY suffices. Therefore, the relocated details are not required to be in the ITS to provide adequate protection of the public health and safety. Changes to the Bases will be controlled by the provisions of the proposed Bases Control Program described in Chapter 5 of the ITS.

LA.2 The detail of CTS 4.9.D footnote a that an alternate 125 volt battery shall adhere to these same Surveillance Requirements to be considered OPERABLE is proposed to be relocated to the Bases, in the form of a discussion that states the alternate 125 VDC battery can be used to meet the requirements of the LCO. This requirement is not necessary to ensure the OPERABILITY of the alternate batteries. This requirement, the definition of OPERABILITY, and the proposed Surveillances are sufficient to ensure that the requirement will be met. As such, the relocated detail is not required to be in the ITS to provide adequate protection of the public health and safety. Changes to the Bases will be controlled by the provisions of the proposed Bases Control Program described in Chapter 5 of the ITS.

"Specific"

L.1 Three of the DC sources Surveillances required to be performed by CTS 4.9.D (CTS 4.9.C.4, 4.9.C.5, and 4.9.C.6) involve tests that would cause the only required OPERABLE 250 VDC battery to be rendered inoperable. This condition presents a significant risk if an event were to occur during the test. The NRC has previously provided Surveillance exceptions in the Dresden 2 and 3 CTS to avoid a similar condition for the AC sources, but the exceptions have not been applied to DC sources. In an effort to consistently address this concern, proposed SR 3.8.5.1 has a Note that excludes performance requirements of Surveillances that would require the required OPERABLE 250 VDC battery(s) to be rendered inoperable. This allowance does not take exception to the requirement for the battery to be capable of performing the particular function - just to the requirement to demonstrate that capability while that source of power is being relied on to support meeting the LCO.

RELOCATED SPECIFICATIONS

None

ITS 3.8.6

A.1

Battery Cell Parameters A.2

3.9 - LIMITING CONDITIONS FOR OPERATION

C. ~~D.C. Sources - Operating~~

LCO 3.8.6

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: A.2

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

See ITS 3.8.4

A.3

APPLICABILITY:

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

ACTION:

1. With one of the above required 250 volt station batteries and/or chargers inoperable, restore the inoperable equipment to OPERABLE status within 2 hours[b].

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]. LA.1

1. At least once per 7 days by verifying that:

SR 3.8.6.1

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: L.1

SR 3.8.6.2

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

for average electrolyte temperature only

LA.1

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.~~

b Each 250 volt battery may be inoperable for a maximum of seven days per operating cycle for maintenance or testing. If it is determined that a 250 volt battery need be replaced as a result of maintenance or testing, a specific battery may be inoperable for an additional seven days per operating cycle.

3.9 - LIMITING CONDITIONS FOR OPERATION

A.4

add proposed ACTIONS Note

2. With one of the above required 125 volt station batteries and/or chargers inoperable, within 2 hours[c], either restore the inoperable equipment to OPERABLE status, or place an OPERABLE corresponding alternate 125 volt battery (with an OPERABLE full capacity charger) in service.

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.

ACTION A

add proposed Required Action A.1

M.1

A.5

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 ~~7~~ 31 days.

L.3

ACTION A

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.

4.9 - SURVEILLANCE REQUIREMENTS

L.2

SR 3.8.6.3 c. The average electrolyte temperature of ~~all~~ representative connected cells is above 65°F.

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.

See ITS 3.8.4

c With Unit 2 and 3 in OPERATIONAL MODE(s) 1, 2 or 3, each 125 volt battery may be inoperable for up to a maximum of seven days per operating cycle for maintenance or testing provided the alternate 125 volt battery is placed into service and is OPERABLE. If it is determined that a 125 volt battery need be replaced as a result of maintenance or testing, a specific battery may be inoperable for an additional seven days provided the alternate 125 volt battery is placed into service and is OPERABLE. With the other Unit in MODE(s) 4 or 5, operations may continue with one of the two 125 volt battery systems inoperable provided the alternate 125 volt battery is placed into service and is OPERABLE.

3.9 - LIMITING CONDITIONS FOR OPERATION

ACTION B 6. With any Category B parameter not within its allowable value(s), immediately declare the battery inoperable.

add proposed ACTION B for electrolyte temperature and Category A or B limits not restored

A.6

4.9 - SURVEILLANCE REQUIREMENTS

5. At least once per 60 months, verify that the battery capacity is at least 80% of the manufacturer's rating when subjected to either a performance discharge test or a modified performance discharge test. The modified performance discharge test satisfies the requirements of both the service test and performance test and therefore, may be performed in lieu of a service test.

6. For any battery that shows signs of degradation or has reached 85% of the service life for the expected application and delivers a capacity of less than 100% of the manufacturer's rated capacity, a performance discharge test or a modified performance test of battery capacity shall be performed at least once every 12 months or the battery shall be replaced or restored to 100% or greater of the manufacturer's rated capacity during the next refuel outage. Degradation is indicated when the battery capacity drops more than 10% from its capacity on the prévious performance test, or is below 90% of the manufacturer's rating. If the battery has reached 85% of service life, delivers a capacity of 100% or greater of the manufacturer's rated capacity and has shown no signs of degradation, a performance test or a modified performance test of battery capacity shall be performed at least once every two years.

See ITS 3.8.4

A.1 ITS 3.8.6

TABLE 3.8.6-1

TABLE 4.9.C-1

BATTERY SURVEILLANCE REQUIREMENTS

CATEGORY C

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	≥2.07 volts
Specific Gravity[a]	≥1.200[b] move Notation	≥ 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]

M.2 M.4

add proposed footnote (a) L.4

TABLE NOTATIONS

add proposed footnote (c) time allowance M.3

footnote b (a) Corrected for electrolyte temperature and level.

footnote c (b) Or battery charging current is less than 2 amperes when on float charge.

~~(c) May be corrected for average electrolyte temperature.~~ M.2

Page 4 of 5

A.1

A.2

add proposed LCO 3.8.6

Battery Cell Parameters

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.

See ITS 3.8.5

A.3

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.

L.5

add proposed ACTIONS A and B

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.2

A.2

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.~~

DISCUSSION OF CHANGES
ITS: 3.8.6 - BATTERY CELL PARAMETERS

ADMINISTRATIVE

A.1 In the conversion of the Dresden 2 and 3 current Technical Specifications (CTS) to the proposed plant specific Improved Technical Specifications (ITS), certain wording preferences or conventions are adopted that do not result in technical changes (either actual or interpretational). Editorial changes, reformatting, and revised numbering are adopted to make the ITS consistent with the BWR Standard Technical Specifications, NUREG-1433, Rev. 1 (i.e., the Improved Standard Technical Specifications (ISTS)).

A.2 CTS 3.9.C specifies the LCO requirements for both the DC electrical power sources and battery parameters, while CTS 3.9.D only specifies LCO requirements for DC electrical power sources. The ITS present the battery cell parameters limits in a separate LCO (ITS 3.8.6). Thus, a revised LCO statement has been provided reflecting this. In addition, the reference in CTS 3.9.C to Table 4.9.C-1 has been replaced with limits since all battery parameters (i.e., average electrolyte temperature) are not specified in the Table. The appropriate ACTIONS and SRs have been moved to this LCO also. CTS 4.9.D is being deleted since its provisions only reference requirements in CTS 4.9.C. ITS 3.8.6 contains these current provisions of CTS 4.9.C and thus no reference is necessary.

A.3 The Applicability of ITS LCO 3.8.6 is "when associated DC electrical power subsystem is required to be OPERABLE." This covers the current MODES 1, 2, 3, 4, and 5 and fuel handling requirements, and is actually more restrictive for the DC power subsystems since more than one of the batteries may be required in MODES 4 and 5 since the DC sources Applicability has been changed (see Discussion of Change M.1 for ITS: 3.8.5 for further discussion). However, since these restrictions are not discussed in this Specification, these changes are considered administrative in nature.

A.4 This proposed change to the Actions of CTS Table 3.9.C provides more explicit instructions for proper application of the Actions for Technical Specifications compliance. In conjunction with proposed Specification 1.3, "Completion Times," the ITS 3.8.6 ACTIONS Note ("separate condition entry is allowed for each battery") provides direction consistent with the intent of existing Actions for a battery parameter not within limits. It is intended that each battery with cell parameters not within limits is allowed a certain time to complete the Required Actions. Since this change only provides more explicit direction of the current interpretation of the existing specification, this change is considered administrative.

ADMINISTRATIVE (continued)

A.5 CTS 3.9.C Action 4 allows the Category A parameters(s) to be not within limits and the battery to be considered OPERABLE, provided the associated battery charger is OPERABLE. The specific requirement for the battery charger has been deleted. Whenever any required DC battery charger is inoperable, entry into the associated actions for the DC sources is required (CTS 3.9.C Action 1 and 2 and ITS 3.8.4 ACTIONS). Therefore, the explicit requirement is not necessary in the ITS. Since no technical changes are being made, this change is considered administrative.

A.6 A specific Condition has been added in ITS 3.8.6 ACTION B to explicitly require the battery to be declared inoperable when the temperature is not within limit or when Category A or B limits have not been restored within the applicable time. Currently, the battery temperature is a Surveillance in the DC Sources — Operating Specification (CTS 4.9.C.2.c), thus failure of the Surveillance would result in an inoperable battery. Since this Surveillance has been moved to this new Specification (ITS 3.8.6), an ACTION has been provided to require the battery to be declared inoperable (ITS 3.8.6 ACTION B, second Condition). The current battery parameter limit actions (CTS Table 3.9.C Actions 4, 5, and 6) do not specifically state to declare the battery inoperable at the end of the allowed restoration time. However, since this is obviously the intent, an ACTION has also been provided (ITS 3.8.6 ACTION B, first Condition). Since this change only provides more explicit direction of the CTS requirements, this change is considered administrative.

TECHNICAL CHANGES - MORE RESTRICTIVE

M.1 A new requirement has been added to CTS Actions 3.9.C.4 and 3.9.C.5 for when a Category A or B limit is not met. ITS 3.8.6 Required Action A.1 requires a check within 1 hour that the pilot cell electrolyte level and float voltage are within the Category C limits (CTS Table 4.9.C-1 Category B allowable values). This action ensures that if the pilot cell is exceeding Category C limits, the battery will be declared inoperable immediately. As such, this change is an additional restriction on plant operation.

M.2 The CTS Table 4.9.C-1 footnote (c) allowance to correct the Category B float voltage limit for average electrolyte temperature has been deleted based on IEEE-450, 1987 recommendations. This change is an additional restriction on plant operation.

TECHNICAL CHANGES - MORE RESTRICTIVE (continued)

M.3 Additional limitations have been imposed on CTS Table 4.9.C-1 footnote (b) (ITS Table 3.8.6-1 footnote (c)). These new limitations restrict the use of replacing specific gravity checks with charging current checks to 7 days when the battery is on float change following a battery charge only. Currently there are no restrictions on when this replacement can be used and for how long. In addition, ITS Table 3.8.6-1 footnote (c) also requires an actual specific gravity measurement at the end of the 7 day allowance. These restrictions will avoid excessive reliance on charging current. This change is an additional restriction on plant operations.

M.4 CTS Table 4.9.C-1, Float Voltage, Allowable Value of ≥ 2.07 volts for each connected cell is being revised. Proposed ITS Table 3.8.6-1 CATEGORY C requires the float voltage to be > 2.07 volts. The elimination of the equality allowance for the 2.07 volts float voltage is consistent with the recommendation identified in IEEE-450-1995, Annex C, C.1 Note, and BWR ISTS, NUREG-1433, Rev. 1. This change imposed an additional operations limitation and is considered more restrictive.

TECHNICAL CHANGES - LESS RESTRICTIVE

"Generic"

LA.1 The detail of CTS 4.9.C footnote a that an alternate 125 volt battery shall adhere to these same Surveillance Requirements to be considered OPERABLE is proposed to be relocated to the Bases, in the form of a discussion that states the alternate 125 volt battery can be used to meet the requirements of the LCO. This requirement is not necessary to ensure the OPERABILITY of the alternate batteries. The proposed LCO requirement, the definition of OPERABILITY, and the proposed Surveillances are sufficient to ensure that the requirement will be met. As such, the relocated detail is not required to be in the ITS to provide adequate protection of the public health and safety. Changes to the Bases will be controlled by the provisions of the proposed Bases Control Program described in Chapter 5 of the ITS.

TECHNICAL CHANGES - LESS RESTRICTIVE (continued)

"Specific"

L.1 The requirement in CTS 4.9.C.2 to verify that the CTS 4.9.C.2.c average electrolyte temperature of all battery cells is above 65°F within 7 days after a battery discharge or overcharge has been removed. This is consistent with the nature of the condition being verified, i.e., that the battery temperature has not decreased since severe discharging and overcharging generally increase the battery electrolyte temperature.

L.2 The CTS 4.9.C.2.c requirement, to measure temperature of all connected cells every 92 days, is being changed. ITS SR 3.8.6.3 requires the average electrolyte temperature of representative cells (10% of the total, as defined in the Bases) be verified within limits every 92 days. This change reduces the number of cells tested to 6 based on a total of either 58 or 60 cells in the 125 VDC batteries and to 12 based on a total of 120 cells in the 250 VDC batteries. This change is consistent with the recommendations of IEEE-450-1995 which states that the average electrolyte temperature of the representative cells should be determined quarterly. This change is also acceptable based on implementation of the ITS 3.8.6 Battery Cell Parameters Specification, consistent with the requirements of BWR ISTS, NUREG-1433, Revision 1, which continues to monitor battery cell electrolyte temperatures to ensure that these temperatures remain within acceptable operating limits.

L.3 The time specified in CTS 3.9.C Actions 4 and 5 to restore Category A and B battery cell parameters to within limits has been extended from the next 6 days and 7 days, respectively, to 31 days in ITS 3.8.6 Required Action A.3. During this time sufficient battery capacity exists to perform its intended function. In addition, periodic verification that the Category C limits are not being exceeded must be performed. ITS 3.8.6 Required Action A.2 requires this verification every 7 days. This action will further ensure that during this additional time, the battery can perform its intended function. These changes are consistent with IEEE battery working group recommendations in a letter from B.M. Radimer (IEEE) to S.K. Agarwal (NRC) dated August 2, 1988 and are also consistent with the BWR ISTS, NUREG-1433, Rev. 1.

L.4 ITS Table 3.8.6-1 footnote (a) has been added to the electrolyte level limits for Table 3.8.6-1, Category A and B limits (CTS Table 4.9.C-1, Category A and B limits). This footnote allows for a temporary electrolyte level increase during and following an equalize charge, and is based on guidance from Appendix A to IEEE-450, 1980. The level excursion is due to gas generation during the equalize charge and would be expected to return to normal within 3 days following completion of the equalize charge.

TECHNICAL CHANGES - LESS RESTRICTIVE (continued)

L.5 CTS 4.9.D requires the batteries and chargers to be demonstrated OPERABLE per the Surveillance Requirements of CTS 4.9.C. The CTS 4.9.C requirements include battery cell parameter Surveillances. However, the CTS 3.9.D Action does not provide any specific actions for when battery cell parameters are exceeding the limits in CTS 4.9.C. Therefore, the associated DC electrical power sources must be declared inoperable and the Action of CTS 3.9.D must be taken immediately. In lieu of taking the CTS 3.9.D Action immediately, ITS 3.8.6 ACTION A will provide time to restore the Category A and B battery cell parameters prior to declaring the associated DC power source inoperable and taking the Action of CTS 3.9.D (ITS 3.8.5 ACTION A). ITS 3.8.6 ACTION B will require the associated battery to be declared inoperable (thus requiring ACTION A of ITS 3.8.5 to be taken) if ACTION A is not met, if the Category C battery cell parameters are not met, or if the electrolyte temperature is not within the limit. The proposed ACTIONS are identical (except as modified by the Discussion of Change L.3 above) to those ACTIONS already approved for use by the NRC for when the Category A and B battery cell parameters are not within limit when the unit is in MODE 1, 2, or 3 (CTS 3.9.C Actions 4 and 5). These proposed ACTIONS are acceptable since, during the time the Category A and B battery cell parameters are not within limits, the battery is still capable of performing its intended function, and, if the battery cell parameters are not within limits for other reasons, the battery is immediately declared inoperable and the appropriate actions (which are consistent with the current Actions) taken.

RELOCATED SPECIFICATIONS

None

A.1

3.9 - LIMITING CONDITIONS FOR OPERATION

E. Distribution - Operating

The following power distribution systems shall be energized:

A.2

LCO 3.8.7.a and b

1. Division 1 and Division 2 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.~~

LA.1

A.2

LCO 3.8.7.c

2. Division 1 and Division 2 ~~250 volt~~ D.C. power distribution~~, consisting of:~~

~~a. For Unit 2, TB MCC 2 and RB MCC 2.~~

~~b. For Unit 3, TB MCC 3 and RB MCC 3.~~

~~3. For Unit 2, 125 volt D.C. power distribution, consisting of:~~

~~a. TB Main Bus Nos. 2A-1 and 3A,~~

~~b. TB Res. Bus Nos. 2B and 2B-1,~~

~~c. Reserve Bus No. 2, and~~

~~d. RB Distribution Panel No. 2.~~

LA.1

; and

The portions of the opposite unit's Division 2 AC and DC electrical power distribution subsystems necessary to support equipment required to be OPERABLE by LCO 3.6.4.3, "Standby Gas Treatment (SGT) System," LCO 3.7.4, "Control Room Emergency Ventilation (CREV) System" (Unit 3 only), LCO 3.7.5, "Control Room Emergency Ventilation Air Conditioning (AC) System" (Unit 3 only), and LCO 3.8.1, "AC Sources - Operating."

M.3

4.9 - SURVEILLANCE REQUIREMENTS

E. Distribution - Operating

SR 3.8.7.1 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.

..9 - LIMITING CONDITIONS FOR OPERATION

4.9 - SURVEILLANCE REQUIREMENTS

~~4. For Unit 3, 125 volt D.C. power distribution, consisting of:~~

~~a. TB Main Bus Nos. 2A-1, 3A and 3A-1,~~

~~b. TB Res. Bus Nos. 3B and 3B-1, and~~

~~c. RB Distribution Panel No. 3.~~

LA.1

APPLICABILITY:

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

ACTIONS:

or more — L.1

ACTIONS A, B, and C — 1. With one or more of the above required A.C. distribution systems not energized, re-energize the system within 8 hours, — add proposed Required Actions A.1, B.1, and C.1 Second Completion Time — M.1

ACTION F — or be in at least HOT SHUTDOWN within the next 12 hours and in COLD SHUTDOWN within the following 24 hours.

or more — L.1

ACTION D — 2. With one or more of the above required D.C. distribution systems not energized, re-energize the system within 2 hours, — add proposed Required Action D.1 Second Completion Time — M.1

ACTION F — or be in at least HOT SHUTDOWN within the next 12 hours and in COLD SHUTDOWN within the following 24 hours.

add proposed ACTION E — M.3

add proposed ACTION G — M.2

ADMINISTRATIVE

A.1 In the conversion of the Dresden 2 and 3 current Technical Specifications (CTS) to the proposed plant specific Improved Technical Specifications (ITS), certain wording preferences or conventions are adopted that do not result in technical changes (either actual or interpretational). Editorial changes, reformatting, and revised numbering are adopted to make the ITS consistent with the BWR Standard Technical Specifications, NUREG-1433, Rev. 1 (i.e., the Improved Standard Technical Specifications (ISTS)).

A.2 CTS LCO 3.9.E currently identifies the electrical buses and distribution panels which comprise the AC and DC power distribution systems. The details relating to the electrical power distribution system design and OPERABILITY are proposed to be relocated to the Bases (see LA.1 discussion below). As a result, ITS LCO 3.8.7 does not include a detailed listing of the electrical power distribution system components required for OPERABILITY in terms of Division 1 and Division 2 electrical power distribution subsystems. Although not previously indicated in CTS LCO 3.9.E, Dresden 2 and 3 currently include the Division 1 and Division 2 subsystem designations for the applicable electrical power distribution system buses, motor control centers, and distribution panels. The subsystems and associated components are consistent with those proposed for ITS LCO 3.8.7. Therefore, the existing OPERABILITY requirements are not altered. Furthermore, since a listing of the applicable power distribution system components is retained in the Bases, the use of the Division 1 and Division 2 subsystem designations in ITS LCO 3.8.7 in lieu of listing the applicable components is a presentational preference change only. As such, the change is considered administrative.

A.3 Not used.

TECHNICAL CHANGES - MORE RESTRICTIVE

M.1 The Completion Times of ITS 3.8.7 ACTIONS A, B, C, and D have a limitation in addition to the 8 hour or 2 hour limit of CTS 3.9.E Actions 1 and 2. This additional limit establishes a maximum time allowed for any combination of distribution subsystems listed in ITS LCO 3.8.7.a and b to be inoperable during any single contiguous occurrence of failing to meet the LCO. If a Division 1 AC distribution subsystem is inoperable while, for instance, a Division 1 125 V DC bus is inoperable and subsequently returned OPERABLE, the LCO may already have been not met for up to 8 hours. This situation could lead to a total duration of 10 hours since initial failure of the LCO to restore the Division 1 125 V DC distribution system. Then, a Division 1 AC subsystem could again become

TECHNICAL CHANGES - MORE RESTRICTIVE

M.1 (cont'd) inoperable, and the DC distribution restored OPERABLE. This could continue indefinitely. Therefore, to preclude this situation and place an appropriate restriction on any such unusual situation, the additional Completion Time of "16 hours from discovery of failure to meet LCO 3.8.7.a or b" is proposed.

M.2 CTS 3.9.E Action 1 allows 8 hours to restore one inoperable AC subsystem and Action 2 allows 2 hours to restore one inoperable DC subsystem. Certain combinations of inoperable AC and DC subsystems will result in a loss of safety function (e.g., an inoperable Division 1 AC subsystem in combination with an inoperable Division 2 DC subsystem). ITS 3.8.7 adds ACTION G, which requires entry into ITS 3.0.3 if the loss of one or more electrical power distribution subsystems results in a loss of safety function. ITS 3.8.7 Required Action G.1 preserves the intent of ITS 3.0.3 and reflects an additional restriction on plant operation.

M.3 ITS LCO 3.8.7.c requires the opposite unit's electrical power distribution subsystem capable of supporting equipment required to be OPERABLE by LCO 3.6.4.3, "Standby Gas Treatment (SGT) System, LCO 3.7.4, "Control Room Emergency Ventilation (CREV) System" (Unit 3 only), LCO 3.7.5, "Control Room Emergency Ventilation Air Conditioning (AC) System" (Unit 3 only), and LCO 3.8.1, "AC Sources-Operating." This is required to ensure that all necessary electrical power is available to support operation of equipment common to both units. An Action (ITS 3.8.7 ACTION E) has been added, which requires the restoration of the opposite unit's required electrical power distribution subsystems to OPERABLE status within 7 days. This Action is required based on the definition of OPERABILITY and provides assurance that electrical power is available to the equipment within an acceptable time period. Existing requirements in the CTS would require entry into CTS 3.7.P Action 1 (one standby gas treatment subsystem inoperable) and CTS 3.8.D Action 1.a (Control Room Emergency Ventilation System) where restoration is required in 7 days. In addition, existing requirements would also require entry into CTS 3.8.D Action 1.b (Control Room Emergency Ventilation AC System) where restoration is required in 30 days. Thus, the same inoperability conditions would result in CTS Actions (CTS 3.7.P Action 1 and CTS 3.8.D Action 1.a) and allowed outage times that are equivalent to those proposed for ITS 3.8.7 ACTION E and its associated Completion Time. Therefore, the portion of the change (with respect to Standby Gas Treatment System and Control Room Emergency Ventilation System) is a presentation preference change and can be considered administrative. However, the addition of the requirement to support the requirements of LCO 3.8.1, "AC Sources - Operating" and the limitation placed on the Completion Time for restoration of the electrical power distribution

TECHNICAL CHANGES - MORE RESTRICTIVE

M.3 (cont'd) subsystem associated with the Control Room Emergency Ventilation AC System are considered more restrictive since the opposite unit AC sources requirements are not currently required by CTS 3.9.A and since the Completion Time for restoration of Control Room Emergency Ventilation AC System related inoperabilities has been reduced from 30 days to 7 days. Therefore, this change is considered more restrictive.

TECHNICAL CHANGES - LESS RESTRICTIVE

"Generic"

LA.1 The details of CTS 3.9.E relating to system design and OPERABILITY are proposed to be relocated to the Bases. The details for system OPERABILITY are not necessary in the LCO. The definition of OPERABILITY suffices. The design details are not necessary to be included in the Technical Specifications to ensure the OPERABILITY of the Distribution Systems since OPERABILITY requirements are adequately addressed in ITS 3.8.7, "Distribution Systems — Operating." Therefore, the relocated details are not required to be in the ITS to provide adequate protection of the public health and safety. Changes to the Bases will be controlled by the provisions of the proposed Bases Control Program described in Chapter 5 of the ITS.

"Specific"

L.1 CTS 3.9.E Action 1 allows 8 hours to restore one inoperable AC subsystem and Action 2 allows 2 hours to restore one inoperable DC subsystem. No time is provided if buses are inoperable in Division 1 and 2 AC subsystems concurrently or in Division 1 and 2 DC subsystems concurrently. Thus a CTS 3.0.C entry is required. ITS 3.8.7 ACTIONS A, D, and E, allow one "or more" AC and DC electrical power distribution subsystems to be concurrently inoperable, without requiring an ITS 3.0.3 entry; either 8 hours or 2 hours (8 hours for AC and 2 hours for DC) will be allowed to restore the inoperabilities. However, ITS 3.8.7 ACTION G is also added to require that if two or more electrical power distribution subsystems are inoperable and result in a loss of function, then ITS 3.0.3 must be entered immediately. Thus if both Division 1 and Division 2 AC subsystems have similar buses inoperable, which result in a loss of function,

TECHNICAL CHANGES - LESS RESTRICTIVE

L.1 (cont'd) ITS 3.8.7 ACTION G will ensure ITS 3.0.3 is entered, consistent with the CTS. This will ensure that the proper actions are taken if a loss of function occurs. Assuming a loss of function has not occurred, the addition of the words "or more" are acceptable since, during this time, sufficient AC and DC buses are Operable to meet the accident analysis (assuming no additional single failure). In addition, if an AC subsystem and a 120 VAC Essential Service Bus or 120 VAC instrument bus, as applicable, are inoperable, a total of 8 hours is provided in CTS 3.9.E Action 1 to restore both to OPERABLE status. ITS 3.8.7 ACTIONS A, B, and C will allow each inoperability to be tracked separately, allowing a maximum of 16 hours to restore all affected subsystems (if the affected subsystem inoperabilities are separated by 8 hours). However, ITS 3.8.7 ACTION G will also ensure that if this results in a loss of function, then ITS LCO 3.0.3 must be entered immediately. This additional time is acceptable since during the additional 8 hours, the unit can still meet accident analysis assumptions. Therefore, these changes will have negligible impact on plant safety.

RELOCATED SPECIFICATIONS

None

A.1

3.9 - LIMITING CONDITIONS FOR OPERATION

F. Distribution - Shutdown

LCO 3.8.8 The following power distribution systems shall be energized ~~with~~ to support equipment required to be OPERABLE M.1

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.~~ LA.1

2. ~~For Unit 2,~~ 125 volt D.C. power distribution ~~consisting of either:~~ ; and the opposite unit's Division 2 electrical power distribution subsystems to support equipment required to be OPERABLE M.1

~~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.~~ LA.1

4.9 - SURVEILLANCE REQUIREMENTS

F. Distribution - Shutdown

SR 3.8.8.1 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.

A.1

3.9 - LIMITING CONDITIONS FOR OPERATION | **4.9 - SURVEILLANCE REQUIREMENTS**

APPLICABILITY:

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

add proposed ACTIONS Note M.2

ACTIONS:

one or more

ACTION A 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.

add proposed Required Action A.1 M.1

add proposed Required Actions A.2.4 and A.2.5 M.3

ADMINISTRATIVE

A.1 In the conversion of the Dresden 2 and 3 current Technical Specifications (CTS) to the proposed plant specific Improved Technical Specifications (ITS), certain wording preferences or conventions are adopted that do not result in technical changes (either actual or interpretational). Editorial changes, reformatting, and revised numbering are adopted to make the ITS consistent with the BWR Standard Technical Specifications, NUREG-1434, Rev. 1 (i.e., the Improved Standard Technical Specifications (ISTS)).

TECHNICAL CHANGES - MORE RESTRICTIVE

M.1 The existing requirement of CTS 3.9.F for distribution buses to be OPERABLE during shutdown conditions is not specific as to what the system must be powering. The current requirement only requires certain AC and DC power distribution buses to be OPERABLE. The requirement in ITS 3.8.8 specifies that the distribution systems necessary to supply AC and DC power to all equipment required to be OPERABLE in the current plant condition must be OPERABLE. This added restriction conservatively assures the needed sources of power are OPERABLE; even if this results in both the Division 1 and Division 2 distribution subsystems being required. In addition, CTS 3.9.F Actions have been modified to be "one or more required" instead of the current "less than," to account for this potential addition.

Since the ITS 3.8.8 distribution system OPERABILITY requirements require supplying power to all necessary loads, if one or more required loads are not being supplied the required power due to an inoperable bus, that distribution subsystem is inoperable. In this event it may not be necessary to suspend all CORE ALTERATIONS, irradiated fuel handling, and OPDRVs as required by the CTS 3.9.F Actions. Conservative actions can be assured if all required equipment without the necessary power is declared inoperable and the associated ACTIONS of the individual equipment taken (ITS 3.8.8 Required Action A.1). Therefore, along with the conservative additional requirements placed on the Division 1 and Division 2 distribution subsystems, Required Action A.1, which requires the associated supported equipment to be declared inoperable, is also added. These additions represent restrictions consistent with implicit assumptions for operation in shutdown conditions (required equipment receiving the necessary required power); restrictions which are not currently imposed via the Technical Specification.

TECHNICAL CHANGES - MORE RESTRICTIVE (continued)

M.2 CTS 3.9.F, "Distribution — Shutdown" Actions have been modified by a Note stating that LCO 3.0.3 is not applicable (ITS 3.8.8 ACTIONS Note). If moving irradiated fuel assemblies while in MODE 4 or 5, LCO 3.0.3 would not specify any action. If moving irradiated fuel assemblies in MODE 1, 2, or 3, the fuel movement is independent of reactor operations. This clarification is necessary because defaulting to LCO 3.0.3 during irradiated fuel assembly movement in MODE 1, 2, or 3 would require the reactor to be shutdown, but would not require suspension of movement of irradiated fuel assemblies. Therefore, the proposed Note ensures that proper actions are taken when moving irradiated fuel assemblies in MODE 1, 2, or 3 (i.e., LCO 3.0.3 is not applicable and cannot be used in lieu of suspending fuel movement as required by the ACTIONS of the LCO). This change is also consistent with TSTF-36, Rev. 3.

M.3 In the event the necessary Division 1 or 2 electrical power distribution subsystems are not OPERABLE, plant conditions are conservatively restricted by suspending CORE ALTERATIONS, irradiated fuel handling, and OPDRVs as required by CTS 3.9.F Actions (ITS 3.8.8 Required Actions A.2.1, A.2.2, and A.2.3). However, continued operation without the necessary electrical power distribution subsystems should not be considered acceptable. Therefore, ITS 3.8.8 Required Action A.2.4 is added to commence and continue attempts to restore the necessary electrical power distribution subsystems. (Note that if actions are taken in accordance with the ITS 3.8.8 Required Action A.1, sufficiently conservative measures are assured by the ACTIONS for the individual components declared inoperable without requiring the efforts to restore the inoperable source.) ITS 3.8.8 Required Action A.2.4 results in an action which does not allow continued operation in the existing plant condition. This has the effect of not allowing MODE changes per LCO 3.0.4. Therefore, this existing explicit requirement is implicitly addressed in the ITS 3.8.8 ACTIONS.

An additional Required Action (ITS 3.8.8 Required Action A.2.5) related to proposed LCO 3.0.6 is also proposed. Proposed LCO 3.0.6 allows the ITS 3.8.8 ACTIONS for inoperable electrical power distribution subsystems to be taken, and thereby not take ACTIONS for each inoperable supported component. ITS 3.8.8 Required Action A.2.5 assures the appropriate consideration is applied for shutdown cooling systems that are without required power, since additional actions not provided in the ITS 3.8.8 ACTIONS are required when shutdown cooling is inoperable.

TECHNICAL CHANGES - LESS RESTRICTIVE

"Generic"

LA.1 The details of CTS 3.9.F relating to system design and OPERABILITY are proposed to be relocated to the Bases. The details for system OPERABILITY are not necessary in the LCO. The definition of OPERABILITY suffices. The design details are not necessary to be included in the Technical Specifications to ensure the OPERABILITY of the Distribution Systems since OPERABILITY requirements are adequately addressed in ITS 3.8.8, "Distribution Systems—Shutdown." Therefore, the relocated details are not required to be in the ITS to provide adequate protection of the public health and safety. Changes to the Bases will be controlled by the provisions of the proposed Bases Control Program described in Chapter 5 of the ITS.

"Specific"

None

RELOCATED SPECIFICATIONS

None

DISCUSSION OF CHANGES
ITS: SECTION 3.8 - ELECTRICAL POWER SYSTEMS BASES

The Bases of the current Technical Specifications for this section (pages B 3/4.9-1 through B 3/4.9-8) have been completely replaced by revised Bases that reflect the format and applicable content of Dresden 2 and 3 ITS Section 3.8, consistent with the BWR ISTS, NUREG-1433, Rev. 1. The revised Bases are as shown in the Dresden 2 and 3 ITS Bases. In addition, page 3/4.9-9 a blank page, has been removed.

<CTS>

3.8 ELECTRICAL POWER SYSTEMS

3.8.1 AC Sources—Operating

<3.9.A.1>
<3.9.A.2>
<DOC M.1>

LCO 3.8.1 The following AC electrical power sources shall be OPERABLE:

a. Two qualified circuits between the offsite transmission network and the onsite Class 1E AC Electrical Power Distribution System; 1

b. Two ~~[Three]~~ diesel generators (DGs)~~[;]~~ ~~and~~ 2

~~c. Three automatic sequencers].~~

Insert LCO 3

<Appl 3.9.A> APPLICABILITY: MODES 1, 2, and 3.

Insert App

ACTIONS

Insert ACTIONS Note

<3.9.A Act 1.a> 1

<DOC M.2>
<3.9.A Act 3.a>

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One ~~[required]~~ offsite circuit inoperable.	A.1 Perform SR 3.8.1.1 for OPERABLE ~~[required]~~ offsite circuit.	1 hour AND Once per 8 hours thereafter
	AND	
	A.2 Declare required feature(s) with no offsite power available inoperable when the redundant required feature(s) are inoperable.	24 hours from discovery of no offsite power to one division concurrent with inoperability of redundant required feature(s)
	AND	

(continued)

$\boxed{3}$ Insert LCO

c. One qualified circuit between the offsite transmission network and the opposite unit's Division 2 onsite Class 1E AC electrical power distribution subsystem capable of supporting the equipment required to be OPERABLE by LCO 3.6.4.3, "Standby Gas Treatment (SGT) System," LCO 3.7.4, "Control Room Emergency Ventilation (CREV) System" (Unit 3 only), and LCO 3.7.5, "Control Room Emergency Ventilation Air Conditioning (AC) System" (Unit 3 only); and

d. The opposite unit's DG capable of supporting the equipment required to be OPERABLE by LCO 3.6.4.3, LCO 3.7.4 (Unit 3 only), and LCO 3.7.5 (Unit 3 only).

$\boxed{3}$ Insert App

-----------------------------------NOTE-----------------------------------

The opposite unit's AC electrical power sources in LCO 3.8.1.c and d are not required to be OPERABLE when the associated required equipment (SGT subsystem, CREV System (Unit 3 only), and Control Room Emergency Ventilation AC System (Unit 3 only)) is inoperable.

$\boxed{3}$ Insert ACTIONS Note

-----------------------------------NOTE-----------------------------------

LCO 3.0.4 is not applicable for the opposite unit's AC electrical power sources.

<CTS>

ACTIONS

	CONDITION	REQUIRED ACTION	COMPLETION TIME
<3.9.A Act 1.b> <Doc L.1> <3.9.A Act 3.d> <3.9.A Act 5.b>	A. (continued)	A.3 Restore [required] offsite circuit to OPERABLE status. [1]	~~72 hours~~ 7 days [4] AND ~~6~~ 14 days from discovery of failure to meet LCO 3.8.1.a or b [3]
[1] <3.9.A Act 2.a> <3.9.A Act 2.b> <3.9.A Act 2.c> <3.9.A Act 3.a> <3.9.A Act 4.a> <3.9.A Act 4.b> <3.9.A Act 6.a> <3.9.A Act 6.b> <Doc L.6>	B. One [required] DG inoperable.	B.1 Perform SR 3.8.1.1 for OPERABLE [required] offsite circuit(s). AND B.2 Declare required feature(s), supported by the inoperable DG, inoperable when the redundant required feature(s) are inoperable. AND	1 hour AND Once per 8 hours thereafter 4 hours from discovery of Condition B concurrent with inoperability of redundant required feature(s) (continued)

<CTS>

ACTIONS

	CONDITION	REQUIRED ACTION		COMPLETION TIME
<3.9.A Act 2.c> <DOC L.1> <3.9.A Act 3.b> <3.9.A Act 3.d> <3.9.A Act 6.c> <3.9.A Act 6.d>	B. (continued)	B.3.1	Determine OPERABLE DG(s) are not inoperable due to common cause failure.	[24] hours 1
		OR		
		B.3.2	Perform SR 3.8.1.2 for OPERABLE DG(s).	[24] hours 1
		AND		
		B.4	Restore [required] DG to OPERABLE status.	~~72 hours~~ 7 days 4 AND ~~[6]~~ 14 days from discovery of failure to meet LCO 3.8.1.a or b 3
1 <3.9.A Act 5.a> <DOC M.2>	C. Two [required] offsite circuits inoperable.	C.1	Declare required feature(s) inoperable when the redundant required feature(s) are inoperable.	12 hours from discovery of Condition C concurrent with inoperability of redundant required feature(s)
		AND		
		C.2	Restore one [required] offsite circuit to OPERABLE status.	24 hours

(continued)

<CTS>

ACTIONS (continued)

	CONDITION	REQUIRED ACTION	COMPLETION TIME
1 <3.9.A Act 3> <3.9.A Act 3.c>	D. One [required] offsite circuit inoperable. AND One [required] DG inoperable.	------------NOTE------------ Enter applicable Conditions and Required Actions of LCO 3.8.[8], "Distribution Systems—Operating," when Condition D is entered with no AC power source to any required division. ---------------------------- 7 5 3	
		D.1 Restore [required] offsite circuit to OPERABLE status. 1	12 hours
		OR	
		D.2 Restore [required] DG to OPERABLE status.	12 hours
2 1 <3.9.A Act 6> <3.9.A Act 6.b>	E. Two [or three] [required] DGs inoperable.	E.1 Restore one [required] DG to OPERABLE status. 1	2 hours

(continued)

<CTS>

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
F. One [required] [automatic load sequencer] inoperable.	-------REVIEWER'S NOTE------- This Condition may be deleted if the unit design is such that any sequencer failure mode will only affect the ability of the associated DG to power its respective safety loads following a loss of offsite power independent of, or coincident with, a Design Basis Event. ----------------------------	
	F.1 Restore [required] [automatic load sequencer] to OPERABLE status.	[12] hours
G. Required Action and Associated Completion Time of Condition A, B, C, D, [or] E[, or F] not met.	G.1 Be in MODE 3.	12 hours
	AND	
	G.2 Be in MODE 4.	36 hours
H. Three or more [required] AC sources inoperable [for reasons other than Condition E].	H.1 Enter LCO 3.0.3.	Immediately

<3.9.A Act 1.b>
<3.9.A Act 2.c>
<3.9.A Act 3.c>
<3.9.A Act 3.d>
<3.9.A Act 4.b>
<3.9.A Act 5.a>
<3.9.A Act 5.b>
<3.9.A Act 6.b>
<3.9.A Act 6.d>
1
2
<DOC A.12> G
1
2
F 2
2

<CTS>

SURVEILLANCE REQUIREMENTS Insert SR Notes 3

		SURVEILLANCE	FREQUENCY
<4.9.A.1.a>	SR 3.8.1.1	Verify correct breaker alignment and indicated power availability for each ~~[required]~~ offsite circuit. 2	7 days
<4.9.A.2.c>	SR 3.8.1.2	------NOTES------ TSTF-253 ~~1. Performance of SR 3.8.1.7 satisfies this SR.~~ 1 ~~2~~. All DG starts may be preceded by an engine prelube period and followed by a warmup period prior to loading. 2 ~~3~~. [A modified DG start involving idling and gradual acceleration to synchronous speed may be used for this SR as recommended by the manufacturer. When modified start procedures are not used, the time, voltage, and frequency tolerances of SR 3.8.1.~~7~~ 8 must be met.] 1 3. A single test of the common DG at the specified Frequency will satisfy the Surveillance for both units. 7 ----------- Verify each DG starts from standby conditions and achieves steady state voltage ≥ ~~[3740]~~ 3952 V and ≤ ~~[4580]~~ 4368 V and frequency ≥ ~~[58.8]~~ Hz and ≤ ~~[61.2]~~ Hz. 1	~~As specified in Table 3.8.1-1~~ 31 days 6

(continued)

$\boxed{3}$ Insert SR Notes

----------------------------------NOTES----------------------------------

1. SR 3.8.1.1 through 3.8.1.20 are applicable only to the given unit's AC electrical power sources.

2. SR 3.8.1.21 is applicable to the opposite unit's AC electrical power sources.

<CTS>

SURVEILLANCE REQUIREMENTS (continued)

	SURVEILLANCE	FREQUENCY
<4.9.A.2.d> SR 3.8.1.3	-------------------NOTES------------------- 1. DG loadings may include gradual loading as recommended by the manufacturer. 2. Momentary transients outside the load range do not invalidate this test. 3. This Surveillance shall be conducted on only one DG at a time. 4. This SR shall be preceded by and immediately follow, without shutdown, a successful performance of SR 3.8.1.2 or SR 3.8.1.~~7~~ 8. 8 7 5. A single test of the common DG at the specified Frequency will satisfy the Surveillance for both units. -- Verify each DG is synchronized and loaded and operates for ≥ 60 minutes at a load ≥ ~~[1710]~~ 2340 kW and ≤ ~~[2000]~~ 2600 kW. 1	~~As specified in Table 3.8.1-1~~ 31 days 6
<3.9.A.2.a> <3.9.A.2.b> <4.9.A.2.a> SR 3.8.1.4	Verify each day tank ~~[and engine mounted tank]~~ contain~~[s]~~ ≥ ~~[900]~~ 205 gal of fuel oil. 2 1	31 days
8 <4.9.A.3> SR 3.8.1.5	~~Check for and~~ remove accumulated water from each day tank ~~[and engine mounted tank]~~.	~~[~~31~~]~~ days 2
9 <4.9.A.2.b> SR 3.8.1.6	Verify ~~the~~ each fuel oil transfer ~~system~~ pump operates to ~~[~~automatically~~]~~ transfer fuel oil from the storage tank~~[s]~~ to the day tank ~~[and engine mounted tank]~~. 2	~~[92]~~ 31 days 1

(continued)

Insert SR 3.8.1.7

and each bulk fuel storage tank contains ≥ 10,000 gal of fuel oil 8

<CTS> $\boxed{8}$ Insert SR 3.8.1.7

<4.9.A.4> SR 3.8.1.7	Check for and remove accumulated water from each bulk storage tank.	92 days

<CTS>

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE	FREQUENCY
8 SR 3.8.1.7 8 — 7 1. <4.9.A.7> -----NOTE----- 5 All DG starts may be preceded by an engine prelube period. ----- Verify each DG starts from standby condition and achieves, in ≤ [12] seconds, voltage ≥ [3740] V (3952) and ≤ [4580] V (4368) and frequency ≥ [58.8] Hz and ≤ [61.2] Hz.	2. A single test of the common DG at the specified Frequency will satisfy the Surveillance for both units. 7 184 days 1
8 9 <4.9.A.1.b> SR 3.8.1.8 -----NOTE----- ~~This Surveillance shall not be performed in MODE 1 or 2. However, credit may be taken for unplanned events that satisfy this SR.~~ ----- Verify [automatic/and] manual[] transfer of [unit power supply] from the [normal offsite circuit to the alternate] offsite circuit.	10 [18] months 24 1

(continued)

:
13
a. In ≤ [12] seconds, voltage ≥ [3740] V and frequency ≥ [58.8] Hz; and
b. Steady state

TSTF-163

11

<CTS>

SURVEILLANCE REQUIREMENTS (continued)

	SURVEILLANCE	FREQUENCY
10 <4.9.A.8.b> 8 1 7 Insert SR 3.8.1.10 Note	SR 3.8.1.~~9~~ 10 ------NOTES------ 1. ~~This Surveillance shall not be performed in MODE 1 or 2. However, credit may be taken for unplanned events that satisfy this SR.~~ 2. ~~If performed with the DG synchronized with offsite power, it shall be performed at a power factor ≤ [0.9].~~ --------------- Verify each DG rejects a load greater than or equal to its associated single largest post-accident load, and: a. Following load rejection, the frequency is ≤ ~~[65.5]~~ 66.73 Hz; b. Within [3] 4 seconds following load rejection, the voltage is ≥ ~~[3740]~~ 3952 V and ≤ ~~[4580]~~ 4368 V; and c. Within [6] seconds following load rejection, the frequency is ≥ [58.8] Hz and ≤ [61.2] Hz.	1 12 [18] 24 months 1
<4.9.A.8.c> 8 1 12 1	SR 3.8.1.~~10~~ 11 ------NOTE------ 5 ~~This Surveillance shall not be performed in MODE 1 or 2. However, credit may be taken for unplanned events that satisfy this SR.~~ --------------- Verify each DG ~~operating at a power factor ≤ [0.9]~~ does not trip and voltage is maintained ≤ ~~[4800]~~ 5006 V during and following a load rejection of ≥ ~~[1710]~~ 2340 kW and ≤ ~~[2000]~~ 2600 kW.	Insert SR 3.8.1.11 Notes 7 15 1 10 [18] 24 months 1

(continued)

$\boxed{7}$ Insert SR 3.8.1.10 Note

A single test of the common DG at the specified Frequency will satisfy the Surveillance for both units.

$\boxed{7}$ $\boxed{15}$ Insert SR 3.8.1.11 Notes

-----------------------------------NOTES-----------------------------------

1 A single test of the common DG at the specified Frequency will satisfy the Surveillance for both units.

2. Momentary transients outside of the voltage limit do not invalidate this test.

<CTS>

SURVEILLANCE REQUIREMENTS (continued)

	SURVEILLANCE	FREQUENCY
8 <4.9.A.8.d>	SR 3.8.1.~~11~~ 12	
	-----NOTES----- ~~1.~~ All DG starts may be preceded by an engine prelube period. ~~2. This Surveillance shall not be performed in MODE 1, 2, or 3. However, credit may be taken for unplanned events that satisfy this SR.~~ -----	10
	Verify on an actual or simulated loss of offsite power signal: a. De-energization of emergency buses; b. Load shedding from emergency buses; and c. DG auto-starts from standby condition and: 1. energizes permanently connected loads in ≤ [~~12~~] 13 seconds, ~~2. energizes auto-connected shutdown loads through [automatic load sequencer],~~ 2 ~~3~~. maintains steady state voltage ≥ [~~3740~~] 3452 V and ≤ [~~4580~~] 4368 V, 3 ~~4~~. maintains steady state frequency ≥ [58.8] Hz and ≤ [61.2] Hz, and 4 ~~5~~. supplies permanently connected ~~and auto-connected shutdown~~ loads for ≥ [5] minutes.	[~~18~~] 24 months[] 1
16		7

(continued)

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SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE		FREQUENCY
SR 3.8.1.~~12~~ 13	----------NOTE~~S~~---------- ~~1.~~ All DG starts may be preceded by an engine prelube period. ~~2. This Surveillance shall not be performed in MODE 1 or 2. However, credit may be taken for unplanned events that satisfy this SR.~~ ---------------------------------- Verify on an actual or simulated Emergency Core Cooling System (ECCS) initiation signal each DG auto-starts from standby condition and: a. In ≤ [~~12~~] 13 seconds after auto-start ~~and during tests~~, achieves voltage ≥ [~~3740~~] 3952 V and ~~≤ [4580]~~ V; b. ~~In ≤ [12] seconds after auto-start and during tests, achieves~~ frequency ≥ [58.8] Hz and ≤ [61.2] Hz; c. Operates for ≥ [5] minutes; d. Permanently connected loads remain energized from the offsite power system; and e. Emergency loads are ~~energized [or~~ auto-connected ~~through the automatic load sequencer]~~ ~~from~~ to the offsite power system.	[~~18~~] 24 months] frequency ≥ [58.8] Hz Steady state voltage ≥ [3952] V and ≤ [4368] V and

(continued)

<4.9.A.8.e>
<DOC M.7>

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SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE		FREQUENCY
8 SR 3.8.1.14 <4.9.A.8.g>	~~NOTE~~ ~~This Surveillance shall not be performed in MODE 1, 2 or 3. However, credit may be taken for unplanned events that satisfy this SR.~~ 10 Verify each DG's automatic trips are bypassed on [actual or simulated loss of voltage signal on the emergency bus concurrent with an actual or simulated ECCS initiation signal] except: a. Engine overspeed; [and] b. Generator differential current[; ~~c. Low lube oil pressure;~~ ~~d. High crankcase pressure; and~~ ~~e. Start failure relay~~]. 2	24 ~~[18~~ months] 1

(continued)

<CTS>

SURVEILLANCE REQUIREMENTS (continued)

	SURVEILLANCE	FREQUENCY
8 (15) <4.9.A.8.h>	SR 3.8.1.14	-------------------NOTES------------------- 1. Momentary transients outside the load and power factor ranges (range) (limit) do not invalidate this test. 12 2. This Surveillance shall not be performed in MODE 1 or 2. However, credit may be taken for unplanned events that satisfy this SR. 10 12 If grid conditions do not permit, the power factor limit is not required to be met. Under this condition, the power factor shall be maintained as close to the limit as practicable. Insert SR 3.8.1.15 Note 7 --- Verify each DG operating (within the) at a power factor (limit) ≤ [0.9] operates for ≥ 24 hours: 12 a. For ≥ [2] hours loaded ≥ [3100] (2730) kW and ≤ [3400] (2860) kW; and b. For the remaining hours of the test loaded ≥ [2850] (2340) kW and ≤ [3150] (2600) kW.	[18] (24) months 1
8 (16) <4.9.A.8.h>	SR 3.8.1.15	-------------------NOTES------------------- 1. This Surveillance shall be performed within 5 minutes of shutting down the DG after the DG has operated ≥ [2] hours loaded ≥ [1710] (2340) kW and ≤ [2000] kW. 1 2 Momentary transients outside of (below the) load range (limit) do not invalidate this test. 9 2. All DG starts may be preceded by an engine prelube period. Insert SR 3.8.1.16 Note 3 7 --- Verify each DG starts and achieves, in ≤ [12] seconds, voltage ≥ [3740] (3952) V and ≤ [4580] (4368) V and frequency ≥ [58.8] Hz and ≤ [61.2] Hz. 11 : (13) a. In ≤ [12] seconds, voltage ≥ [3952] and frequency ≥ [58.8] Hz; and b. Steady state TSTF-163 1	[18] (24) months 1

(continued)

7 Insert SR 3.8.1.15 Note

3. A single test of the common DG at the specified Frequency will satisfy the Surveillance for both units.

7 Insert SR 3.8.1.16 Note 3

3. A single test of the common DG at the specified Frequency will satisfy the Surveillance for both units.

<CTS>

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE		FREQUENCY
8 — 17 SR 3.8.1.~~16~~ <4.9.A.8.j>	~~------NOTE------ This Surveillance shall not be performed in MODE 1, 2, or 3. However, credit may be taken for unplanned events that satisfy this SR. ------~~ 10 Verify each DG: a. Synchronizes with offsite power source while loaded with emergency loads upon a simulated restoration of offsite power; b. Transfers loads to offsite power source; and c. Returns to ready-to-load operation.	24 ~~[18~~ months~~]~~ 1
~~[SR 3.8.1.17~~	~~------NOTE------ This Surveillance shall not be performed in MODE 1, 2, or 3. However, credit may be taken for unplanned events that satisfy this SR. ------ Verify with a DG operating in test mode and connected to its bus, an actual or simulated ECCS initiation signal overrides the test mode by: a. Returning DG to ready-to-load operation[; and] [b. Automatically energizing the emergency load from offsite power.]~~	~~[18 months]]~~ 2

(continued)

<CTS>

SURVEILLANCE REQUIREMENTS (continued)

	SURVEILLANCE	FREQUENCY
<4.9.A.8.k> SR 3.8.1.18	~~-------NOTE------- This Surveillance shall not be performed in MODE 1, 2 or 3. However, credit may be taken for unplanned events that satisfy this SR.~~ Verify interval between each sequenced load block is within ± [10% of design interval] [for each load sequencer ~~timer~~]. time delay relay	[18 months] 24
<4.9.A.8.f> SR 3.8.1.19	-------NOTES------- ~~1.~~ All DG starts may be preceded by an engine prelube period. ~~2. This Surveillance shall not be performed in MODE 1, 2, or 3. However, credit may be taken for unplanned events that satisfy this SR.~~ Verify, on an actual or simulated loss of offsite power signal in conjunction with an actual or simulated ECCS initiation signal: a. De-energization of emergency buses; b. Load shedding from emergency buses; and c. DG auto-starts from standby condition and: 1. energizes permanently connected loads in ≤ ~~[12]~~ 13 seconds, 2. energizes auto-connected emergency loads ~~through [load sequencer]~~,	[18 months] 24
		(continued)

1 10 1 10 1 1 2

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SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
<4.9.A.8.f> SR 3.8.1.19 (continued) 17 maintains 3. ~~achieves~~ steady state voltage ≥ ~~[3740]~~ 3952 V and ≤ ~~[4580]~~ 4368 V, 4. ~~achieves~~ steady state frequency ≥ [58.8] Hz and ≤ [61.2] Hz, and 5. supplies permanently connected and auto-connected emergency loads for ≥ [5] minutes.	1
<4.9.A.9> SR 3.8.1.20 --------------------NOTE-------------------- All DG starts may be preceded by an engine prelube period. -- 7 Verify, when started simultaneously from standby condition, ~~[each]~~ ~~[2A and 2C]~~ DG achieves, in ≤ [12] seconds, voltage ≥ ~~[3740]~~ 3952 V ~~and ≤ [4580] V~~ and frequency ≥ [58.8] Hz ~~and ≤ [61.2] Hz~~. 13 1 Insert SR 3.8.1.21 3	TSTF-163 changes not adopted 18 10 years 2

<CTS>

3 Insert SR 3.8.1.21

<DOC M.1> SR 3.8.1.21	-------------------NOTE-------------------- When the opposite unit is in MODE 4 or 5, or moving irradiated fuel assemblies in secondary containment, the following opposite unit SRs are not required to be performed: SR 3.8.1.3, SR 3.8.1.10 through SR 3.8.1.12, and SR 3.8.1.14 through SR 3.8.1.17. -- For required opposite unit AC electrical power sources, the SRs of the opposite unit's Specification 3.8.1, except SR 3.8.1.9, SR 3.8.1.13, SR 3.8.1.18, SR 3.8.1.19, and SR 3.8.1.20, are applicable.	In accordance with applicable SRs

Table 3.8.1-1
Diesel Generator Test Schedule

NUMBER OF FAILURES IN LAST 25 VALID TESTS(a)	FREQUENCY
≤ 3	31 days
≥ 4	7 days(b) (but ≥ 24 hours)

(a) Criteria for determining number of failures and valid tests shall be in accordance with Regulatory Position C.2.1 of Regulatory Guide 1.9, Revision 3, where the number of tests and failures is determined on a per DG basis. 6

(b) This test frequency shall be maintained until seven consecutive failure free starts from standby conditions and load and run tests have been performed. This is consistent with Regulatory Position [ ], of Regulatory Guide 1.9, Revision 3. If, subsequent to the 7 failure free tests, 1 or more additional failures occur such that there are again 4 or more failures in the last 25 tests, the testing interval shall again be reduced as noted above and maintained until 7 consecutive failure free tests have been performed.

[Note: If Revision 3 of Regulatory Guide 1.9 is not approved, the above table will be modified to be consistent with the existing version of Regulatory Guide 1.108, GL 84-15, or other approved guidance.]

JUSTIFICATION FOR DEVIATIONS FROM NUREG-1433, REVISION 1
ITS 3.8.1 - AC SOURCES — OPERATING

1. The brackets have been removed and the proper plant specific information/value has been provided.

2. This bracketed requirement has been deleted because it is not applicable to Dresden 2 and 3. The following requirements have been renumbered, where applicable, to reflect this deletion. In addition, the references to engine mounted tanks in ISTS SRs 3.8.1.4, 3.8.1.5, and 3.8.1.6 are deleted consistent with the design of the Dresden 2 and 3 diesel generators.

3. Additional requirements were added to ISTS LCO 3.8.1 to ensure the appropriate AC sources are OPERABLE during unit operation in MODES 1, 2, and 3 to satisfy the design requirements of UFSAR, Section 3.1.2.2.8. The new requirements were added as LCO 3.8.1.c and LCO 3.8.1.d. This modification was necessary due to shared systems (e.g., Standby Gas Treatment System and Control Room Emergency Ventilation System) between both units. A Note has been added to the Applicability that allows the opposite unit's AC electrical power sources not to be required when the associated equipment is inoperable. This is an exception that is intended to allow declaring the opposite unit's Division 2 equipment inoperable in lieu of declaring the opposite unit's Division 2 power source inoperable. This exception also allows the supported equipment to be declared inoperable at any time subsequent to entering ACTIONS for an inoperable opposite unit Division 2 power source. This exception is acceptable since, with the opposite unit Division 2 equipment inoperable and the associated ACTIONS entered, the opposite unit Division 2 AC sources provide no additional assurance of meeting the safety criteria of the given unit's AC sources. An additional Note has been added to the ACTIONS which excludes the applicability of LCO 3.0.4 for the opposite unit's AC electrical power sources. This proposed Note allows entry into the applicable MODE while relying on the ACTIONS even though the ACTIONS may eventually require a plant shutdown. This allowance is acceptable due to the low probability of an event requiring the opposite unit equipment. This change is consistent with current Technical Specification allowances.

   Two Notes have been added to the Surveillance Requirements Table and an additional Surveillance has been added to clearly define the Applicability of the Surveillances to both units and to ensure the opposite unit's power sources are OPERABLE.

   In addition, the Completion Times for multiple AC sources inoperable (Required Actions A.3 and B.4) have been revised to not reflect these additional LCO requirements since the equipment supported by the opposite unit's Division 2 AC power sources may be declared inoperable in lieu of declaring the power sources inoperable.

4. The ISTS 3.8.1 Required Action A.3 Completion Times of 72 hours and 6 days from discovery of failure to meet LCO have been extended to 7 days and 14 days, respectively (ITS 3.8.1 Required Actions A.3 Completion Times). The Completion Times of ISTS 3.8.1 Required Action B.4 have been similarly extended. The first Completion Time of 7 days in each of the Required Actions is consistent with current requirements which were approved in the Dresden 2 and 3 facility operating License Amendment 138/132. The second Completion Time is simply the sum of the Completion Times for an offsite circuit and diesel generator inoperable and is consistent with the proposed Bases description.

5. The proper Dresden 2 and 3 plant specific LCO number has been provided.

6. The diesel generator accelerated test frequency requirements are included in the Diesel Generator Reliability Program leaving the current and proposed Technical Specifications periodic Surveillance Frequency as 31 days. A plant procedure implements the requirements and responsibilities for tracking emergency DG failures for the determination and reporting of reaching trigger values specified in NUMARC 87-00. These requirements are more restrictive than those specified in NUREG-1433, Revision 1. In addition, Generic Letter 94-01, "Removal of Accelerated Testing and Special Reporting Requirements for Diesel Generators," allows Licensees to request removal from TS of provisions for accelerated testing. This change is also consistent with TSTF-37.

7. An additional Note has been added to several Surveillances to reflect the shared DG design and current interpretation of the existing requirements. A single test of the common DG at the specified Frequency will satisfy the Surveillance for both units. This Note has been applied to ITS SRs 3.8.1.2, 3.8.1.3, 3.8.1.8, 3.8.1.10, 3.8.1.11, 3.8.1.15, and 3.8.1.16. The following Notes are renumbered, where applicable, to reflect these changes.

8. The requirements for bulk fuel storage tank level (ISTS SR 3.8.3.1 and SR 3.8.3.5) have been included in ITS 3.8.1 instead of ITS 3.8.3. The Dresden 2 and 3 fuel oil storage tanks capacity includes only a 2 day supply. This capacity is not consistent with the capacity assumed in NUREG-1433, Revision 1, therefore, the allowances are not considered to be applicable to Dresden 2 and 3 and the requirements have been incorporated in ITS SR 3.8.1.4 along with the day tank capacity requirements. Similarly, ITS SR 3.8.1.7 (ISTS SR 3.8.3.5), the requirement to check for and remove accumulated water from each storage tank, has been added to ITS 3.8.1 consistent with current requirements. In addition, the ISTS SR 3.8.1.4 requirement to check for and remove accumulated water from each day tank has been revised to only require the removal of accumulated water. The Dresden 2 and 3 fuel oil day tank design does not include a method for sampling. Any accumulated water in the day tank is transferred to the storage tank every 31 days by draining oil from the bottom of the day tank and transferring the oil and any accumulated water to the bulk storage tank. The bulk

8. (continued)

storage tank is sampled every 31 days for entrained water and every 92 days for accumulated water. These requirements are considered an acceptable approach to monitor for and remove water (accumulated and entrained) from the DG fuel oil tanks. This change is consistent with existing requirements which were approved in the Dresden 2 and 3 facility operating License Amendment 138/132. The following requirements are renumbered, where applicable, to reflect these changes.

9. The proper Dresden 2 and 3 plant specific nomenclature/value has been provided.

10. Various Surveillance Requirements in ISTS 3.8.1 are modified by Notes which state the Surveillances shall not be performed in MODE 1, 2, or 3 (as applicable). These Notes also state that credit may be taken for unplanned events that satisfy the associated surveillance. These Notes have not been incorporated into the ITS for Dresden 2 and 3. The control of plant conditions appropriate to performing Surveillances is an issue for procedures and scheduling and has been determined by the NRC staff to be unnecessary as a Technical Specification restriction. As indicated in Generic Letter 91-04, allowing this control is consistent with the vast majority of other Technical Specifications, which do not dictate plant conditions for the associated Surveillances. This detail of the Surveillance is a prerequisite for performance of the test and is not necessary for ensuring the requirements to demonstrate OPERABILITY of the DG or qualified offsite sources. This change is consistent with the current Licensing Basis. In addition, the changes documented in TSTF-8, Rev. 2 have not been added since the Note has not been retained. Subsequent Notes have been renumbered as required.

11. Typographical/grammatical error corrected.

12. ISTS SR 3.8.1.9, the single load rejection test, ISTS SR 3.8.1.10, the full load rejection test, and ISTS SR 3.8.1.14, the 24-hour endurance run, include power factor requirements for performance of the testing. However, during DG testing with light auxiliary load (e.g., during shutdown), rated power factor may not be able to be achieved without exceeding the design rating of 4300 volts. Exceeding 4300 volts results in exceeding the manufacturer's tolerances for safety-related 4 kV motors and for devices downstream of the 4kV system (e.g., 480V devices). Operating an electric motor above design rating can overexcite the motor, overheat the rotor and reduce its qualified life.

    In order to verify the DG can be operated at the design basis post accident conditions, ITS SR 3.8.1.15 (24 hr run) testing will be performed at a power factor as close to the limit as practicable. The power factor used for conducting the 24-hour endurance run must consider the effects of bus voltage on connected equipment. Therefore, for ComEd stations, "practicable" includes a criterion of not exceeding 4300 volts. Therefore, the limit is placed in the Bases rather than in the Surveillance.

12. (continued)

Exceeding 4300 Volts on the medium voltage buses could result in exceeding 506 Volts at the terminals of low voltage motors due to the boost in the unit substation transformers combined with the high prospect of low transformer loading at the time of the test. During the test, many accident loads would not be running, leading to a minimal voltage drop through the transformer. The transformer tap is selected based on accident loading. The high terminal voltage could result in overexcitation of the motor. Overexcitation increases the heat rise in the winding, which decreases the qualified life of the motor. VAR demand is not constant on any power system. The generators must vary the reactive power to meet demand. Therefore, holding the power factor static is not representative of the system requirements. The station operators do not have instrumentation directly indicating power factor. Control room metering indicates reactive power (kVAR). Specifying a limit of 1600 kVAR is a better reflection of the calculations and the available metering. Operating the generator above unity power factor unnecessarily exposes the generator to damage. If the DG output breaker were to trip, the combination of high internal voltage and the transient due to the interruption of current through an inductive reactance will result in high voltage. The point on the waveform when the circuit breaker opens also influences the magnitude of transient voltage. This could damage the winding of the generator. Therefore, it is prudent to limit the time of exposure as there is risk associated with operation of the generator at accident power factor for long periods.

Even when the grid voltage may be such that the DG excitation levels needed to obtain the specified power factor may not cause unacceptable voltages on the emergency busses, there is risk associated with operating the generator above unity power factor. If the DG output breaker were to trip, the combination of high internal voltage and the transient due to the interruption of current through an inductive reactance will result in high voltage. The point on the waveform when the circuit breaker opens also influences the magnitude of transient voltage. This could damage the winding of the generator. Therefore, it is not practicable to operate the generator in droop mode at the anticipated worst case accident power factor for long periods. The inductive load will vary during the accident. VAR demand is dependent on the connected loads, starting of induction motors and system impedance. Raising the voltage regulator for an output of 1600 kVAR (equal to approximately 0.85 power factor at rated kW output), maintaining this output for a short time period, then returning output to near unity power factor is more representative of system requirements.

For ITS SR 3.8.1.10, the single load rejection test, and ITS SR 3.8.1.11, the full load rejection test, operating at rated kW and rated power factor results in maximum steady state current output and maximum generator internal voltages. A load rejection with

12. (continued)

these conditions will result in interrupting the maximum steady state current and have the highest transient voltage. A load rejection under these conditions may result in exceeding the maximum voltage limit. The CTS full load rejection tests require a trip of the generator from rated kW with no power factor identified. In accordance with Regulatory Guide 1.9, the diesel generator single and full load rejection tests also include an acceptance criterion for the resulting frequency or voltage, respectively, to be within the required limits. These are proposed to be retained without the Regulatory Guide 1.9, Rev. 3, power factor requirements for load rejection tests.

Transient voltage is a function of the generator design (sub-transient reactance) and the output circuit breaker design (time required to extinguish the arc). These parameters can vary significantly between diesel generator sizes and vendors. ComEd experience indicates that normal transient voltage after a full load rejection at unity power factor approaches the limit of 5000 volts. Performing the test at rated power factor will result in higher transient voltages that will exceed the limit, not only since the initial internal voltage is higher, but due to the interruption of current through an inductive reactance. The magnitude of transient voltage is also influenced by the point on the waveform when the circuit breaker opens. Exceeding the limit will stress the insulation systems of the generator and connected motors by the high voltage. Motors being disconnected will also be stressed, but to a somewhat lesser extent. The length of time that the high voltage will be present is very brief, the voltage level decays exponentially and the maximum voltage is less than that achieved during high potential testing required for insulation. Accordingly, neither the generator nor the ECCS loads would fail from a single event; however repeated exposures to high voltage could result in a failure of the windings. Therefore, the ITS load rejection testing of the diesel generators does not include the power factor conditions that would result in exceeding the voltage limits and degradation of the equipment.

13. Not used.

14. Not used.

15. Note 2 has been added to ITS SR 3.8.1.11 which states that momentary transients outside of the voltage limit do not invalidate this test. This change is consistent with the current licensing basis.

16. The requirement in ISTS SR 3.8.1.11 (ITS SR 3.8.1.12), the loss of offsite power test, to verify the energization of auto-connected shutdown loads (c.2 and a portion of c.5) has been deleted since these loads do not exist in the Dresden 2 and 3 design. All loads are immediately supplied when the DG energizes the emergency bus (permanently connected load). Subsequent requirements have been modified and renumbered as necessary.

17. The word in ISTS SR 3.8.1.19.c.3 and 4 has been changed from "achieves" to "maintains" for consistency with ISTS SR 3.8.1.11.

18. The steady state limit does not apply to the simultaneous start of all DGs (ISTS SR 3.8.1.20), since it is a test of starting independence, not operating independence. This is consistent with the current Dresden 2 and 3 Licensing Basis. Since the steady state limit is not being added into the Dresden 2 and 3 ITS, TSTF-163 changes are not necessary and also have not been adopted.

<CTS>

3.8 ELECTRICAL POWER SYSTEMS

3.8.2 AC Sources—Shutdown

<3.9.B> LCO 3.8.2 The following AC electrical power sources shall be OPERABLE:

a. One qualified circuit between the offsite transmission network and the onsite Class 1E AC electrical power distribution subsystem(s) required by LCO 3.8.10, "Distribution Systems—Shutdown"; and 8 1

b. One diesel generator (DG) capable of supplying one division of the onsite Class 1E AC electrical power distribution subsystem(s) required by LCO 3.8.10.

<Appl 3.9.B> APPLICABILITY: MODES 4 and 5,
2 During movement of irradiated fuel assemblies in the [secondary] containment.

3

---- NOTE ----
LCO 3.0.3 is not applicable

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
<3.9.B Act 1> <DOC M.1> <3.9.B Act 2> 1 A. One required offsite circuit inoperable.	------------NOTE------------ Enter applicable Condition and Required Actions of LCO 3.8.~~10~~ B, ~~with one~~ when any required division is de-energized as a result of Condition A. ----------------------------	4
	A.1 Declare affected required feature(s), with no offsite power available, inoperable.	Immediately
	OR	
	A.2.1 Suspend CORE ALTERATIONS.	Immediately
	AND	
	A.2.2 Suspend movement of irradiated fuel assemblies in the [secondary] containment. 2	Immediately
	AND	
	A.2.3 Initiate action to suspend operations with a potential for draining the reactor vessel (OPDRVs).	Immediately
	AND	
	A.2.4 Initiate action to restore required offsite power circuit to OPERABLE status.	Immediately

(continued)

<CTS>

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
<3.9.B Act 1> <3.9.B Act 2> B. One required DG inoperable.	B.1 Suspend CORE ALTERATIONS.	Immediately
	AND	
	B.2 Suspend movement of irradiated fuel assemblies in [secondary] containment. [2]	Immediately
	AND	
	B.3 Initiate action to suspend OPDRVs.	Immediately
	AND	
	B.4 Initiate action to restore required DG to OPERABLE status.	Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
<4.9.B> [5] SR 3.8.2.1 ------------------NOTE------------------ 1. The following SRs are not required to be performed: SR 3.8.1.3, SR 3.8.1.9 through SR 3.8.1.11, SR 3.8.1.14 through ~~SR 3.8.1.16~~, ~~[SR 3.8.1.18]~~, and SR 3.8.1.19. [6] [2] [10] [14]	
For AC sources required to be OPERABLE the SRs of Specification 3.8.1, except SR 3.8.1.8, ~~SR 3.8.1.17~~, and SR 3.8.1.20, are applicable. [6] [9]	In accordance with applicable SRs [7] SR 3.8.1.21

2. SR 3.8.1.13 and SR 3.8.1.19 are not required to be met when associated ECCS subsystem(s) are not required to be OPERABLE per LCO 3.5.2, "ECCS - Shutdown." [5] TSTF-300

JUSTIFICATION FOR DEVIATIONS FROM NUREG-1433, REVISION 1
ITS 3.8.2 - AC SOURCES — SHUTDOWN

1. The proper LCO number has been provided. This change was necessary due to the deletion of ISTS 3.8.7, "Inverters — Operating" and ISTS 3.8.8, "Inverters — Shutdown."

2. The brackets have been removed and the proper plant specific information/value has been provided.

3. The ACTIONS have been modified by a Note stating that LCO 3.0.3 is not applicable. If moving irradiated fuel assemblies while in Mode 4 or 5, LCO 3.0.3 would not specify any action. If moving irradiated fuel assemblies while in Mode 1, 2, or 3, the fuel movement is independent of reactor operations. This clarification is necessary because defaulting to LCO 3.0.3 during irradiated fuel assembly movement in Mode 1, 2, or 3 would require the reactor to be shutdown, but would not require suspension of movement of irradiated fuel assemblies. Therefore, the proposed Note ensures that proper actions are taken when moving irradiated fuel assemblies in Mode 1, 2, or 3 (i.e., LCO 3.0.3 is not applicable and cannot be used in lieu of suspending fuel movement as required by the ACTIONS of the LCO). This change is also consistent with TSTF-36, Rev. 4.

4. This change has been made for clarity to ensure LCO 3.8.8 is entered when one <u>or more</u> required divisions are de-energized. The current words could be misinterpreted to mean that LCO 3.8.8 is entered when only one division is de-energized.

5. A new Note has been added to ITS SR 3.8.2.1. The Note (Note 2) exempts the requirement that the DGs be capable of responding to a LOCA signal (i.e., eliminate the requirement for ITS SR 3.8.1.13 and SR 3.8.1.19 to be met) when the associated ECCS subsystems are not required to be Operable. During shutdown Modes when the reactor cavity is flooded and when the reactor vessel is defueled, the ECCS subsystems are not required to be Operable. Therefore, the LOCA start function of the DGs serves no safety significant support function. As such, the SRs that test the DG capability to start on a LOCA signal are not required and have been deleted from the DG Operability requirements. This change is also consistent with TSTF-300, Rev. 0.

6. The proper SR numbers have been used.

7. SR 3.8.1.21 has been excepted from the LCO 3.8.2 applicable SRs because it applies only to the opposite unit's DG, which is not required to be OPERABLE by LCO 3.8.2.

 2

<CTS>

3.8 ELECTRICAL POWER SYSTEMS

3.8.3 Diesel Fuel Oil, ~~Lube Oil,~~ and Starting Air 2

<Doc A.2> LCO 3.8.3 The stored diesel fuel oil, ~~lube oil,~~ and starting air subsystem shall be within limits for each required diesel generator (DG).

<Appl 3.9.A>
<Appl 3.9.B> APPLICABILITY: When associated DG is required to be OPERABLE.

ACTIONS

-----------------------------------NOTE-----------------------------------
Separate Condition entry is allowed for each DG.

CONDITION	REQUIRED ACTION	COMPLETION TIME
~~A. One or more DGs with fuel oil level < [33,000] gal and > [28,285] gal in storage tank.~~	~~A.1 Restore fuel oil level to within limits.~~	~~48 hours~~ 1
~~B. One or more DGs with lube oil inventory < [500] gal and > [425] gal.~~	~~B.1 Restore lube oil inventory to within limits.~~	~~48 hours~~ 2
2 A ~~C.~~ One or more DGs with stored fuel oil total particulates not within limit.	~~C~~A.1 Restore stored fuel oil total particulates to within limit.	7 days 3

<3.9.A Act 7>
<Doc L.1>

(continued)

2

<CTS>

ACTIONS (continued)

	CONDITION	REQUIRED ACTION	COMPLETION TIME
<3.9.A Act 7> <Doc L.1>	B. One or more DGs with new fuel oil properties not within limits.	B.1 Restore stored fuel oil properties to within limits.	30 days
2 <Doc L.2> 3	C. One or more DGs with required starting air receiver pressure < ~~[225]~~ 220 psig and ≥ ~~[125]~~ 175 psig.	C.1 Restore starting air receiver pressure to ≥ ~~[225]~~ 220 psig.	48 hours 4
<3.9.A Act 7>	D. Required Action and associated Completion Time of Condition A, B, or C not met. OR One or more DGs with stored diesel fuel oil, ~~lube oil~~, or starting air subsystem not within limits for reasons other than Condition A, B, or C, ~~D, or E~~.	D.1 Declare associated DG inoperable.	Immediately 3 2 2

2

<CTS>

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY	
SR 3.8.~~3~~.1	Verify each fuel oil storage tank contains ≥ [33,000] gal of fuel.	31 days	1
SR 3.8.~~3~~.2	Verify lube oil inventory is ≥ [500] gal.	31 days	2
<DOC A.4> <4.9.B> SR 3.8.3.~~3~~ 1	2 Verify fuel oil properties of new and stored fuel oil are tested in accordance with, and maintained within the limits of, the Diesel Fuel Oil Testing Program.	In accordance with the Diesel Fuel Oil Testing Program	
<4.9.A.2.f> <4.9.B> SR 3.8.3.~~4~~ 2	Verify each required DG air start receiver pressure is ≥ ~~[225]~~ 220 psig.	31 days	3, 4
SR 3.~~8~~.3.5	Check for and remove accumulated water from each fuel oil storage tank.	[31] days	1
SR 3.8.~~3~~.6	For each fuel oil storage tank: a. Drain the fuel oil; b. Remove the sediment; and c. Clean the tank.	10 years	TSTF -2

JUSTIFICATION FOR DEVIATIONS FROM NUREG-1433, REVISION 1
ITS: 3.8.3 - DIESEL FUEL OIL and STARTING AIR

1. DG fuel oil storage tank requirements (10,000 gals) are based on maintaining a 2 day supply at full load instead of the 7 day at rated load fuel oil storage capacity required in ISTS LCO 3.8.3. Therefore, the ACTIONS and Surveillance Requirements for fuel oil storage are being moved to ITS 3.8.1, "AC Sources – Operating." ITS 3.8.3 requirements have been revised, and subsequent requirements are renumbered, as required, to reflect this change. This change has been made to reflect the current licensing basis description.

2. DG lube oil storage requirements are administratively controlled to ensure a sufficient supply of lube oil is available onsite to support the run time requirements assumed in the accident analysis. Therefore, the ACTIONS and Surveillance Requirements for lube oil are not being retained in ITS 3.8.3. The ITS 3.8.3 title and requirements have been revised, and subsequent requirements are renumbered, as required, to reflect his change. This change has been made to reflect the current licensing basis description.

3. Change made to be consistent with the Writers Guide.

4. The brackets have been removed and the proper plant specific information/value has been provided.

<CTS>

3.8 ELECTRICAL POWER SYSTEMS

3.8.4 DC Sources—Operating

following

<3.9.C> LCO 3.8.4 The ~~Division 1 and Division 2 station service, and DG 1B, 2A, and 2C~~ DC electrical power subsystems shall be OPERABLE. :

Insert LCO 3.8.4

1

<Appl 3.9.C> APPLICABILITY: MODES 1, 2, and 3.

ACTIONS

2 Insert ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. ~~One DC electrical power subsystem inoperable.~~	A.1 ~~Restore DC electrical power subsystem to OPERABLE status.~~	~~2 hours~~
<3.9.C Act 3> 2 ~~B~~ H. Required Action and Associated Completion Time ~~of Condition A not met for station service DC subsystem~~.	~~B~~.1 Be in MODE 3. AND ~~B~~.2 Be in MODE 4.	12 hours 36 hours
~~C. Required Action and associated Completion Time of Condition A not met for DG DC subsystem.~~	~~C.1 Declare associated DG inoperable.~~	~~Immediately~~ 3

<CTS>

1 Insert LCO 3.8.4

<3.9.C.1> a. Two 250 VDC electrical power subsystems; and

<3.9.C.2> b. Division 1 and Division 2 125 VDC electrical power subsystems; and

<DOC M.2> c. The opposite unit Division 2 125 VDC electrical power subsystem capable of supporting equipment required to be OPERABLE by LCO 3.6.4.3, "Standby Gas Treatment (SGT) System," LCO 3.7.4, "Control Room Emergency Ventilation (CREV) System" (Unit 3 only), LCO 3.7.5, "Control Room Emergency Ventilation Air Conditioning (AC) System" (Unit 3 only),and LCO 3.8.1, "AC Sources-Operating."

2 Insert ACTIONS

<3.9.C Act 1> <3.9.C Footnote (b)> A.	One 250 VDC battery inoperable as a result of maintenance or testing.	A.1 Restore 250 VDC battery to OPERABLE status.	Prior to exceeding 7 cumulative days per operating cycle of battery inoperability, on a per battery basis, as a result of maintenance or testing
<3.9.C Act 1> <3.9.C Footnote (b)> B.	One 250 VDC battery inoperable, due to the need to replace the battery, as determined by maintenance or testing.	B.1 Restore 250 VDC battery to OPERABLE status.	7 days

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$\boxed{2}$ Insert ACTIONS (continued)

<3.9.C Act 1>	C. One 250 VDC electrical power subsystem inoperable for reasons other than Conditions A or B.	C.1 Restore 250 VDC electrical power subsystem to OPERABLE status.	2 hours
<3.9.C Act 2> <3.9.C Footnote (c)>	D. --------NOTE-------- Only applicable if opposite unit is in MODE 1, 2, or 3. -------------------- Division 1 or 2 125 VDC battery inoperable as a result of maintenance or testing.	D.1 Place associated OPERABLE alternate 125 VDC electrical power subsystem in service. AND D.2 Restore 125 VDC battery to OPERABLE status.	2 hours Prior to exceeding 7 cumulative days per operating cycle on a per battery basis

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$\boxed{2}$ Insert ACTIONS (continued)

⟨3.9.C Act 2⟩ ⟨3.9.C Footnote (c)⟩ E.	--------NOTE-------- Only applicable if opposite unit is in MODE 1, 2, or 3. -------------------- Division 1 or 2 125 VDC battery inoperable, due to the need to replace the battery, as determined by maintenance or testing.	E.1 Place associated OPERABLE alternate 125 VDC electrical power subsystem in service. AND E.2 Restore 125 VDC battery to OPERABLE status.	2 hours 7 days
⟨3.9.C Act 2⟩ ⟨3.9.C Footnote (c)⟩ F.	Division 1 or 2 125 VDC electrical power subsystem inoperable for reasons other than Condition D or E.	F.1 Restore 125 VDC electrical power subsystem to OPERABLE status. OR F.2 ---------NOTE--------- Only applicable if the opposite unit is not in MODE 1, 2, or 3. ---------------------- Place associated OPERABLE alternate 125 VDC electrical power subsystem in service	2 hours 2 hours
⟨DOC M.2⟩ G.	Opposite unit Division 2 125 VDC electrical power subsystem inoperable.	G.1 Restore opposite unit Division 2 125 VDC electrical power subsystem to OPERABLE status.	7 days

all changes are 1 unless otherwise identified

a. ≥ 260.4 VDC for each 250 VDC subsystem;
b. ≥ 125.9 VDC for each 125 VDC substem; and
c. ≥ 130.2 VDC for Unit 2 alternate battery.

<CTS>

SURVEILLANCE REQUIREMENTS

		SURVEILLANCE	FREQUENCY
<3.9.C Footnote (a)> <4.9.C.1>	SR 3.8.4.1	Verify battery terminal voltage is [≥ 120] V on float charge. :	7 days
<4.9.C.2>	SR 3.8.4.2	Verify no visible corrosion at battery terminals and connectors. OR Verify battery connection resistance [is ≤ [1.5E-4 ohm] for inter-cell connections, ≤ [1.5E-4 ohm] for inter-rack connections, ≤ [1.5E-4 ohm] for inter-tier connections, and ≤ [1.5E-4 ohm] for terminal connections .	92 days
		Insert SR 3.8.4.3 6	
6 <4.9.C 3.a>	SR 3.8.4.3 4	Verify battery cells, cell plates, and racks show no visual indication of physical damage or abnormal deterioration. that could degrade battery performance	[12] 24 months TSTF -38
6 <4.9.C.3.b>	SR 3.8.4.4 5	Remove visible corrosion and verify battery cell to cell and terminal connections are [clean and tight, and] coated with anti-corrosion material.	[12] 24 months
6 <4.9.C.3.c>	SR 3.8.4.5 6	Verify battery connection resistance [is ≤ [1.5E-4 ohm] for inter-cell connections, ≤ [1.5E-4 ohm] for inter-rack connections, ≤ [1.5E-4 ohm] for inter-tier connections, and ≤ [1.5E-4 ohm] for terminal connections].	[12] 24 months

(continued)

6 Insert SR 3.8.4.3

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<4.9.C.3.d>	SR 3.8.4.3 Verify each required 250 V battery charger supplies $\geq$ 200 amps at $\geq$ 260 VDC for $\geq$ 4 hours for the 250 VDC subsystems.	18 months

SURVEILLANCE REQUIREMENTS (continued)

	SURVEILLANCE	FREQUENCY
<4.9.C.3.d> 6 SR 3.8.4.~~6~~ 7	~~-------------------NOTE------------------- This Surveillance shall not be performed in MODE 1, 2, or 3. However, credit may be taken for unplanned events that satisfy this SR. --~~ 4 1 125 V Verify each required battery charger supplies ≥ ~~[400 amps for station service subsystems, and ≥ 100 amps for DG subsystems] at ≥ [129] V for ≥ [4] hours.~~	1 24 ~~[18~~ months~~]~~
<4.9.C.4> 6 SR 3.8.4.~~7~~ 8	-------------------NOTE~~S~~------------------- 4 ~~1.~~ The modified performance discharge ~~9~~ 6 test in SR 3.8.4.~~8~~ may be performed in lieu of the service test in SR 3.8.4.~~7~~ ~~once per 60 months.~~ 5 ~~2. This Surveillance shall not be performed in MODE 1, 2, or 3. However, credit may be taken for unplanned events that satisfy this SR.~~ 4 -- Verify battery capacity is adequate to supply, and maintain in OPERABLE status, the required emergency loads for the design duty cycle when subjected to a battery service test.	5 Provided the modified performance discharge test completely envelopes the service test 1 24 ~~[18~~ months~~]~~

(continued)

200 amps at ≥ 130 VDC for ≥ 4 hours for the 125 VDC subsystems. 1

<CTS>

SURVEILLANCE REQUIREMENTS (continued)

	SURVEILLANCE	FREQUENCY
6 <4.9.C.5> <4.9.C.6>	SR 3.8.4.~~8~~ 9 ~~-------------------NOTE-------------------~~ ~~This Surveillance shall not be performed in MODE 1, 2, or 3. However, credit may be taken for unplanned events that satisfy this SR.~~ ~~--~~ 4 Verify battery capacity is ≥ [80]% of the manufacturer's rating when subjected to a performance discharge test or a modified performance discharge test.	60 months 1 AND 12 months when battery shows degradation or has reached [85]% of expected life with capacity < 100% of manufacturer's rating 1 AND 24 months when battery has reached [85]% of the expected life with capacity ≥ 100% of manufacturer's rating 1

JUSTIFICATION FOR DEVIATIONS FROM NUREG-1433, REVISION 1
ITS: 3.8.4 - DC SOURCES — OPERATING

1. The brackets have been removed and the proper plant specific information/value has been provided.

2. Changes have been made to the ISTS 3.8.4 ACTIONS to be consistent with the current licensing basis Actions for inoperable DC Sources.

3. The bracketed item has been deleted since its is not applicable to Dresden 2 and 3.

4. Various Surveillance Requirements in ISTS 3.8.4 are modified by Notes which state the Surveillances shall not be performed in MODE 1, 2, or 3. These Notes also state that credit may be taken for unplanned events that satisfy the associated Surveillance. TSTF-8 adds a clarification to the Bases of SR 3.0.1 which allows credit to be taken for unplanned events that satisfy surveillances. However, TSTF-8 also deletes the portion of the ISTS 3.8.4 SR Notes that allow credit to be taken for unplanned events. These Notes have not been incorporated into the ITS for Dresden 2 and 3. The control of plant conditions appropriate to performing Surveillances is an issue for procedures and scheduling and has been determined by the NRC staff to be unnecessary as a Technical Specification restriction. As indicated in Generic Letter 91-04, allowing this control is consistent with the vast majority of other Technical Specifications, which do not dictate plant conditions for the associated Surveillances. This detail of the Surveillance is a prerequisite for performance of the test and is not necessary for ensuring the requirements to demonstrate OPERABILITY of the DC subsystem. This change is consistent with the current licensing basis. Therefore, the changes documented in TSTF-8, Rev. 2 do not apply. Subsequent Notes have been renumbered as required.

5. ITS SR 3.8.4.8 Note 1, permitting limited use of the modified performance discharge test in lieu of the service test, has been deleted and ITS SR 3.8.4.8 revised. The CTS (as approved in Amendments 150 and 145) permits the use of the modified performance discharge test in lieu of the service test at all times. This current licensing basis requirement is consistent with proposed TSTF-200.

6. The 250 V battery chargers are currently required to supply a load equal to their design capability for at least 4 hours. SR 3.8.4.3 is being added to ensure this requirement is retained at the current 18 month Surveillance Frequency based on battery charger performance. The subsequent SRs have been renumbered, where applicable, to reflect this change.

<CTS>

3.8 ELECTRICAL POWER SYSTEMS

3.8.5 DC Sources—Shutdown

<3.9.D> LCO 3.8.5 DC electrical power subsystems shall be OPERABLE to support the DC electrical power distribution subsystem(s) required by LCO 3.8.~~10~~ 8, "Distribution Systems—Shutdown." $\boxed{1}$

<Appl 3.9.D> APPLICABILITY: MODES 4 and 5,
During movement of irradiated fuel assemblies in the [secondary] containment. $\boxed{2}$

NOTE
LCO 3.0.3 is not applicable $\boxed{3}$

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
<3.9.D Act> <Doc M.1> A. One or more required DC electrical power subsystems inoperable.	A.1 Declare affected required feature(s) inoperable.	Immediately
	<u>OR</u>	
	A.2.1 Suspend CORE ALTERATIONS.	Immediately
	<u>AND</u>	
	A.2.2 Suspend movement of irradiated fuel assemblies in the [secondary] containment. $\boxed{2}$	Immediately
	<u>AND</u>	
		(continued)

<CTS>

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
<3.9.D Act> <DOC M.3> A. (continued)	A.2.3 Initiate action to suspend operations with a potential for draining the reactor vessel.	Immediately
	AND	
	A.2.4 Initiate action to restore required DC electrical power subsystems to OPERABLE status.	Immediately

for 250 VDC electrical power subsystem(s) 4

SURVEILLANCE REQUIREMENTS

	SURVEILLANCE	FREQUENCY
<4.9.D> SR 3.8.5.1 5 electrical power subsystems <4.9.D Footnote (a)>	-------------------NOTE------------------- The following SRs are not required to be performed: SR 3.8.4.6 3, SR 3.8.4.7 8, and SR 3.8.4.8 9. -- For DC sources required to be OPERABLE the following SRs are applicable: SR 3.8.4.1 SR 3.8.4.4 SR 3.8.4.7 SR 3.8.4.2 SR 3.8.4.5 SR 3.8.4.8 SR 3.8.4.3 SR 3.8.4.6 , and SR 3.8.4.9	4 In accordance with applicable SRs 6

JUSTIFICATION FOR DEVIATIONS FROM NUREG-1433, REVISION 1
ITS: 3.8.5 - DC SOURCES — SHUTDOWN

1. The proper LCO number has been provided. This change was necessary due to the deletion of ISTS 3.8.7, "Inverters — Operating" and ISTS 3.8.8, "Inverters — Shutdown."

2. The brackets have been removed and the proper plant specific information/value has been provided.

3. The ACTIONS have been modified by a Note stating that LCO 3.0.3 is not applicable. If moving irradiated fuel assemblies while in Mode 4 or 5, LCO 3.0.3 would not specify any action. If moving irradiated fuel assemblies while in Mode 1, 2, or 3, the fuel movement is independent of reactor operations. This clarification is necessary because defaulting to LCO 3.0.3 during irradiated fuel assembly movement in Mode 1, 2, or 3 would require the reactor to be shutdown, but would not require suspension of movement of irradiated fuel assemblies. Therefore, the proposed Note ensures that proper actions are taken when moving irradiated fuel assemblies in Mode 1, 2, or 3 (i.e., LCO 3.0.3 is not applicable and cannot be used in lieu of suspending fuel movement as required by the ACTIONS of the LCO). This change is also consistent with TSTF-36, Rev. 4.

4. Due to the Dresden 2 and 3 design (spare battery and charger for the 125 VDC Electrical Power System), individual batteries and battery chargers can be tested without compromising compliance with the requirements of the LCO. Therefore, since the test can be performed without compromising the DC loads, the SRs are not excepted from performance for the 125 VDC Electrical Power System when the unit is shutdown (per the Note to SR 3.8.5.1).

5. Editorial change made to match the words in the LCO and ACTION requirements.

6. Change made to be consistent with the Writers Guide.

<CTS>

3.8 ELECTRICAL POWER SYSTEMS

3.8.6 Battery Cell Parameters

125 V and 250 V | 1

<3.9.C>
<Doc A.2>

LCO 3.8.6 Battery cell parameters for the [station service and DG] batteries shall be within the limits of Table 3.8.6-1.

TSTF -278

<Appl 3.9.C>
<Appl 3.9.D>

APPLICABILITY: When associated DC electrical power subsystems are required to be OPERABLE.

ACTIONS

------------------------------------NOTE------------------------------------
Separate Condition entry is allowed for each battery.

<3.9.C Act 4>
<Doc M.1>
<3.9.C Act 5>
<Doc L.5>

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One or more batteries with one or more battery cell parameters not within Table 3.8.6-1 Category A or B limits.	A.1 Verify pilot cell[s] (2) electrolyte level and float voltage meet Table 3.8.6-1 Category C limits.	1 hour (1)
	AND	
TSTF -278	A.2 Verify battery cell parameters meet Table 3.8.6-1 Category C limits.	24 hours AND Once per 7 days thereafter
	AND	
	A.3 Restore battery cell parameters to Category A and B limits of Table 3.8.6-1.	31 days

(continued)

<CTS>

ACTIONS (continued)

	CONDITION	REQUIRED ACTION	COMPLETION TIME
<3.9.C Act 6> <Doc A.6> <Doc L.5>	B. Required Action and associated Completion Time of Condition A not met. OR One or more batteries with average electrolyte temperature of the representative cells not within limits. OR One or more batteries with one or more battery cell parameters not within Table 3.8.6-1 Category C values limits.	B.1 Declare associated battery inoperable. TSTF-278 2	Immediately

SURVEILLANCE REQUIREMENTS

	SURVEILLANCE	FREQUENCY
<4.9.C.1>	SR 3.8.6.1 Verify battery cell parameters meet Table 3.8.6-1 Category A limits.	7 days

(continued)

<CTS>

SURVEILLANCE REQUIREMENTS (continued)

	SURVEILLANCE	FREQUENCY
<4.9.C.2.a>	SR 3.8.6.2 Verify battery cell parameters meet Table 3.8.6-1 Category B limits.	92 days AND Once within ~~24 hours~~ 7 days [3] after battery discharge < ~~[110]~~ 105 V for 125 V batteries and < 210 V for 250 V batteries [1] AND Once within ~~24 hours~~ 7 days [3] after battery overcharge > [150] V for 125 V batteries and > 300 V for 250 V batteries [1]
<4.9.C.2.c>	SR 3.8.6.3 Verify average electrolyte temperature of representative cells is ≥ [65°F ~~for each station service battery, and ≥ 55°F for each DG battery~~].	92 days [1]

<CTS>

<T 4.9.C-1>

Table 3.8.6-1 (page 1 of 1)
Battery Cell Parameter Requirements

PARAMETER	CATEGORY A: LIMITS FOR EACH DESIGNATED PILOT CELL	4 CATEGORY B: LIMITS FOR EACH CONNECTED CELL	CATEGORY C: ~~ALLOWABLE~~ LIMITS FOR EACH CONNECTED CELL 2
Electrolyte Level	> Minimum level indication mark, and ≤ ¼ inch above maximum level indication mark(a)	> Minimum level indication mark, and ≤ ¼ inch above maximum level indication mark(a)	Above top of plates, and not overflowing
Float Voltage	≥ 2.13 V	≥ 2.13 V	> 2.07 V
Specific Gravity(b)(c)	≥ ~~[1.195]~~ 1.200	≥ [1.195] AND Average of all connected cells > [1.205]	Not more than 0.020 below average of all connected cells AND Average of all connected cells ≥ [1.195] 1

(a) It is acceptable for the electrolyte level to temporarily increase above the specified maximum level during and following equalizing charges provided it is not overflowing. 5

(b) Corrected for electrolyte temperature and level. ~~[Level correction is not required, however, when on float charge battery charging current is ≤ [1 amp for station service batteries and ≤ 0.5 amp for DG batteries].~~ 6

(c) A battery charging current of < [1] 2 amp ~~for station service batteries and ≤ 0.5 amp for DG batteries~~ 3 when on float charge is acceptable for meeting specific gravity limits following a battery recharge, for a maximum of [7] days. When charging current is used to satisfy specific gravity requirements, specific gravity of each connected cell shall be measured prior to expiration of the [7] day allowance. 1

JUSTIFICATION FOR DEVIATIONS FROM NUREG-1433, REVISION 1
ITS 3.8.6 - BATTERY CELL PARAMETERS

1. The brackets have been removed and the proper plant specific information/value has been provided.

2. The word "values" in the third Condition of Condition B has been changed to "limits" to more closely match the LCO description. In addition, the word "Allowable" in Table 3.8.6-1 has been deleted to be consistent with the manner in which Category C "Limits" are described in the ACTIONS. This will also avoid confusion with the term "Allowable Value" used in the Instrumentation Section.

3. The second and third Frequencies of SR 3.8.6.2 have been modified to require the parameters to be verified within 7 days after the battery discharge/overcharge event, in lieu of the ISTS requirements of 24 hours after the battery discharge/overcharge event. IEEE-450 (the 1980, 1987, and 1995 versions) only require the verification to be performed; it does not state the time limit for performing the verification. Therefore, the time specified in the Dresden 2 and 3 CTS is being maintained (i.e., this time is consistent with current licensing basis).

4. Typographical/grammatical error corrected.

5. The words "and following" have been added to footnote (a) to allow the electrolyte level to be temporarily above the limit following the equalize charge as well as during the charge. As stated in the Bases for this footnote (in Table 3.8.6-1 description), IEEE-450, Annex A, recommends that electrolyte level readings not be taken until 72 hours after the equalize charge. This allows time for the electrolyte temperature to stabilize and the level reading to be a "true" reading. Without the added words, the limit may not be met upon completion of the charge and unnecessary ACTIONS would have to be taken.

6. The allowance in footnote (b) to not perform a level correction for the specific gravity when charging current is a certain amperage value has been deleted, consistent with current licensing basis.

1

3.8 ELECTRICAL POWER SYSTEMS

3.8.7 Inverters—Operating

LCO 3.8.7 The [Division 1] and [Division 2] inverters shall be OPERABLE.

-----------------------------NOTE-----------------------------
[One/two] inverter[s] may be disconnected from [its/their] associated DC bus for ≤ [24] hours to perform an equalizing charge on [its/their] associated [common] battery, provided:

a. The associated AC vital bus[es] [is/are] energized from [its/their] [Class 1E constant voltage transformers] [inverter using internal AC source]; and

b. All other AC vital buses are energized from their associated OPERABLE inverters.

APPLICABILITY: MODES 1, 2, and 3.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One [required] inverter inoperable.	A.1 ---------NOTE-------- Enter applicable Conditions and Required Actions of LCO 3.8.9, "Distribution Systems - Operating" with any AC vital bus de-energized. -------------------- Restore inverter to OPERABLE status.	 24 hours

(continued)

I

ACTIONS (continued)

CONDITION	REQUIRED ACTION		COMPLETION TIME
B. Required Action and associated Completion Time not met.	B.1	Be in MODE 3.	12 hours
	AND		
	B.2	Be in MODE 4.	36 hours

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.8.7.1	Verify correct inverter voltage, [frequency,] and alignment to required AC vital buses.	7 days

JUSTIFICATION FOR DEVIATIONS FROM NUREG-1433, REVISION 1
ISTS: 3.8.7 - INVERTERS — OPERATING

1. ISTS 3.8.7, "Inverters — Operating," has been deleted since the current licensing basis does not require the inverter to supply the associated loads. In addition, if the associated distribution panels are energized by the alternate source for extended periods there will be no long term degradation of equipment. Therefore, this Specification is not proposed for the Dresden 2 and 3 ITS.

3.8 ELECTRICAL POWER SYSTEMS

3.8.8 Inverters—Shutdown

LCO 3.8.8 Inverter(s) shall be OPERABLE to support the onsite Class 1E AC vital bus electrical power distribution subsystem(s) required by LCO 3.8.10, "Distribution Systems—Shutdown."

APPLICABILITY: MODES 4 and 5,
During movement of irradiated fuel assemblies in the [secondary] containment.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One or more [required] inverters inoperable.	A.1 Declare affected required feature(s) inoperable.	Immediately
	<u>OR</u>	
	A.2.1 Suspend CORE ALTERATIONS.	Immediately
	<u>AND</u>	
	A.2.2 Suspend handling of irradiated fuel assemblies in the [secondary] containment.	Immediately
	<u>AND</u>	
	A.2.3 Initiate action to suspend operations with a potential for draining the reactor vessel.	Immediately
	<u>AND</u>	

(continued)

1

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. (continued)	A.2.4 Initiate action to restore [required] inverters to OPERABLE status.	Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
SR 3.8.8.1 Verify correct inverter voltage, [frequency,] and alignments to [required] AC vital buses.	7 days

JUSTIFICATION FOR DEVIATIONS FROM NUREG-1433, REVISION 1
ISTS: 3.8.8 - INVERTERS — SHUTDOWN

1. ISTS 3.8.8, "Inverters — Shutdown," has been deleted since the current licensing basis does not require the inverter to supply the associated loads. In addition, if the associated distribution panels are energized by the alternate source for extended periods there will be no long term degradation of equipment. Therefore this Specification is not proposed for the Dresden 2 and 3 ITS.

<CTS>

3.8 ELECTRICAL POWER SYSTEMS

3.8.~~9~~ Distribution Systems—Operating

1 7

<3.9.E> LCO 3.8.~~9~~ ~~[Division 1] and [Division 2] AC, DC, [and AC vital bus] electrical power distribution subsystems shall be OPERABLE.~~ Insert LCO 3.8.7 2

<Appl 3.9.E> APPLICABILITY: MODES 1, 2, and 3.

ACTIONS

	CONDITION	REQUIRED ACTION	COMPLETION TIME
<3.9.E Act 1> <Doc M.1>	A. One or more AC electrical power distribution subsystems inoperable.	A.1 Restore AC electrical power distribution subsystems to OPERABLE status.	8 hours AND 16 hours from discovery of failure to meet LCO 3.8.7.a or b 3
<3.9.E Act 1> <Doc M.1> 2 5 Insert 3.8.7 ACTION C	B. ~~One or more~~ AC ~~vital~~ bus~~es~~ inoperable. Essential Service 120 V	B.1 Restore AC ~~vital~~ bus ~~distribution subsystems~~ to OPERABLE status. essential Service 120 V	~~2~~ 8 hours 4 AND 16 hours from discovery of failure to meet LCO 3.8.7.a or b 2 3
<3.9.E Act 2> 2 <DOC M.1> 6 Insert 3.8.7 ACTION E	~~C~~ D. One or more ~~[station service]~~ DC electrical power distribution subsystems inoperable.	~~C~~ D.1 Restore DC electrical power distribution subsystems to OPERABLE status.	2 hours AND 16 hours from discovery of failure to meet LCO 3.8.7.a or b

(continued)

<CTS>

2 Insert LCO 3.8.7

The following electrical power distribution subsystems shall be OPERABLE:

<3.9.E.1> a. Division 1 and Division 2 AC and DC electrical power distribution subsystems;

<3.9.E.1> b. Essential service and instrument 120 VAC buses, and

<3.9.E.2> c. The portions of the opposite unit's Division 2 AC and DC electrical power distribution subsystem necessary to support equipment required to be OPERABLE by LCO 3.6.4.3, "Standby Gas Treatment (SGT) System," LCO 3.7.4, "Control Room Emergency Ventilation (CREV) System" (Unit 3 only), LCO 3.7.5, "Control Room Emergency Ventilation Air Conditioning (AC) System" (Unit 3 only), and LCO 3.8.1, "AC Sources-Operating."

5 Insert 3.8.7 ACTION C

<3.9.E Act 1> <DOC M.1>	C. Instrument 120 VAC bus inoperable.	C.1	Restore instrument 120 VAC bus to OPERABLE status.	8 hours AND 16 hours from discovery of failure to meet LCO 3.8.7.a or b

6 Insert 3.8.7 ACTION E

<DOC M.3>	E. Required opposite unit Division 2 AC and DC electrical power distribution subsystem inoperable.	E.1	Restore required opposite unit Division 2 AC and DC electrical power distribution subsystem to OPERABLE status.	7 days

<CTS>

ACTIONS (continued)

CONDITION	REQUIRED ACTION		COMPLETION TIME
5 6 <3.9.E Act 1> <3.9.E Act 2> D. F Required Action and associated Completion Time of Condition A, B, ~~or~~ C, D, or E not met.	D.1 F	Be in MODE 3.	12 hours
	AND		
	D.2 F	Be in MODE 4.	36 hours
7 ~~E. One or more DG DC electrical power distribution subsystems inoperable.~~	~~E.1~~	~~Declare associated DG(s) inoperable.~~	~~Immediately~~
5 6 <DOC M.2> F. G Two or more electrical power distribution subsystems inoperable that result in a loss of function.	F.1 G	Enter LCO 3.0.3.	Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
1 2 <4.9.E> SR 3.8.7.1	Verify correct breaker alignments and voltage to ~~[required]~~ AC, and DC, ~~[and AC vital bus]~~ electrical power distribution subsystems and the essential Service and instrument 120 VAC buses.	7 days

JUSTIFICATION FOR DEVIATIONS FROM NUREG-1433, REVISION 1
ITS: 3.8.7 - DISTRIBUTION SYSTEMS — OPERATING

1. The proper LCO/SR number has been provided. This change was necessary due to the deletion of ISTS 3.8.7, "Inverters — Operating" and ISTS 3.8.8, "Inverters — Shutdown."

2. The brackets have been removed and the proper plant specific information/value has been provided.

3. The second Completion Time for Required Actions A.1, B.1, C.1, and D.1 has been modified to be consistent with the intent of the ISTS. The second Completion Time is intended to limit the maximum time the LCO is not being met due to inoperable AC or DC electrical power distribution subsystems. However, the Dresden 2 and 3 electrical distribution system is designed such that each unit relies on portions of the opposite unit's AC and DC electrical distribution system to support the OPERABILITY of components that are shared by both units (e.g., standby gas treatment, control room ventilation (Unit 3 only)). When an opposite unit's Division 2 AC or DC electrical distribution subsystem that is required to support equipment required to be OPERABLE becomes inoperable, ITS 3.8.7 ACTION E requires the subsystem to be restored within 7 days. The Completion Time is based on the allowable outage time of the supported equipment. Should a Division 1 or 2 AC or DC electrical power distribution subsystem or required 120 VAC bus be declared inoperable, the second Completion Time starts. Should Condition E occur subsequent to a failure to meet the LCO due to Condition A, B, C, or D the Completion Time to restore the inoperable portion of the opposite unit's Division 2 subsystem would be unnecessarily restricted; that is, it would not allow the normal 7 day Completion Time for restoration. This was not the intent of the second Completion Time. Therefore, the second Completion Time for Required Actions A.1, B.1, C.1, and D.1 has been modified to only start upon discovery of failure to meet LCO 3.8.7.a or b, since these are the portions of the LCO that apply to the individual unit's Division 1 and 2 AC and DC electrical power distribution subsystems, and essential service and instrument 120 VAC buses.

4. The Completion Time for ITS 3.8.7 Required Action B.1 to restore an inoperable essential service 120 VAC bus has been changed from 2 hours to 8 hours. The essential service 120 VAC bus only powers AC equipment and is electrically isolated from the DC electrical power distribution subsystems. Therefore, the Completion Time has been changed to be consistent with the Completion Time provided for AC electrical power distribution subsystems. This proposed time is also consistent with the current Technical Specifications (CTS 3.9.E Action 1) which provide 8 hours to restore the essential service 120 VAC bus.

5. Action C has been added to reflect the existing requirement for the instrument 120 VAC bus. When the instrument 120 VAC bus becomes inoperable, ACTION C requires the instrument 120 VAC bus be restored within 8 hours. The Completion Time is based on the allowable outage time of the equipment supported, in this case the MSIVs are affected. This change is consistent with the current licensing basis. Subsequent ACTIONS have been renumbered, as applicable.

6. Action E has been added to reflect existing requirements for the Division 2 AC and DC electrical power distribution subsystems necessary to support opposite unit powered equipment OPERABILITY requirements. Subsequent ACTIONS have been renumbered, as applicable.

7. This bracketed requirement has been deleted because it is not applicable to Dresden 2 and 3. The following requirement has been renumbered to reflect the deletion.

<CTS>

3.8 ELECTRICAL POWER SYSTEMS

3.8.10 Distribution Systems—Shutdown 8

<3.9.F> LCO 3.8.10 8 The necessary portions of the AC, DC, ~~[and AC/vital bus]~~ and the opposite unit's Division 2 [2] electrical power distribution subsystems shall be OPERABLE to support equipment required to be OPERABLE.

<Appl 3.9.F> APPLICABILITY: MODES 4 and 5,
During movement of irradiated fuel assemblies in the [2] ~~[secondary]~~ containment.

ACTIONS

---- NOTE ----
LCO 3.0.3 is not applicable [3]

CONDITION	REQUIRED ACTION	COMPLETION TIME
[5] <3.9.F Act> <DOC M.1> A. One or more required AC, or DC, ~~[or AC/vital bus]~~ electrical power distribution subsystems inoperable.	A.1 Declare associated supported required feature(s) inoperable.	Immediately
	OR	
	A.2.1 Suspend CORE ALTERATIONS.	Immediately
	AND	
	A.2.2 Suspend ~~handling~~ movement [4] of irradiated fuel assemblies in the ~~[secondary]~~ [2] containment.	Immediately
	AND	
	A.2.3 Initiate action to suspend operations with a potential for draining the reactor vessel.	Immediately
	AND	
		(continued)

<CTS>

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
<Doc M.3> A. (continued)	A.2.4 Initiate actions to restore required AC and DC, ~~[and AC vital bus]~~ electrical power distribution subsystems to OPERABLE status. 5	Immediately
	AND	
	A.2.5 Declare associated required shutdown cooling subsystem(s) inoperable and not in operation.	Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
1 B <4.9.F> 5 SR 3.8.10.1 Verify correct breaker alignments and voltage to required AC and DC, ~~[and AC vital bus]~~ electrical power distribution subsystems.	7 days

JUSTIFICATION FOR DEVIATIONS FROM NUREG-1433, REVISION 1
ITS: 3.8.8 - DISTRIBUTION SYSTEMS — SHUTDOWN

1. The proper LCO/SR number has been provided. This change was necessary due to the deletion of ISTS 3.8.7, "Inverters — Operating" and ISTS 3.8.8, "Inverters — Shutdown."

2. The brackets have been removed and the proper plant specific information/value has been provided.

3. The ACTIONS have been modified by a Note stating that LCO 3.0.3 is not applicable. If moving irradiated fuel assemblies while in Mode 4 or 5, LCO 3.0.3 would not specify any action. If moving irradiated fuel assemblies while in Mode 1, 2, or 3, the fuel movement is independent of reactor operations. This clarification is necessary because defaulting to LCO 3.0.3 during irradiated fuel assembly movement in Mode 1, 2, or 3 would require the reactor to be shutdown, but would not require suspension of movement of irradiated fuel assemblies. Therefore, the proposed Note ensures that proper actions are taken when moving irradiated fuel assemblies in Mode 1, 2, or 3 (i.e., LCO 3.0.3 is not applicable and cannot be used in lieu of suspending fuel movement as required by the ACTIONS of the LCO). This change is also consistent with TSTF-36, Rev. 4.

4. The word "handling" has been replaced with "movement" for consistency with other places in the TS where this Required Action appears.

5. The bracketed information has been deleted because it is not applicable to Dresden 2 and 3.

All changes are 1 unless otherwise identified.

B 3.8 ELECTRICAL POWER SYSTEMS

B 3.8.1 AC Sources—Operating

BASES

BACKGROUND

The unit Class 1E AC Electrical Power Distribution System AC sources consist of the offsite power sources (~~preferred power sources, normal and alternates~~), and the onsite standby power sources (diesel generators (DGs) 2A, 2C, and 1B). As required by ~~10 CFR 50, Appendix A, GDC 17~~ UFSAR, Section 3.1.2.2.8 (Ref. 1), the design of the AC electrical power system provides independence and redundancy to ensure an available source of power to the Engineered Safety Feature (ESF) systems. 2/3 3

The Class 1E unit AC distribution system is, for the most part, divided into redundant load groups (Divisions 1 and 2), so loss of any one group does not prevent the minimum safety functions from being performed. Insert BKGD-1 Each unit's load group has connections to two ~~preferred~~ physically independent offsite power ~~supplies~~ sources and a single DG.

Offsite power is supplied to each of the ~~230~~ 138 kV and ~~500~~ 345 kV switchyards from the transmission network by ~~eight~~ six transmission lines. From the ~~230~~ 138 kV switchyards, ~~two~~ one qualified electrically and physically separated circuits provide normally AC power, through reserve auxiliary transformers ~~2C and 2D~~ (RAT) 22, to ~~4.16~~ 4160 V ~~ESF~~ Essential Service System buses ~~2E, 2F, and 2G~~. A detailed description of the offsite power network and circuits to the onsite Class 1E ~~ESF~~ ESS buses is found in the UFSAR, Section ~~8.2~~ (Ref. 2). Insert BKGD-3 2

A qualified offsite circuit consists of all breakers, transformers, switches, interrupting devices, cabling, and controls required to transmit power from the offsite transmission network to the onsite Class 1E ~~ESF~~ ESS bus or buses.

~~Startup auxiliary transformer (SAT) 2D provides the normal source of power to the ESF buses 2E, 2F, and 2G. If any 4.16 kV ESF bus loses power, an automatic transfer from SAT 2D to SAT 2C occurs. At this time, 4.16 kV buses 2A and 2B and supply breakers from SAT 2C also trip open, disconnecting all nonessential loads from SAT 2C to preclude overloading of the transformer.~~

~~SATs~~ RATs ~~2C~~ 22 and ~~2D~~ 32 are sized to accommodate the simultaneous starting of all ESF loads on receipt of an accident signal without the need for load sequencing.

(continued)

$\boxed{/}$ Insert BKGD-1

The exception is that the opposite unit's Division 2 AC Electrical Power Distribution System powers shared Division 2 loads (i.e., standby gas treatment subsystem, Control Room Emergency Ventilation (CREV) System (Unit 3 only), and Control Room Emergency Ventilation Air Conditioning (AC) System (Unit 3 only)). Although shared by both units, the CREV System and Control Room Emergency Ventilation AC System are single train systems that are powered only from a single Unit 2 motor control center.

$\boxed{/}$ Insert BKGD-3

24-1 via ESS bus 24 to supply the Division 2 loads of Unit 2. From the 345 kV switchyard, another qualified, electrically and physically separated circuit normally provides AC power, through RAT 32, to 4160 V ESS bus 34-1 via ESS bus 34 to supply the Division 2 loads of Unit 3. Unit auxiliary transformer (UAT) 21, which is normally supplied by the Unit 2 main generator, is normally aligned to Unit 2 to supply Division 1 4160 V ESS bus 23-1 via ESS bus 23. Finally, UAT 31, which is normally supplied by the Unit 3 main generator, is normally aligned to Unit 3 to supply Division 1 4160 V ESS bus 33-1 via ESS bus 33.

When a main generator is not operating, the loads fed from the UAT are automatically transferred to the RAT on a generator trip (RAT 22 will supply 4160 V ESS bus 23-1 via 4160 V ESS bus 23 and RAT 32 will supply 4160 V ESS bus 33-1 via 4160 V ESS bus 33). The given unit's RAT is the primary (normal) offsite source to the Division 1 and 2 load groups. The RAT of the opposite unit provides the second (alternate) qualified offsite source through bus ties provided between the corresponding ESS buses of the two units. Additionally, the UAT of either unit provides another source of offsite power to the ESS buses only when the unit is shutdown and the UAT is being backfed from the grid. Physical changes to the generator links are required to place the unit in an alignment to allow backfeed. The offsite AC electrical power sources are designed and located so as to minimize to the extent practical the likelihood of their simultaneous failure under operating and postulated accident and environmental conditions.

All changes are 1 unless otherwise identified.

BASES

BACKGROUND (continued)

The onsite standby power source for ~~4.16~~ 4160 kV ~~ESF~~ ESS buses ~~2E, 2F, and 2G~~ 23-1, 24-1, 33-1, and 34-1 consists of three DGs. DGs 2~~A~~ 3 and ~~2C~~ 2/3 are dedicated to ~~ESF~~ ESS buses ~~2E~~ 34-1 and ~~2G~~ 23-1, respectively. DG ~~1B~~ is a shared power source and can supply either Unit ~~1~~ 3 ~~ESF~~ ESS bus ~~1F~~ 33-1 or Unit ~~2~~ 2 ~~ESF~~ ESS bus ~~2F~~ 24-1. A DG starts automatically on a loss of coolant accident (LOCA) signal (i.e., low reactor water level signal or high drywell pressure signal) or on an ~~ESF~~ ESS bus degraded voltage or undervoltage signal (refer to LCO 3.3.8.1, "Loss of Power (LOP) Instrumentation"). Insert BKGD-4 After the DG has started, it automatically ties to its respective bus after offsite power is tripped as a consequence of ~~ESF~~ ESS bus undervoltage or degraded voltage, independent of or coincident with a LOCA signal. The DGs also start and operate in the standby mode without tying to the ~~ESF~~ ESS bus on a LOCA signal alone. Insert BKGD-5 Following the trip of offsite power, ~~a sequencer strips nonpermanent loads~~ buses 23-1, 24-1, 33-1, and 34-1 are automatically disconnected from their normal supply and all nonessential loads are disconnected from the ~~ESF~~ ESS bus. When the DG is tied to the ~~ESF~~ ESS bus, loads are then sequentially connected to ~~its~~ their respective ~~ESF~~ ESS bus, if a LOCA signal is present, by the sequence logic ~~by the automatic sequencer~~. The sequencing logic controls the ~~permissive and~~ starting signals to motor breakers to prevent overloading the DG.

In the event of a loss of ~~preferred~~ offsite power, the ESF electrical loads are automatically connected to the DGs in sufficient time to provide for safe reactor shutdown and to mitigate the consequences of a Design Basis Accident (DBA) such as a LOCA.

Certain required plant loads are returned to service in a predetermined sequence in order to prevent overloading of the DGs in the process. Within ~~46~~ 30 seconds after the initiating signal is received, all automatic and permanently connected loads needed to recover the unit or maintain it in a safe condition are returned to service.

~~Ratings for the DGs satisfy the requirements of Regulatory Guide 1.9 (Ref. 3).~~ DGs 2~~A~~, 3, and ~~2C~~ 2/3 have the following ratings:

a. ~~2850~~ 2600 kW—continuous,

b. ~~3100~~ 2860 kW—2000 hours~~,~~.

~~c. 3250 kW—300 hours,~~

~~d. 3500 kW—30 minutes.~~

(continued)

3 Insert BKGD-4

(refer to LCO 3.3.5.1, "Emergency Core Cooling System (ECCS) Instrumentation")

1 Insert BKGD-5

In the event of a LOCA on a unit, DG 2/3 will start and supply the unit (bus 23-1 or 33-1) experiencing the accident if no offsite power is available. This is accomplished by using the accident signal to prevent the DG 2/3 output breaker from closing on the nonaccident unit.

BASES

BACKGROUND (continued)

~~DG 1B has the following ratings:~~

~~a. 2850 kW—continuous,~~

~~b. 3250 kW—168 hours.~~

1

APPLICABLE SAFETY ANALYSES

1 U 3

The initial conditions of DBA and transient analyses in the UFSAR, Chapter ~~[6]~~ (Ref. ~~4~~) and Chapter ~~[15]~~ (Ref. ~~5~~), assume ESF systems are OPERABLE. The AC 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 (RCS), and containment design limits are not exceeded. These limits are discussed in more detail in the Bases for Section 3.2, Power Distribution Limits; Section 3.~~4~~5, ~~Reactor Coolant System (RCS)~~ Emergency Core Cooling System (ECCS) and Isolation Condenser (IC) System; and Section 3.6, Containment Systems. 2 4 1 4 5

The OPERABILITY of the AC electrical power sources is consistent with the initial assumptions of the accident analyses and is based upon meeting the design basis of the unit. This includes maintaining the onsite or offsite AC sources OPERABLE during accident conditions in the event of:

a. An assumed loss of all offsite power or all onsite AC power; and

b. A worst case single failure.

AC sources satisfy Criterion 3 of ~~the NRC Policy Statement~~ 10 CFR 50.36(c)(2)(ii). 1

LCO

Two qualified circuits between the offsite transmission network and the onsite Class 1E AC Electrical Power ~~Distribution System~~ ~~and~~ ~~three~~ two separate and independent DGs ~~([2A, 2C, and 1B])~~ ensure availability of the required power to shut down the reactor and maintain it in a safe shutdown condition after an anticipated operational occurrence (AOO) or a postulated DBA. 5 5

Qualified offsite circuits are those that are described in the UFSAR, and are part of the licensing basis for the unit. 1

(continued)

one qualified circuit between the offsite transmission network and the opposite unit's Division 2 onsite Class 1E AC Electrical Power Distribution subsystem capable of supporting the equipment required to be OPERABLE by LCO 3.6.4.3, "Standby Gas Treatment (SGT) System," LCO 3.7.4, "Control Room Emergency Ventilation (CREV) System" (Unit 3 only), and LCO 3.7.5, "Control Room Emergency Ventilation Air Conditioning (AC) System" (Unit 3 only), and the opposite unit's DG capable of supporting LCO 3.6.4.3, LCO 3.7.4 (Unit 3 only), and LCO 3.7.5 (Unit 3 only), 5

All changes are 1 unless otherwise identified.

BASES

LCO (continued)

~~[In addition, [one required automatic load sequencer per ESF bus] shall be OPERABLE.]~~ 6

from the 138 kV and 345 kV Switchyards

Each offsite circuit must be capable of maintaining rated frequency and voltage, and accepting required loads during an accident, while connected to the ESF buses. Each offsite circuit consists of incoming breaker and disconnect to the respective 2C and 2D RATs, the 2C and 2D transformers, and the respective circuit path including feeder breakers to 4.16 kV ESF buses. ~~Feeder breakers from each circuit are required to the 2F ESF bus; however, if 2C SAT is connected to ESF bus 2E (or 2G) and 2D SAT is connected to 2G (or 2E), the remaining breakers to 2E and 2G are not required.~~

the; 4160 V ESS; An; to each unit; S; 22; 32; 32; R; RATs 22; 4160; ESS; Insert LCO-1

The respective unit DG and shared

Each DG must be capable of starting, accelerating to rated speed and voltage, and connecting to its respective ESF bus on detection of bus undervoltage. This sequence must be accomplished within 12 seconds. Each DG must also be capable of accepting required loads within the assumed loading sequence intervals, and must continue to operate until offsite power can be restored to the ESF buses. These capabilities are required to be met from a variety of initial conditions, such as DG in standby with the engine hot and DG in standby with the engine at ambient condition. ~~Additional DG capabilities must be demonstrated to meet required Surveillances, e.g., capability of the DG to revert to standby status on an ECCS signal while operating in parallel test mode.~~

4160 V ESS; 13; respective unit DG and shared

~~Proper sequencing of loads, including tripping of nonessential loads, is a required function for DG OPERABILITY.~~ 3

Insert LCO-2

The AC sources must be separate and independent (to the extent possible) of other AC sources. For the DGs, the separation and independence are complete. For the offsite AC sources, the separation and independence are to the extent practical. A circuit may be connected to more than one ESF bus, with fast transfer capability to the other circuit OPERABLE, and not violate separation criteria. A circuit that is not connected to an ESF bus is required to have OPERABLE fast transfer interlock mechanisms to at least two ESF buses to support OPERABILITY of that circuit.

both divisions of either unit; qualified; manual; the 4160 V ESS; es; capability; manual; qualified

(continued)

[I] Insert LCO-1

A qualified circuit does not have to be connected to the ESS bus (i.e., the main generator can be connected to the ESS bus) as long as the capability to fast transfer to the qualified circuit exists. The other qualified offsite circuit for each unit is provided by a bus tie between the corresponding ESS buses of the two units. The breakers connecting the buses must be capable of closure. For Unit 2, LCO 3.8.1.a is met if RAT 22 is capable of supplying ESS buses 23-1 and 24-1 and if RAT 32 (or UAT 31 on backfeed) can supply ESS buses 23-1 and 24-1 via the associated unit tie. For Unit 3, LCO 3.8.1.a is met if RAT 32 can supply ESS buses 33-1 and 34-1 and if RAT 22 (or UAT 21 on backfeed) can supply ESS buses 33-1 and 34-1 via the associated unit tie. For Unit 2, LCO 3.8.1.c is met if RAT 32 (or UAT 31 on backfeed) is capable of supplying ESS bus 39 to support equipment required by LCO 3.6.4.3. For Unit 3, LCO 3.8.1.c is met if RAT 22 (or UAT 21 on backfeed) is capable of supplying ESS bus 29 to support equipment required by LCO 3.6.4.3, LCO 3.7.4, and LCO 3.7.5.

[I] Insert LCO-2

The opposite unit's DG must be capable of starting, accelerating to rated speed and voltage, and connecting to its Division 2 Class 1E AC electrical power distribution subsystem on detection of bus undervoltage. This sequence must be accomplished within 13 seconds and is required to be met from the same variety of initial conditions specified for the unit DGs. For Unit 2 to meet LCO 3.8.1.d, DG 3 must be capable of supplying ESS bus 34-1 on a loss of power to the bus in order to supply ESS bus 39 to support equipment required by LCO 3.6.4.3. Similarly, for Unit 3 to meet LCO 3.8.1.d, DG 2 must be capable of supplying ESS bus 24-1 on a loss of power to the bus in order to support ESS bus 29 to support equipment required by LCO 3.6.4.3, LCO 3.7.4, and LCO 3.7.5.

BASES (continued)

2

APPLICABILITY

The AC sources ~~(and sequencers)~~ are required to be OPERABLE in MODES 1, 2, and 3 to ensure that:

a. Acceptable fuel design limits and reactor coolant pressure boundary limits are not exceeded as a result of AOOs or abnormal transients; and

b. Adequate core cooling is provided and containment OPERABILITY and other vital functions are maintained in the event of a postulated DBA.

5 Insert Applicability

The AC power requirements for MODES 4 and 5 and other conditions in which AC sources are required 7 are covered in LCO 3.8.2, "AC Sources—Shutdown."

ACTIONS

5 Insert ACTIONS Note

A.1

To ensure a highly reliable power source remains with one offsite circuit inoperable, it is necessary to verify the availability of the remaining required offsite circuit on a more frequent basis. Since the Required Action only specifies "perform," a failure of SR 3.8.1.1 acceptance criteria does not result in a Required Action not met. However, if a second required circuit fails SR 3.8.1.1, the second offsite circuit is inoperable, and Condition C, for two offsite circuits inoperable, is entered.

A.2

Required Action A.2, which only applies if the division cannot be powered from an offsite source, is intended to provide assurance that an event with a coincident single failure of the associated DG does not result in a complete loss of safety function of critical systems. These features are designed with redundant safety related divisions (i.e., single division systems are not included). Redundant required features failures consist of inoperable features associated with a division redundant to the division that has no offsite power.

The Completion Time for Required Action A.2 is intended to allow time for the operator to evaluate and repair any

(continued)

$\boxed{5}$ Insert Applicability

A Note has been added taking exception to the Applicability requirements for the opposite unit's Division 2 AC electrical power sources in LCO 3.8.1.c and d, provided the associated required equipment (SGT subsystem, CREV System (for Unit 3 only), and Control Room Emergency Ventilation AC System (for Unit 3 only)) is inoperable. This exception is intended to allow declaring of the opposite unit's Division 2 supported equipment inoperable either in lieu of declaring the opposite unit's Division 2 source inoperable, or at any time subsequent to entering ACTIONS for an inoperable opposite unit Division 2 source. This exception is acceptable since, with the opposite unit powered Division 2 equipment inoperable and the associated ACTIONS entered, the opposite unit Division 2 AC sources provide no additional assurance of meeting the above criteria.

$\boxed{5}$ Insert ACTIONS Note

A Note has been added to the ACTIONS to exclude the MODE change restriction of LCO 3.0.4 for the opposite unit's AC electrical power sources. This exception allows entry into the applicable MODE while relying on the ACTIONS even though the ACTIONS may eventually require a plant shutdown. This allowance is acceptable due to the low probability of an event requiring the opposite unit equipment.

BASES

ACTIONS

A.2 (continued)

discovered inoperabilities. This Completion Time also allows an exception to the normal "time zero" for beginning the allowed outage time "clock." In this Required Action the Completion Time only begins on discovery that both:

a. The division has no offsite power supplying its loads; and

3 redundant

b. A required feature on the other division is inoperable.

If, at any time during the existence of this Condition (one offsite circuit inoperable) a required feature subsequently becomes inoperable, this Completion Time would begin to be tracked.

ESS 1

Discovering no offsite power to one 4160 V ~~ESF~~ bus of the onsite Class 1E Power Distribution System coincident with one or more inoperable required support or supported features, or both, that are associated with any other ~~ESF~~ bus that has offsite power, results in starting the

8 Completion Times for the Required Action. Twenty-four hours is acceptable because it minimizes risk while allowing time for restoration before the unit is subjected to transients associated with shutdown.

The remaining OPERABLE offsite circuit and DGs are adequate to supply electrical power to the onsite Class 1E Distribution System. Thus, on a component basis, single failure protection may have been lost for the required feature's function; however, function is not lost. The 24 hour Completion Time takes into account the component OPERABILITY of the redundant counterpart to the inoperable required feature. Additionally, the 24 hour Completion Time takes into account the capacity and capability of the remaining AC sources, a reasonable time for repairs, and the low probability of a DBA occurring during this period.

A.3

~~According to Regulatory Guide 1.93 (Ref. 6), operation may continue in Condition A for a period that should not exceed 72 hours.~~ With one offsite circuit inoperable, the 5

(continued)

BASES

ACTIONS

A.3 (continued)

reliability of the offsite system is degraded, and the potential for a loss of offsite power is increased, with attendant potential for a challenge to the plant safety systems. In this condition, however, the remaining OPERABLE offsite circuit and DGs are adequate to supply electrical power to the onsite Class 1E Distribution System.

5 7 day

The 72 hour Completion Time takes into account the capacity and capability of the remaining AC sources, reasonable time for repairs, and the low probability of a DBA occurring during this period.

The second Completion Time for Required Action A.3 establishes a limit on the maximum time allowed for any combination of required AC power sources to be inoperable during any single contiguous occurrence of failing to meet the LCO. If Condition A is entered while, for instance, a DG is inoperable, and that DG is subsequently returned OPERABLE, the LCO may already have been not met for up to 72 hours. This situation could lead to a total of 144 hours, since initial failure to meet the LCO, to restore the offsite circuit. At this time, a DG could again become inoperable, the circuit restored OPERABLE, and an additional 72 hours (for a total of 9 days) allowed prior to complete restoration of the LCO. The 6 day Completion Time provides a limit on the time allowed in a specified condition after discovery of failure to meet the LCO. This limit is considered reasonable for situations in which Conditions A and B are entered concurrently. The "AND" connector between the 72 hours and 6 day Completion Times means that both Completion Times apply simultaneously, and the more restrictive Completion Time must be met.

3.8.1.a or b — 7 days — 14 days — 21 — 7 days — 14 — 3.8.1.a or b — 7 day — 14 — 5

3 Similar to

As in Required Action A.2, the Completion Time allows for an exception to the normal "time zero" for beginning the allowed outage time "clock." This exception results in establishing the "time zero" at the time the LCO was initially not met, instead of at the time that Condition A was entered.

of Required Action A.3 3

3.8.1.a or b 5

(continued)

BASES

ACTIONS (continued)

B.1

To ensure a highly reliable power source remains with one DG inoperable, it is necessary to verify the availability of the required offsite circuits on a more frequent basis. Since the Required Action only specifies "perform," a failure of SR 3.8.1.1 acceptance criteria does not result in a Required Action being not met. However, if a circuit fails to pass SR 3.8.1.1, it is inoperable. Upon offsite circuit inoperability, additional Conditions must then be entered.

B.2

Required Action B.2 is intended to provide assurance that a loss of offsite power, during the period that a DG is inoperable, does not result in a complete loss of safety function of critical systems. These features are designed with redundant safety related divisions (i.e., single division systems are not included). Redundant required features failures consist of inoperable features associated with a division redundant to the division that has an inoperable DG.

The Completion Time is intended to allow the operator time to evaluate and repair any discovered inoperabilities. This Completion Time also allows for an exception to the normal "time zero" for beginning the allowed outage time "clock." In this Required Action the Completion Time only begins on discovery that both:

a. An inoperable DG exists; and

b. A redundant required feature on the other division (Division 1 or 2) is inoperable.

If, at any time during the existence of this Condition (one DG inoperable), a redundant required feature subsequently becomes inoperable, this Completion Time begins to be tracked.

Discovering one required DG inoperable coincident with one or more inoperable redundant required support or supported features, or both, that are associated with the OPERABLE DG(s) results in starting the Completion Time for the Required Action. Four hours from the discovery of these events existing

3 B

(continued)

BASES

ACTIONS

B.2 (continued)

concurrently is acceptable because it minimizes risk while allowing time for restoration before subjecting the unit to transients associated with shutdown.

The remaining OPERABLE DGs and offsite circuits are adequate to supply electrical power to the onsite Class 1E Distribution System. Thus, on a component basis, single failure protection for the required feature's function may have been lost; however, function has not been lost. The 4 hour Completion Time takes into account the component OPERABILITY of the redundant counterpart to the inoperable required feature. Additionally, the 4 hour Completion Time takes into account the capacity and capability of the remaining AC sources, reasonable time for repairs, and low probability of a DBA occurring during this period.

B.3.1 and B.3.2

Required Action B.3.1 provides an allowance to avoid unnecessary testing of OPERABLE DGs. If it can be determined that the cause of the inoperable DG does not exist on the OPERABLE DG(s), SR 3.8.1.2 does not have to be performed. If the cause of inoperability exists on other DG(s), they are declared inoperable upon discovery, and Condition E or G of LCO 3.8.1 is entered, as applicable. Once the failure is repaired, and the common cause failure no longer exists, Required Action B.3.1 is satisfied. If the cause of the initial inoperable DG cannot be confirmed not to exist on the remaining DG(s), performance of SR 3.8.1.2 suffices to provide assurance of continued OPERABILITY of those DGs.

In the event the inoperable DG is restored to OPERABLE status prior to completing either B.3.1 or B.3.2, the ~~plant~~ station corrective action program will continue to evaluate the common cause possibility. This continued evaluation, however, is no longer under the 24 hour constraint imposed while in Condition B.

According to Generic Letter 84-15 (Ref. ~~7~~ 5), 24 hours is a reasonable time to confirm that the OPERABLE DG(s) are not affected by the same problem as the inoperable DG.

(continued)

BASES

ACTIONS (continued)

B.4

~~According to Regulatory Guide 1.93 (Ref. 6), operation may continue in Condition B for a period that should not exceed 72 hours.~~ [5] In Condition B, the remaining OPERABLE DGs and offsite circuits are adequate to supply electrical power to the onsite Class 1E Distribution System. The ~~72 hour~~ 7 day Completion Time takes into account the capacity and capability of the remaining AC sources, a reasonable time for repairs, and the low probability of a DBA occurring during this period. [3]

The second Completion Time for Required Action B.4 establishes a limit on the maximum time allowed for any combination of required AC power sources to be inoperable during any single contiguous occurrence of failing to meet ~~the~~ LCO 3.8.1.a or b. If Condition B is entered while, for instance, an offsite circuit is inoperable and that circuit is subsequently restored OPERABLE, the LCO may already have been not met for up to ~~72 hours~~ 7 days. This situation could lead to a total of ~~144 hours~~ 14 days, since initial failure of the LCO, to restore the DG. At this time, an offsite circuit could again become inoperable, the DG restored OPERABLE, and an additional ~~72 hours~~ 7 days (for a total of ~~9~~ 21 days) allowed prior to complete restoration of the LCO. The ~~6~~ 14 day Completion Time provides a limit on the time allowed in a specified condition after discovery of failure to meet ~~the~~ LCO 3.8.1.a or b. This limit is considered reasonable for situations in which Conditions A and B are entered concurrently. The "AND" connector between the ~~72 hour~~ 7 day and ~~6~~ 14 day Completion Times means that both Completion Times apply simultaneously, and the more restrictive must be met. [5]

[3] Similar to ~~As in~~ Required Action B.2, the Completion Time of Required Action B.4 [3] allows for an exception to the normal "time zero" for beginning the allowed outage time "clock." This exception results in establishing the "time zero" at the time that ~~the~~ LCO 3.8.1.a or b [5] was initially not met, instead of the time that Condition B was entered.

C.1 and C.2

Required Action C.1 addresses actions to be taken in the event of inoperability of redundant required features

(continued)

BASES

ACTIONS

C.1 and C.2 (continued)

concurrent with inoperability of two offsite circuits. Required Action C.1 reduces the vulnerability to a loss of function. The Completion Time for taking these actions is reduced to 12 hours from that allowed with one division without offsite power (Required Action A.2). The rationale for the reduction to 12 hours is that Regulatory Guide 1.93 (Ref. 6) allows a Completion Time of 24 hours for two required offsite circuits inoperable, based upon the assumption that two complete safety divisions are OPERABLE. When a concurrent redundant required feature failure exists, this assumption is not the case, and a shorter Completion Time of 12 hours is appropriate. These features are designed with redundant safety related divisions, (i.e., single division systems are not included in the list). Redundant required features failures consist of any of these features that are inoperable because any inoperability is on a division redundant to a division with inoperable offsite circuits.

The Completion Time for Required Action C.1 is intended to allow the operator time to evaluate and repair any discovered inoperabilities. This Completion Time also allows for an exception to the normal "time zero" for beginning the allowed outage time "clock." In this Required Action, the Completion Time only begins on discovery that both:

3

a. All ~~r~~equired offsite circuits are inoperable; and

redundant

b. A required feature is inoperable.

If, at any time during the existence of this Condition (two offsite circuits inoperable), a required feature subsequently becomes inoperable, this Completion Time begins to be tracked.

According to Regulatory Guide 1.93 (Ref. 6), operation may continue in Condition C for a period that should not exceed 24 hours. This level of degradation means that the offsite electrical power system does not have the capability to effect a safe shutdown and to mitigate the effects of an accident; however, the onsite AC sources have not been degraded. This level of degradation generally corresponds

(continued)

BASES

ACTIONS

C.1 and C.2 (continued)

to a total loss of the immediately accessible offsite power sources.

Because of the normally high availability of the offsite sources, this level of degradation may appear to be more severe than other combinations of two AC sources inoperable that involve one or more DGs inoperable. However, two factors tend to decrease the severity of this degradation level:

a. The configuration of the redundant AC electrical power system that remains available is not susceptible to a single bus or switching failure; and

b. The time required to detect and restore an unavailable offsite power source is generally much less than that required to detect and restore an unavailable onsite AC source.

With both of the required offsite circuits inoperable, sufficient onsite AC sources are available to maintain the unit in a safe shutdown condition in the event of a DBA or transient. In fact, a simultaneous loss of offsite AC sources, a LOCA, and a worst case single failure were postulated as a part of the design basis in the safety analysis. Thus, the 24 hour Completion Time provides a period of time to effect restoration of one of the offsite circuits commensurate with the importance of maintaining an AC electrical power system capable of meeting its design criteria.

According to Regulatory Guide 1.93 (Ref. 6), with the available offsite AC sources two less than required by the LCO, operation may continue for 24 hours. If two offsite sources are restored within 24 hours, unrestricted operation may continue. If only one required offsite source is restored within 24 hours, power operation continues in accordance with Condition A. 3

D.1 and D.2

Pursuant to LCO 3.0.6, the Distribution System ACTIONS would not be entered even if all AC sources to it were inoperable,

(continued)

BASES

ACTIONS

D.1 and D.2 (continued)

resulting in de-energization. Therefore, the Required Actions of Condition D are modified by a Note to indicate that when Condition D is entered with no AC source to any ESF bus, ACTIONS for LCO 3.8.8, "Distribution Systems—Operating," must be immediately entered. This allows Condition D to provide requirements for the loss of the offsite circuit and one DG without regard to whether a division is de-energized. LCO 3.8.8 provides the appropriate restrictions for a de-energized division.

required 3

7 10

1 4160 V ESS

3 (i.e., the bus is de-energized)

According to Regulatory Guide 1.93 (Ref. 6), operation may continue in Condition D for a period that should not exceed 12 hours. In Condition D, individual redundancy is lost in both the offsite electrical power system and the onsite AC electrical power system. Since power system redundancy is provided by two diverse sources of power, however, the reliability of the power systems in this Condition may appear higher than that in Condition C (loss of both required offsite circuits). This difference in reliability is offset by the susceptibility of this power system configuration to a single bus or switching failure. The 12 hour Completion Time takes into account the capacity and capability of the remaining AC sources, reasonable time for repairs, and the low probability of a DBA occurring during this period.

E.1

no more than 2

11 required

With two DGs inoperable, there is none remaining standby AC source. Thus, with an assumed loss of offsite electrical power, insufficient standby AC sources are available to power the minimum required ESF functions. Since the offsite electrical power system is the only source of AC power for the majority of ESF equipment at 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. (The immediate shutdown could cause grid instability, which could result in a total loss of AC power.) Since any inadvertent unit generator trip could also result in a total loss of offsite AC power, however, the time allowed for continued operation is severely restricted. The intent here is to avoid the risk

may not be 3

(continued)

BASES

3

ACTIONS E.1 (continued)

associated with an immediate controlled shutdown and to minimize the risk associated with this level of degradation.

According to Regulatory Guide 1.93 (Ref. 6), with both DGs inoperable, operation may continue for a period that should not exceed 2 hours.

The Completion Time assumes complete loss of onsite (DG) AC capability to power the minimum loads needed to respond to analyzed events.

~~F.1~~

~~The sequencer(s) is an essential support system to [both the offsite circuit and the DG associated with a given ESF bus.] [Furthermore, the sequencer(s) is on the primary success path for most major AC electrically powered safety systems powered from the associated ESF bus.] Therefore, loss of an [ESF bus's sequencer] affects every major ESF System in the [division]. The [12] hour Completion Time provides a period of time to correct the problem commensurate with the importance of maintaining sequencer OPERABILITY. This time period also ensures that the probability of an accident requiring sequencer OPERABILITY occurring during periods when the sequencer is inoperable is minimal.~~

~~This Condition is preceded by a Note that allows the Condition to be deleted if the unit design is such that any sequencer failure mode only affects the ability of the associated DG to power its respective safety loads under any conditions. Implicit in this Note is the concept that the Condition must be retained if any sequencer failure mode results in the inability to start all or part of the safety loads when required regardless of power availability, or results in overloading the offsite power circuit to a safety bus during an event thereby causing its failure. Also implicit in the Note is that the Condition is not applicable to any division that does not have a sequencer.~~ 6

6 F

G.1 and G.2

If the inoperable AC electrical power sources cannot be restored to OPERABLE status within the associated Completion Time, the unit must be brought to a MODE in which the LCO does not apply. To achieve this status, the unit must be brought to at least MODE 3 within 12 hours and to MODE 4

(continued)

BASES

6 ACTIONS F E.1 and E.2 (continued)

within 36 hours. The allowed Completion Times are reasonable, based on operating experience, to reach the required plant conditions from full power conditions in an orderly manner and without challenging plant systems.

6 G H.1

Condition H corresponds to a level of degradation in which all redundancy in the AC electrical power supplies has been lost. At this severely degraded level, any further losses in the AC electrical power system will cause a loss of function. Therefore, no additional time is justified for continued operation. The unit is required by LCO 3.0.3 to commence a controlled shutdown.

SURVEILLANCE REQUIREMENTS

The AC sources are designed to permit inspection and testing of all important areas and features, especially those that have a standby function, in accordance with 7 1 ~~10 CFR 50, GDC 18~~ UFSAR, Section 3.1.2.2.9 1 (Ref. ~~8~~). Periodic component tests are supplemented by extensive functional tests during refueling outages (under simulated accident conditions). The SRs for demonstrating the OPERABILITY of the DGs are ~~in accordance~~ consistant 8 with the recommendations of Regulatory Guide 1.9 (Ref. 3), Regulatory Guide 1.108 (Ref. 9), and Regulatory Guide 1.137 (Ref. 10), as addressed in the UFSAR.

5 Insert SR Notes

Where the SRs discussed herein specify voltage and frequency tolerances, the following summary is applicable. The minimum steady state output voltage of ~~3740~~ 3952 V is 90% of the nominal 4160 V output voltage. This value, which is specified in ANSI C84.1 (Ref. 11), allows for voltage drop to the terminals of 4000 V motors whose minimum operating voltage is specified as 90% or 3600 V. It also allows for voltage drops to motors and other equipment down through the 120 V level where minimum operating voltage is also usually specified as 90% of name plate rating. The specified maximum steady state output voltage of ~~4756~~ 4368 2 V is equal to the maximum operating voltage specified for 4000 V motors. It ensures that for a lightly loaded distribution system, the voltage at the terminals of 4000 V motors is no more than the maximum rated operating voltages. The specified

(continued)

$\boxed{5}$ <u>Insert SR Notes</u>

The Surveillances are modified by two Notes to clearly identify how the Surveillances apply to the given unit and the opposite unit AC electrical power sources. Note 1 states that SR 3.8.1.1 through 3.8.1.20 are applicable only to the given unit AC electrical power sources and Note 2 states that SR 3.8.1.21 is applicable to the opposite unit AC electrical power sources. These Notes are necessary since the opposite unit AC electrical power sources are not required to meet all of the requirements of the given unit AC electrical power sources (e.g., the opposite unit's DG is not required to start on the opposite unit's ECCS initiation signal to support the OPERABILITY of the given unit).

BASES

SURVEILLANCE REQUIREMENTS (continued)

minimum and maximum frequencies of the DG are 58.8 Hz and 61.2 Hz, respectively. These values are equal to ± 2% of the 60 Hz nominal frequency and are derived from the recommendations found in Regulatory Guide 1.9 (Ref. 3). 8 1

SR 3.8.1.1

This SR ensures proper circuit continuity for the offsite AC electrical power supply to the onsite distribution network and availability of offsite AC electrical power. The breaker alignment verifies that each breaker is in its correct position to ensure that distribution buses and loads are connected to their preferred power source and that appropriate independence of offsite circuits is maintained. The 7 day Frequency is adequate since breaker position is not likely to change without the operator being aware of it and because its status is displayed in the control room.

SR 3.8.1.2 and SR 3.8.1.7 8 5

These SRs help to ensure the availability of the standby electrical power supply to mitigate DBAs and transients and maintain the unit in a safe shutdown condition.

To minimize the wear on moving parts that do not get lubricated when the engine is not running, these SRs have been modified by a Note (Note 2 for SR 3.8.1.2 and Note 1 for SR 3.8.1.7) to indicate that all DG starts for these Surveillances may be preceded by an engine prelube period and followed by a warmup prior to loading. 1 TSTF-253 5 8

For the purposes of this testing, the DGs are started from standby conditions. Standby conditions for a DG mean that the diesel engine coolant and oil are being continuously circulated and temperature is being maintained consistent with manufacturer recommendations.

2 In order to reduce stress and wear on diesel engines, ~~some~~ the manufacturers recommend a modified start in which the starting speed of DGs is limited, warmup is limited to this lower speed, and the DGs are gradually accelerated to synchronous speed prior to loading. These start procedures are the intent of Note 2, which is only applicable when such modified start procedures are recommended by the manufacturer. has ed of SR 3.8.1.2 2

TSTF-253 2

(continued)

All changes are 1 unless otherwise identified.

BASES

SURVEILLANCE REQUIREMENTS

SR 3.8.1.2 and SR 3.8.1.7 (continued)

SR 3.8.1.7 requires that, at a 184 day Frequency, the DG starts from standby conditions and achieves required voltage and frequency within 12 seconds. The 12 second start requirement supports the assumptions in the design basis LOCA analysis of FSAR, Section 6.3 (Ref. 12). The 12 second start requirement is not applicable to SR 3.8.1.2 (see Note 2 of SR 3.8.1.2), when a modified start procedure as described above is used. If a modified start is not used, the 12 second start requirement of SR 3.8.1.7 applies.

Since SR 3.8.1.7 does require a 12 second start, it is more restrictive than SR 3.8.1.2, and it may be performed in lieu of SR 3.8.1.2. This procedure is the intent of Note 1 of SR 3.8.1.2.

Insert SR 3.8.1.2-1

Insert SR 3.8.1.2-2

The normal 31 day Frequency for SR 3.8.1.2 (see Table 3.8.1-1, "Diesel Generator Test Schedule") is consistent with Regulatory Guide 1.9 (Ref. 3). The 184 day Frequency for SR 3.8.1.7 is a reduction in cold testing consistent with Generic Letter 84-15 (Ref. 7). These Frequencies provide adequate assurance of DG OPERABILITY, while minimizing degradation resulting from testing.

SR 3.8.1.3

This Surveillance verifies that the DGs are capable of synchronizing and accepting greater than or equal to the equivalent of the maximum expected accident loads. A minimum run time of 60 minutes is required to stabilize engine temperatures, while minimizing the time that the DG is connected to the offsite source.

a load approximately equivalent to that corresponding to the continuous rating

Although no power factor requirements are established by this SR, the DG is normally operated at a power factor between 0.8 lagging and 1.0. The 0.8 value is the design rating of the machine, while 1.0 is an operational limitation to ensure circulating currents are minimized. The load band is provided to avoid routine overloading of the DG. Routine overloading may result in more frequent teardown inspections in accordance with vendor recommendations in order to maintain DG OPERABILITY.

when running synchronized with the grid

at a particular KVA.

The

power factor

Insert SR 3.8.1.3-1

power factor value

(continued)

Insert SR 3.8.1.2-1

In addition, the DG is required to maintain proper voltage and frequency limits after steady state is achieved. The voltage and frequency limits are normally achieved within 13 seconds. The time for the DG to reach steady state operation, unless the modified DG start method is employed, is periodically monitored and the trend evaluated to identify degradation of governor and voltage regulator performance. 1 3

TSTF-163

5 Insert SR 3.8.1.2-2

To minimize testing of the common DG, Note 3 of SR 3.8.1.2 and Note 2 of SR 3.8.1.8 allow a single test of the common DG (instead of two tests, one for each unit) to satisfy the requirements for both units. This is allowed since the main purpose of the Surveillance can be met by performing the test on either unit. If the DG fails one of these Surveillances, the DG should be considered inoperable on both units, unless the cause of the failure can be directly related to only one unit.

1 Insert SR 3.8.1.3-1

condition where the reactive power component is zero, which minimizes the reactive heating of the generator. Operating the generator at a power factor between 0.8 lagging and 1.0 avoids adverse conditions associated with underexciting the generator and more closely represents the generator operating requirements when performing its safety function (running isolated on its associated 4160 V ESS bus).

BASES

SURVEILLANCE REQUIREMENTS

SR 3.8.1.3 (continued)

The ~~normal~~ 31 day Frequency for this Surveillance ~~(see Table 3.8.1-1)~~ is consistent with Regulatory Guide 1.9 (Ref. ~~3~~ 8). 5 1

Note 1 modifies this Surveillance to indicate that diesel engine runs for this Surveillance may include gradual loading, as recommended by the manufacturer, so that mechanical stress and wear on the diesel engine are minimized.

Note 2 modifies this Surveillance by stating that momentary transients because of changing bus loads do not invalidate this test. Similarly, momentary power factor transients above the limit do not invalidate the test.

Note 3 indicates that this Surveillance should be conducted on only one DG at a time in order to avoid common cause failures that might result from offsite circuit or grid perturbations.

Note 4 stipulates a prerequisite requirement for performance of this SR. A successful DG start must precede this test to credit satisfactory performance.

5 Insert SR 3.8.1.3-2

SR 3.8.1.4

6 This SR provides verification that the level of fuel oil in the day tank ~~(and engine mounted tank)~~ is at or above the level at which fuel oil is automatically added. The level is expressed as an equivalent volume in gallons, and is selected to ensure adequate fuel oil for a minimum of 1 hour of DG operation at full load plus 10%.

5 Insert SR 3.8.1.4

The 31 day Frequency is adequate to ensure that a sufficient supply of fuel oil is available, since low level alarms are provided and facility operators would be aware of any large uses of fuel oil during this period.

SR 3.8.1.5 and SR 3.8.1.7

Microbiological fouling is a major cause of fuel oil degradation. There are numerous bacteria that can grow in

(continued)

$\boxed{5}$ Insert SR 3.8.1.3-2

To minimize testing of the common DG, Note 5 allows a single test of the common DG (instead of two tests, one for each unit) to satisfy the requirements for both units. This is allowed since the main purpose of the Surveillance can be met by performing the test on either unit. If the DG fails one of these Surveillances, the DG should be considered inoperable on both units, unless the cause of the failure can be directly related to only one unit.

$\boxed{5}$ Insert SR 3.8.1.4

This SR also provides verification that there is an adequate inventory of fuel oil in the storage tanks to support each DG's operation for approximately 2 days at full load. The approximate 2 day period is sufficient time to place the unit in a safe shutdown condition and to bring in replenishment fuel from an offsite location.

BASES

and SR 3.8.1.7 5

1 SURVEILLANCE REQUIREMENTS

SR 3.8.1.5 (continued)

fuel oil and cause fouling, but all must have a water environment in order to survive. 6 Removal of water from the 2 fuel oil day ~~[and engine mounted]~~ tank~~s~~ once every ~~[~~31~~]~~ days 1 eliminates the necessary environment for bacterial survival. This is the most effective means of controlling microbiological fouling. In addition, it eliminates the potential for water entrainment in the fuel oil during DG operation. Water may come from any of several sources, including condensation, ground water, rain water, contaminated fuel oil, and breakdown of the fuel oil by bacteria. Frequent checking for and removal of accumulated water minimizes fouling and provides data regarding the watertight integrity of the fuel oil system. The Surveillance Frequencies are established by Regulatory Guide 1.137 (Ref. 10). This SR is for preventive maintenance. The presence of water does not necessarily represent a failure of this SR provided that accumulated water is removed during performance of this Surveillance.

This is accomplished by draining a portion of the contents from the bottom of the day tank to the top of the storage tank. Checking for and removal of any accumulated water from the bulk storage tank once every 92 days also eliminates the necessary environment for bacterial survival. In addition, the Diesel Fuel Oil Testing Program requires the sampling of the bulk storage tank to ensure water content is consistent with the applicable ASTM standards.

SR 3.8.1.6

This Surveillance demonstrates that each ~~required~~ 1 fuel oil transfer pump operates and automatically 5 transfers fuel oil from its associated storage tank to its associated day tank. It is required to support continuous operation of standby power sources. This Surveillance provides assurance that ~~the~~ each 1 fuel oil transfer pump is OPERABLE, the fuel oil piping system is intact, the fuel delivery piping is not obstructed, and the controls and control systems for automatic fuel transfer systems are OPERABLE.

~~[The Frequency for this SR is variable, depending on individual system design, with up to a [92] day interval. The [92] day Frequency corresponds to the testing requirements for pumps as contained in the ASME Boiler and Pressure Vessel Code, Section XI (Ref. 13); however, the design of fuel transfer systems is such that pumps operate automatically or must be started manually in order to maintain an adequate volume of fuel oil in the day [and engine mounted] tanks during or following DG testing. In such a case, a 31 day Frequency is appropriate. Since proper operation of fuel transfer systems is an inherent]~~ 2

2 The Frequency for this SR is consistent with the Frequency for testing the DGs in SR 3.8.1.3. DG operation for SR 3.8.1.3 is normally long enough that fuel oil level in the day tank will be reduced to the point where the fuel oil transfer pump automatically starts to restore fuel oil level by transferring oil from the storage tank.

(continued)

BASES

2

SURVEILLANCE REQUIREMENTS

SR ~~3.8.1.6~~ (continued)

~~part of DG OPERABILITY, the Frequency of this SR should be modified to reflect individual designs.~~ 2

~~SR 3.8.1.7~~

~~See SR 3.8.1.2.~~ 3

5 9

2 SR 3.8.1.8

This SR includes the transfer of each UAT to the associated unit RAT and a verification of the cross tie between the unit's 4160 V ESS buses.

Transfer of each ~~4.16 kV~~ 4160 V ~~ESF~~ ESS bus power supply from the normal offsite circuit to the alternate offsite circuit demonstrates the OPERABILITY of the alternate circuit distribution network to power the shutdown loads. The ~~18 month~~ Frequency of the Surveillance is based on engineering judgment taking into consideration the plant conditions required to perform the Surveillance, and is intended to be consistent with expected fuel cycle lengths. Operating experience has shown that these components usually pass the SR when performed on the ~~18~~ 24 month Frequency. Therefore, the Frequency was concluded to be acceptable from a reliability standpoint. 2

5 ~~This SR is modified by a Note. The reason for the Note is that, during operation with the reactor critical, performance of this SR could cause perturbations to the electrical distribution systems that could challenge continued steady state operation and, as a result, plant safety systems. Credit may be taken for unplanned events that satisfy this SR.~~

SR 3.8.1.~~9~~ 10 5

Each DG is provided with an engine overspeed trip to prevent damage to the engine. Recovery from the transient caused by the loss of a large load could cause diesel engine overspeed, which, if excessive, might result in a trip of the engine. This Surveillance demonstrates the DG load response characteristics and capability to reject the largest single load without exceeding predetermined voltage and frequency and while maintaining a specified margin to the overspeed trip. The largest single load for each DG is a ~~residual heat removal~~ service water pump (~~1225 bhp~~ 686 kW). The specified load value conservatively bounds the expected kW rating of the single largest load under accident conditions. This Surveillance may be accomplished by: 1

(continued)

All changes are 1 unless otherwise identified.

BASES

5 SURVEILLANCE REQUIREMENTS

SR 3.8.1.9 10 (continued)

a. Tripping the DG output breaker with the DG carrying greater than or equal to its associated single largest post-accident load while paralleled to offsite power, or while solely supplying the bus; or

b. Tripping its associated single largest post-accident load with the DG solely supplying the bus.

Consistent with Regulatory Guide 1.9

As required by IEEE-308 (Ref. 14 8), the load rejection test is acceptable if the increase in diesel speed does not exceed 75% of the difference between synchronous speed and the overspeed trip setpoint, or 15% above synchronous speed, whichever is lower. For DGs 2A, 2C, and 1B, this represents 65.5 Hz, equivalent to 75% of the difference between nominal speed and the overspeed trip setpoint.

the nominal (synchronous) speed plus — nominal — 115% of nominal — which is the nominal speed plus — 66.73 — corresponds to

The time, voltage, and frequency tolerances specified in this SR are derived from Regulatory Guide 1.9 (Ref. 3 8) recommendations for response during load sequence intervals. 3 The 10 6 seconds specified is equal to 60% of the 10 second 5 load sequence interval associated with sequencing the residual ECCS low pressure heat removal (RHR) pumps during an undervoltage on the bus concurrent with a LOCA. The voltage and frequency specified are consistent with the design range of the equipment powered 10 by the DG. SR 3.8.1.9.a corresponds to the maximum frequency excursion, while SR 3.8.1.9.b and SR 3.8.1.9.c are steady state voltage and frequency values to which the system must 2 recover following load rejection. The 18 month 24 Frequency is consistent with the recommendation of Regulatory Guide 1.108 (Ref. 9). 5

takes into consideration the the plant conditions required to perform the Surveillance, and is intended to be consistent with expected fuel cycle lengths

This SR is modified by two a Notes. ~~The reason for Note 1 is that, during operation with the reactor critical, performance of this SR could cause perturbations to the electrical distribution systems that could challenge continued steady state operation and, as a result, plant safety systems. Credit may be taken for unplanned events that satisfy this SR.~~ 12 TSTF-8 not adopted ~~In order to ensure that the DG is tested under load conditions that are as close to design basis conditions as possible, Note 2 requires that, if synchronized to offsite power, testing must be performed using a power factor ≤ [0.9]. This power factor is chosen to be representative of the actual design basis inductive loading that the DG would experience.~~ 5 Insert SR 3.8.1.10

(continued)

$\boxed{5}$ Insert SR 3.8.1.10

The reason for the Note is to minimize testing of the common DG and allow a single test of the common DG (instead of two tests, one for each unit) to satisfy the requirements for both units. This is allowed since the main purpose of the Surveillance can be met by performing the test on either unit. If the DG fails one of these Surveillances, the DG should be considered inoperable on both units, unless the cause of the failure can be directly related to only one unit.

BASES

SURVEILLANCE REQUIREMENTS

SR 3.8.1.9 (continued)

[Reviewer's Note: The above MODE restrictions may be deleted if it can be demonstrated to the staff, on a plant specific basis, that performing the SR with the reactor in any of the restricted MODES can satisfy the following criteria, as applicable:

a. Performance of the SR will not render any safety system or component inoperable;

b. Performance of the SR will not cause perturbations to any of the electrical distribution systems that could result in a challenge to steady state operation or to plant safety systems; and

c. Performance of the SR, or failure of the SR, will not cause, or result in, an AOO with attendant challenge to plant safety systems.]

13

5

SR 3.8.1.10 11

1

Consistent with Regulatory Guide 1.9 (Ref. 8), paragraph C.2.2.8,

This Surveillance demonstrates the DG capability to reject a full load without overspeed tripping or exceeding the predetermined voltage limits. The DG full load rejection may occur because of a system fault or inadvertent breaker tripping. This Surveillance ensures proper engine generator load response under the simulated test conditions. This test simulates the loss of the total connected load that the DG experiences following a full load rejection and verifies that the DG does not trip upon loss of the load. These acceptance criteria provide DG damage protection. While the DG is not expected to experience this transient during an event, and continues to be available, this response ensures that the DG is not degraded for future application, including reconnection to the bus if the trip initiator can be corrected or isolated.

In order to ensure that the DG is tested under load conditions that are as close to design basis conditions as possible, ~~testing must be performed using a power factor ≤ [0.9]. This power factor is chosen to be representative of the actual design basis inductive loading that the DG would experience~~.

5

a load band (90% to 100%) has been specified based on Regulatory Guide 1.9 (Ref. 8)

(continued)

BASES

[5] (11) [2] (24)

SURVEILLANCE REQUIREMENTS

SR 3.8.1.~~10~~ (continued)

[1] takes into consideration the plant conditions required to perform the Surveillance,

The ~~[18~~ month~~]~~ Frequency ~~is consistent with the recommendation of Regulatory Guide 1.108 (Ref. 9)~~ and is intended to be consistent with expected fuel cycle lengths.

[5] two (5)

This SR is modified by ~~a~~ Note~~s~~. ~~The reason for the Note is that during operation with the reactor critical, performance of this SR could cause perturbations to the electrical distribution systems that would challenge continued steady state operation and, as a result, plant safety systems. Credit may be taken for unplanned events that satisfy this SR.~~

TSTF-8 not adopted [12]

Insert SR 3.8.1.11 [5]

[13]

~~Reviewer's Note: The above MODE restrictions may be deleted if it can be demonstrated to the staff, on a plant specific basis, that performing the SR with the reactor in any of the restricted MODES can satisfy the following criteria, as applicable:~~

~~a. Performance of the SR will not render any safety system or component inoperable;~~

~~b. Performance of the SR will not cause perturbations to any of the electrical distribution systems that could result in a challenge to steady state operation or to plant safety systems; and~~

~~c. Performance of the SR, or failure of the SR, will not cause, or result in, an AOO with attendant challenge to plant safety systems.~~

(12) [5]

SR 3.8.1.~~11~~

[1] Consistent with (1.9) [1] (8) (C.2.2.4)

~~As required by~~ Regulatory Guide ~~1.108~~ (Ref. ~~9~~), paragraph ~~2.a.(1)~~, this Surveillance demonstrates the as designed operation of the standby power sources during loss of the offsite source. This test verifies all actions encountered from the loss of offsite power, including shedding of the nonessential loads and energization of the emergency buses and respective loads from the DG. It further demonstrates the capability of the DG to automatically achieve the required voltage and frequency within the specified time.

[1] and energization of permanently connected loads (13) [1]

The DG auto-start time of ~~12~~ seconds is derived from requirements of the accident analysis for responding to a

(continued)

$\boxed{5}$ Insert SR 3.8.1.11

To minimize testing of the common DG, Note 1 allows a single test of the common DG (instead of two tests, one for each unit) to satisfy the requirements for both units. This is allowed since the main purpose of the Surveillance can be met by performing the test on either unit. If the DG fails one of these Surveillances, the DG should be considered inoperable on both units, unless the cause of the failure can be directly related to only one unit. Note 2 modifies this Surveillance by stating that momentary transients outside of the voltage limit do not invalidate this test.

BASES

5 (12)

SURVEILLANCE REQUIREMENTS

SR 3.8.1.~~11~~ (continued) (Ref. 12) 1

design basis large break LOCA. The Surveillance should be continued for a minimum of 5 minutes in order to demonstrate that all starting transients have decayed and stability has been achieved.

5 (ly connected)

1 a component or system may be out-of-service and closure of its associated breaker during this test could damage the component or system

The requirement to verify the connection and power supply of permanent ~~and auto-connected~~ loads is intended to satisfactorily show the relationship of these loads to the DG loading logic. In certain circumstances, many of these loads cannot actually be connected or loaded without undue hardship or potential for undesired operation. For instance, ~~Emergency Core Cooling Systems (ECCS) injection valves are not desired to be stroked open, or systems are not capable of being operated at full flow, or RHR systems performing a decay heat removal function are not desired to be realigned to the ECCS mode of operation~~. In lieu of actual demonstration of the connection and loading of these loads, testing that adequately shows the capability of the DG system to perform these functions is acceptable. This testing may include any series of sequential, overlapping, or total steps so that the entire connection and loading sequence is verified.

2

(24)

The Frequency of ~~[18 months]~~ ~~is consistent with the recommendations of Regulatory Guide 1.108 (Ref. 9), paragraph 2.a.(1),~~ takes into consideration plant conditions required to perform the Surveillance, and is intended to be consistent with expected fuel cycle lengths. 1

(a) (the) 5

This SR is modified by ~~two~~ Notes. The reason for Note ~~1~~ is to minimize wear and tear on the DGs during testing. For the purpose of this testing, the DGs shall be started from standby conditions, that is, with the engine coolant and oil being continuously circulated and temperature maintained consistent with manufacturer recommendations. ~~The reason for Note 2 is that performing the Surveillance would remove a required offsite circuit from service, perturb the electrical distribution system, and challenge safety systems. Credit may be taken for unplanned events that satisfy this SR.~~

(lube) 1

TSTF-8 not adopted 12

(continued)

BASES

SURVEILLANCE REQUIREMENTS (continued)

Insert SR 3.8.1.13-1

SR 3.8.1.12 13

Consistent with Regulatory Guide 1.9 (Ref. 9), paragraph C.2.2.5,

This Surveillance demonstrates that the DG automatically starts and achieves the required voltage and frequency within the specified time ([12] seconds) from the design basis actuation signal (LOCA signal) and operates for ≥ [5] minutes. The [5] minute period provides sufficient time to demonstrate stability. SR 3.8.1.12.d and SR 3.8.1.12.e ensure that permanently connected loads and emergency loads are energized from the offsite electrical power system on a LOCA signal without loss of offsite power.

AC Electrical Power System

The requirement to verify the connection and power supply of permanent and autoconnected loads is intended to satisfactorily show the relationship of these loads to the loading logic for loading onto offsite power. In certain circumstances, many of these loads cannot actually be connected or loaded without undue hardship or potential for undesired operation. For instance, ECCS injection valves are not desired to be stroked open, high pressure injection systems are not capable of being operated at full flow, or RHR systems performing a decay heat removal function are not desired to be realigned to the ECCS mode of operation. In lieu of actual demonstration of the connection and loading of these loads, testing that adequately shows the capability of the DG system to perform these functions is acceptable. This testing may include any series of sequential, overlapping, or total steps so that the entire connection and loading sequence is verified.

24

The Frequency of [18 months] takes into consideration plant conditions required to perform the Surveillance and is intended to be consistent with the expected fuel cycle lengths. ~~Operating experience has shown that these components usually pass the SR when performed at the [18 month] Frequency. Therefore, the Frequency is acceptable from a reliability standpoint.~~

a the

This SR is modified by two Notes. The reason for Note 1 is to minimize wear and tear on the DGs during testing. For the purpose of this testing, the DGs must be started from standby conditions, that is, with the engine coolant and oil being continuously circulated and temperature maintained consistent with manufacturer recommendations. ~~The reason for Note 2 is that during operation with the reactor critical,~~

TSTF-8 not adopted

(continued)

5 Insert SR 3.8.1.13-1

. In addition, the DG is required to maintain proper voltage and frequency limits after steady state is achieved. The time for the DG to reach the steady state voltage and frequency limits is periodically monitored and the trend evaluated to identify degradation of governor and voltage regulator performance. The DG is required to

BASES

SURVEILLANCE REQUIREMENTS

SR 3.8.1.12 (continued)

performance of this Surveillance could potentially cause perturbations to the electrical distribution systems that could challenge continued steady state operation and, as a result, plant safety systems. Credit may be taken for unplanned events that satisfy this SR.

2

12

TSTF-8 not adopted

5

14

SR 3.8.1.13

7

Consistent with Regulatory Guide 1.9 (Ref. 8), paragraph c.2.2.12,

This Surveillance demonstrates that DG non-critical protective functions (e.g., high jacket water temperature) are bypassed on an ECCS initiation test signal and critical protective functions (engine overspeed, generator differential current, and low lubricating oil pressure) trip the DG to avert substantial damage to the DG unit. The non-critical trips are bypassed during DBAs and provide an alarm on an abnormal engine condition. This alarm provides the operator with sufficient time to react appropriately. The DG availability to mitigate the DBA is more critical than protecting the engine against minor problems that are not immediately detrimental to emergency operation of the DG.

5

2

24

The [18 month] Frequency is based on engineering judgment, takes into consideration plant conditions required to perform the Surveillance, and is intended to be consistent with expected fuel cycle lengths. Operating experience has shown that these components usually pass the SR when performed at the [18 month] Frequency. Therefore, the Frequency was concluded to be acceptable from a reliability standpoint.

11

12

TSTF-8 not adopted

The SR is modified by a Note. The reason for the Note is that performing the Surveillance would remove a required DG from service. Credit may be taken for unplanned events that satisfy this SR.

Reviewer's Note: The above MODE restrictions may be deleted if it can be demonstrated to the staff, on a plant specific basis, that performing the SR with the reactor in any of the restricted MODES can satisfy the following criteria, as applicable:

a. Performance of the SR will not render any safety system or component inoperable;

13

(continued)

BASES

SURVEILLANCE REQUIREMENTS

SR 3.8.1.13 (continued)

b. Performance of the SR will not cause perturbations to any of the electrical distribution systems that could result in a challenge to steady state operation or to plant safety systems; and

c. Performance of the SR, or failure of the SR, will not cause, or result in, an AOO with attendant challenge to plant safety systems.

13

5 15

SR 3.8.1.14

9 8 C.2.2.9

1 Regulatory Guide 1.108 (Ref. 9), paragraph 2.a.(3), requires demonstration once per 18 months that the DGs can start and run continuously at full load capability for an interval of not less than 24 hours, 22 hours of which is at a load equivalent to the continuous rating of the DG, and 2 hours of which is at a load equivalent to 110% of the continuous duty rating of the DG. Plant Hatch has taken an exception to this requirement and performs the 2 hour run at the 2000 hour rating (3100 kW). The DG starts for this Surveillance can be performed either from standby or hot conditions. The provisions for prelube and warmup, discussed in SR 3.8.1.2, and for gradual loading, discussed in SR 3.8.1.3, are applicable to this SR.

5 90% to 100% of

105% to 5

1

2 5

at a power factor as close to the accident load power factor as practicable. When synchronized with offsite power, the power factor limit is ≤ 0.85

In order to ensure that the DG is tested under load conditions that are as close to design conditions as possible, testing must be performed using a power factor ≤ 0.9. This power factor is chosen to be representative of the actual design basis inductive loading that the DG could experience. A load band is provided to avoid routine overloading of the DG. Routine overloading may result in more frequent teardown inspections in accordance with vendor recommendations in order to maintain DG OPERABILITY.

worst case 1

1 bound

under design basis accident conditions

5

2 24

The 18 month Frequency is consistent with the recommendations of Regulatory Guide 1.108 (Ref. 9), paragraph 2.a.(3), takes into consideration plant conditions required to perform the Surveillance, and is intended to be consistent with expected fuel cycle lengths. 9

1

(continued)

The load band is provided to avoid routine overloading of the DG. Routine overloading may result in more frequent teardown inspections in accordance with vendor recommendations in order to maintain DG OPERABILITY. 5

BASES

SURVEILLANCE REQUIREMENTS

SR 3.8.1.~~14~~ 15 (continued)

This Surveillance ~~has been~~ is modified by ~~two~~ three Notes. Note 1 states that momentary transients ~~due to changing bus loads~~ do not invalidate this test. Similarly, momentary power factor transients above the limit do not invalidate the test. 5 Insert SR 3.8.1.15-1 ~~The reason for Note 2 is that during operation with the reactor critical, performance of this Surveillance could cause perturbations to the electrical distribution systems that would challenge continued steady state operation and, as a result, plant safety systems. Credit may be taken for unplanned events that satisfy this SR.~~ TSTF-8 not adopted 12

5 SR 3.8.1.~~15~~ 16

This Surveillance demonstrates that the diesel engine can restart from a hot condition, such as subsequent to shutdown from normal Surveillances, and achieve the required voltage and frequency within ~~12~~ 13 seconds. The ~~12~~ 9 second time is derived from the requirements of the accident ~~analysis~~ ~~to~~ for respond~~ing~~ to a design basis large break LOCA. 2 3 ~~The~~ ~~18~~ 24 month Frequency ~~is consistent with the recommendations of Regulatory Guide 1.108 (Ref. 9), paragraph 2.a.(5).~~ Insert SR 3.8.1.16-1 (Ref. 12) takes into consideration the plant conditions required to perform the Surveillance, and is intended to be consistent with expected fuel cycle lengths 1

This SR is modified by ~~two~~ three Notes. Note 1 ensures that the test is performed with the diesel sufficiently hot. The requirement that the diesel has operated for at least 2 hours at approximately full load conditions prior to performance of this Surveillance is based on manufacturer recommendations for achieving hot conditions. ~~The load band is provided to avoid routine overloading of the DG. Routine overloads may result in more frequent teardown inspections in accordance with vendor recommendations in order to maintain DG OPERABILITY.~~ Momentary transients due to changing bus loads do not invalidate this test. Note 2 allows all DG starts to be preceded by an engine prelube period to minimize wear and tear on the diesel during testing. Insert SR 3.8.1.16-2 5

SR 3.8.1.~~16~~ 17

~~As required by~~ Consistent with Regulatory Guide 1.~~108~~ 9 (Ref. ~~9~~ 8), ~~paragraph 2.a.(6)~~ C.2.2.11, this Surveillance ensures that the manual synchronization and ~~automatic~~ load transfer from the DG to the offsite source can be made and that the DG can be returned 1

(continued)

5 Insert SR 3.8.1.15-1

Note 2 is provided in recognition that under certain conditions, it is necessary to allow the Surveillance to be conducted at a power factor other than the specified limit. These conditions occur when grid voltage is high, and the additional field excitation needed to get the power factor to the specified limit results in voltages on the emergency buses that are too high. Under these conditions, the power factor should be maintained as close as practicable to the specified limit while still maintaining acceptable voltage limits on the emergency buses. In other circumstances, the grid voltage may be such that the DG excitation levels needed to obtain the specified power factor may not cause unacceptable voltages on the emergency buses, but the transient voltage at the generator terminals would be in excess of those recommended for the DG if the DG output breaker were to trip during the Surveillance. In such cases, the power factor shall be maintained as close as practicable to the specified limit while still ensuring that if the DG output breaker were to trip during the Surveillance that the maximum DG winding voltage would not be exceeded. To minimize testing of the common DG, Note 3 allows a single test of the common DG (instead of two tests, one for each unit) to satisfy the requirements for both units. This is allowed since the main purpose of the Surveillance can be met by performing the test on either unit. If the DG fails one of these Surveillances, the DG should be considered inoperable on both units, unless the cause of the failure can be directly related to only one unit.

1 Insert SR 3.8.1.16-1

In addition, the DG is required to maintain proper voltage and frequency limits after steady state is achieved. The time for the DG to reach the steady state voltage and frequency limits is periodically monitored and the trend evaluated to identify degradation of governor and voltage regulator performance.

5 Insert SR 3.8.1.16-2

To minimize testing of the common DG, Note 3 allows a single test of the common DG (instead of two tests, one for each unit) to satisfy the requirements for both units. This is allowed since the main purpose of the Surveillance can be met by performing the test on either unit. If the DG fails one of these Surveillances, the DG should be considered inoperable on both units, unless the cause of the failure can be directly related to only one unit.

BASES

5

SURVEILLANCE REQUIREMENTS

SR ~~3.8.1.16~~ 17 (continued)

to ready-to-load status when offsite power is restored. It also ensures that the auto-start logic is reset to allow the DG to reload if a subsequent loss of offsite power occurs. The DG is considered to be in ready-to-load status when the DG is at rated speed and voltage, the output breaker is open and can receive an auto-close signal on bus undervoltage, and the load ~~sequence~~ individual timers are reset. 1 2

The Frequency of ~~18~~ 24 months ~~is consistent with the recommendations of Regulatory Guide 1.108 (Ref. 9), paragraph 2.a.(8), and~~ takes into consideration plant conditions required to perform the Surveillance, and is intended to be consistent with expected fuel cycle lengths. 3 1

~~This SR is modified by a Note. The reason for the Note is that performing the Surveillance would remove a required offsite circuit from service, perturb the electrical distribution system, and challenge safety systems. Credit may be taken for unplanned events that satisfy this SR.~~ TSTF-8 not adopted 12

~~SR 3.8.1.17~~

~~Demonstration of the test mode override ensures that the DG availability under accident conditions is not compromised as the result of testing. Interlocks to the LOCA sensing circuits cause the DG to automatically reset to ready-to-load operation if an ECCS initiation signal is received during operation in the test mode. Ready-to-load operation is defined as the DG running at rated speed and voltage with the DG output breaker open. These provisions for automatic switchover are required by IEEE-308 (Ref. 14), paragraph 6.2.6(2).~~

~~The requirement to automatically energize the emergency loads with offsite power is essentially identical to that of SR 3.8.1.12. The intent in the requirements associated with SR 3.8.1.17.b is to show that the emergency loading is not affected by the DG operation in test mode. In lieu of actual demonstration of connection and loading of loads, testing that adequately shows the capability of the emergency loads to perform these functions is acceptable. This testing may include any series of sequential, overlapping, or total steps so that the entire connection and loading sequence is verified.~~ 5

(continued)

BASES

SURVEILLANCE REQUIREMENTS

SR 3.8.1.17 (continued)

The [18 month] Frequency is consistent with the recommendations of Regulatory Guide 1.108 (Ref. 9), paragraph 2.a.(8); takes into consideration plant conditions required to perform the Surveillance; and is intended to be consistent with expected fuel cycle lengths. 5

This SR is modified by a Note. The reason for the Note is that performing the Surveillance would remove a required offsite circuit from service, perturb the electrical distribution system, and challenge safety systems. Credit may be taken for unplanned events that satisfy this SR. TSTF-8 not adopted 12

SR 3.8.1.18

with

Under accident conditions [and loss of offsite power] loads are sequentially connected to the bus by the automatic load sequencer. The sequencing logic controls the permissive and starting signals to motor breakers to prevent overloading of the DGs due to high motor starting currents. The [10]% load sequence time interval tolerance ensures that sufficient time exists for the DG to restore frequency and voltage prior to applying the next load and that safety analysis assumptions regarding ESF equipment time delays are not violated. Reference 2 provides a summary of the automatic loading of ESF buses. 2

1 time delay relays

interval 3 a

1 13 ESS 1

24

2 The Frequency of [18 months] is consistent with the recommendations of Regulatory Guide 1.108 (Ref. 9), paragraph 2.a.(2); takes into consideration plant conditions required to perform the Surveillance, and is intended to be consistent with expected fuel cycle lengths. 1 8

5 This SR is modified by a Note. The reason for the Note is that performing the Surveillance would remove a required offsite circuit from service, perturb the electrical distribution system, and challenge safety systems. Credit may be taken for unplanned events that satisfy this SR. TSTF-8 not adopted 12

[Reviewer's Note: The above MODE restrictions may be deleted if it can be demonstrated to the staff, on a plant specific basis, that performing the SR with the reactor in any of the restricted MODES can satisfy the following criteria, as applicable:] 13

(continued)

BASES

SURVEILLANCE REQUIREMENTS

SR 3.8.1.18 (continued)

a. ~~Performance of the SR will not render any safety system or component inoperable;~~

b. ~~Performance of the SR will not cause perturbations to any of the electrical distribution systems that could result in a challenge to steady state operation or to plant safety systems; and~~

c. ~~Performance of the SR, or failure of the SR, will not cause, or result in, an AOO with attendant challenge to plant safety systems.~~

13

SR 3.8.1.19

In the event of a DBA coincident with a loss of offsite power, the DGs are required to supply the necessary power to ESF systems so that the fuel, RCS, and containment design limits are not exceeded.

5 12 This Surveillance demonstrates DG operation, as discussed in the Bases for SR 3.8.1.11, during a loss of offsite power actuation test signal in conjunction with an ECCS initiation signal. In lieu of actual demonstration of connection and loading of loads, testing that adequately shows the capability of the DG system to perform these functions is acceptable. This testing may include any series of sequential, overlapping, or total steps so that the entire connection and loading sequence is verified.

2 24 The Frequency of [18 months] takes into consideration plant conditions required to perform the Surveillance and is intended to be consistent with an expected fuel cycle length of [18 months]. 8 3

5 This SR is modified by ~~two~~ a Note~~s~~. The reason for the Note ~~1~~ is to minimize wear and tear on the DGs during testing. For the purpose of this testing, the DGs must be started from standby conditions, that is, with the engine coolant and oil being continuously circulated and temperature maintained consistent with manufacturer recommendations. ~~The reason for Note 2 is that performing the Surveillance would remove a required offsite circuit from service, perturb the electrical~~

(continued)

BASES

SURVEILLANCE REQUIREMENTS

SR 3.8.1.19 (continued)

distribution system, and challenge safety systems. Credit may be taken for unplanned events that satisfy this SR.

TSTF-8 not adopted 12

5

SR 3.8.1.20

This Surveillance demonstrates that the DG starting independence has not been compromised. Also, this Surveillance demonstrates that each engine can achieve proper ~~speed~~ frequency and voltage within the specified time when the DGs are started simultaneously.

11

The 10 year Frequency is consistent with the recommendations of Regulatory Guide 1.~~108~~ 9 (Ref. ~~9~~ 8).

1

This SR is modified by a Note. The reason for the Note is to minimize wear on the DG during testing. For the purpose of this testing, the DGs must be started from standby conditions, that is, with the engine coolant and oil continuously circulated and temperature maintained consistent with manufacturer recommendations.

5 Insert SR 3.8.1.21

~~Diesel Generator Test Schedule~~

~~The DG test schedule (Table 3.8.1-1) implements the recommendations of Revision 3 to Regulatory Guide 1.9 (Ref. 3). The purpose of this test schedule is to provide timely test data to establish a confidence level associated with the goal to maintain DG reliability at > 0.95 per test.~~

~~According to Regulatory Guide 1.9 (Ref. 3), Revision 3, each DG unit should be tested at least once every 31 days. Whenever a DG has experienced 4 or more valid failures in the last 25 valid tests, the maximum time between tests is reduced to 7 days. Four failures in 25 valid tests is a failure rate of 0.16, or the threshold of acceptable DG performance, and hence may be an early indication of the degradation of DG reliability. When considered in the light of a long history of tests, however, 4 failures in the last 25 valid tests may only be a statistically probable distribution of random events. Increasing the test Frequency allows a more timely accumulation of additional test data upon which to base judgment of the reliability of the DG. The~~

5

(continued)

5 Insert SR 3.8.1.21

SR 3.8.1.21

With the exception of this Surveillance, all other Surveillances of this Specification (SR 3.8.1.1 through SR 3.8.1.20) are applied only to the given unit AC sources. This Surveillance is provided to direct that appropriate Surveillances for the required opposite unit AC sources are governed by the applicable opposite unit Technical Specifications. Performance of the applicable opposite unit Surveillances will satisfy the opposite unit requirements, as well as satisfying the given unit Surveillance Requirement. Exceptions are noted to the opposite unit SRs of LCO 3.8.1. SR 3.8.1.9 and SR 3.8.1.20 are excepted since only one opposite unit offsite circuit and DG is required by the given unit's Specification. SR 3.8.1.13, SR 3.8.1.18, and SR 3.8.1.19 are excepted since these SRs test the opposite unit's ECCS initiation signal, which is not needed for the AC electrical power sources to be OPERABLE on the given unit.

The Frequency required by the applicable opposite unit SR also governs performance of that SR for the given unit.

As Noted, if the opposite unit is in MODE 4 or 5, or moving irradiated fuel assemblies in the secondary containment, the following opposite unit SRs are not required to be performed: SR 3.8.1.3, SR 3.8.1.10 through SR 3.8.1.12, and SR 3.8.1.14 through SR 3.8.1.17. This ensures that a given unit SR will not require an opposite unit SR to be performed, when the opposite unit Technical Specifications exempts performance of an opposite unit SR (however, as stated in the opposite unit SR 3.8.2.1 Note 1, while performance of an SR is exempted, the SR must still be met).

All changes are $\boxed{1}$ unless otherwise identified.

BASES

SURVEILLANCE REQUIREMENTS

~~Diesel Generator Test Schedule (continued)~~

~~increased test Frequency must be maintained until seven consecutive failure free tests have been performed.~~

~~The Frequency for accelerated testing is 7 days, but no less than 24 hours. Tests conducted at intervals of less than 24 hours may be credited for compliance with Required Actions. However, for the purpose of re-establishing the normal 31-day Frequency, a successful test at an interval of less than 24 hours should be considered an invalid test and not count towards the seven consecutive failure free starts, and the consecutive test count is not reset.~~

~~A test interval in excess of 7 days (or 31 days, as appropriate) constitutes a failure to meet SRs and results in the associated DG being declared inoperable. It does not, however, constitute a valid test or failure of the DG, and any consecutive test count is not reset.~~ $\boxed{5}$

REFERENCES

1. ~~10 CFR 50, Appendix A, GDC 17~~. UFSAR, Section 3.1.2.2.8
2. U FSAR, Section ~~8.2~~. $\boxed{2}$
~~3. Regulatory Guide 1.9.~~
3 ~~4~~. U FSAR, Chapter ~~6~~.
4 ~~5~~. U FSAR, Chapter ~~15~~.
6. Regulatory Guide 1.93, Revision 0, December 1974.
5 ~~7~~. Generic Letter 84-15, July 2, 1984
7 ~~8~~. ~~10 CFR 50, Appendix A, GDC 18~~. UFSAR, Section 3.1.2.2.9
8. Regulatory Guide 1.9, Revision 3, July 1993
9. Regulatory Guide 1.108, Revision 1, August 1977
10. Regulatory Guide 1.137, Revision 1, October 1979
11. ANSI C84.1, 1982.

(continued)

All changes are [1] unless otherwise identified.

BASES

[2]

REFERENCES (continued)

12. (u) FSAR, Section ~~[6.3]~~.

13. ~~ASME Boiler and Pressure Vessel Code, Section XI.~~ UFSAR, Section 8.3.1.5.1

[5] ~~14. IEEE Standard 308.~~

JUSTIFICATION FOR DEVIATIONS FROM NUREG-1433, REVISION 1
ITS BASES: 3.8.1 - AC SOURCES — OPERATING

1. Changes have been made (additions, deletions, and/or changes to the NUREG) to reflect the plant specific nomenclature, number, reference, system description, analysis description, or licensing basis description.

2. The brackets have been removed and the proper plant specific information/value has been provided.

3. Editorial change made for enhanced clarity or to be consistent with similar statements in other places in the Bases.

4. This change has been made since Section 3.5, "ECCS and IC System" provides the appropriate limits that are affected by the systems in this LCO.

5. Changes have been made to reflect those changes made to the Specification. The following requirements have been renumbered, where applicable, to reflect the changes.

6. This bracketed requirement/information has been deleted because it is not applicable to Dresden 2 and 3. The following requirements have been renumbered, where applicable, to reflect this deletion.

7. This change has been made to be consistent with the Applicability of LCO 3.8.2.

8. Typographical/grammatical error corrected.

9. Condition G may also apply, since the LCO can require up to three DGs to be OPERABLE.

10. The proper Dresden 2 and 3 plant specific LCO number has been provided.

11. Changes have been made to more closely match the Specification requirements.

12. TSTF-8 change to the Bases has not been adopted since TSTF-8 has not been incorporated into the Specification.

13. This Reviewer's Note has been deleted. This information is for the NRC reviewer to be keyed in to what is needed to meet the requirement. This is not meant to be retained in the final version of the plant specific submittal.

B 3.8 ELECTRICAL POWER SYSTEMS

B 3.8.2 AC Sources—Shutdown

BASES

BACKGROUND

A description of the AC sources is provided in the Bases for LCO 3.8.1, "AC Sources—Operating."

APPLICABLE SAFETY ANALYSES

1

The OPERABILITY of the minimum AC sources during MODES 4 and 5 and during movement of irradiated fuel assemblies in the secondary containment ensures that: 2

a. The facility can be maintained in the shutdown or refueling condition for extended periods;

b. Sufficient instrumentation and control capability is available for monitoring and maintaining the unit status; and

c. Adequate AC electrical power is provided to mitigate events postulated during shutdown, such as an inadvertent draindown of the vessel or a fuel handling accident.

1

In general, when the unit is shut down the Technical Specifications requirements ensure that the unit has the capability to mitigate the consequences of postulated accidents. However, assuming a single failure and concurrent loss of all offsite or loss of all onsite power is not required. The rationale for this is based on the fact that many Design Basis Accidents (DBAs) that are analyzed in MODES 1, 2, and 3 have no specific analyses in MODES 4 and 5. Worst case bounding events are deemed not credible in MODES 4 and 5 because the energy contained within the reactor pressure boundary, reactor coolant temperature and pressure, and corresponding stresses result in the probabilities of occurrences significantly reduced or eliminated, and minimal consequences. These deviations from DBA analysis assumptions and design requirements during shutdown conditions are allowed by the LCO for required systems.

During MODES 1, 2, and 3, various deviations from the analysis assumptions and design requirements are allowed

(continued)

BASES

APPLICABLE SAFETY ANALYSES (continued)

within the ACTIONS. This allowance is in recognition that certain testing and maintenance activities must be conducted, provided an acceptable level of risk is not exceeded. During MODES 4 and 5, performance of a significant number of required testing and maintenance activities is also required. In MODES 4 and 5, the activities are generally planned and administratively controlled. Relaxations from typical MODES 1, 2, and 3 LCO requirements are acceptable during shutdown MODES, based on:

a. The fact that time in an outage is limited. This is a risk prudent goal as well as a utility economic consideration.

b. Requiring appropriate compensatory measures for certain conditions. These may include administrative controls, reliance on systems that do not necessarily meet typical design requirements applied to systems credited in operation MODE analyses, or both.

c. Prudent utility consideration of the risk associated with multiple activities that could affect multiple systems.

d. Maintaining, to the extent practical, the ability to perform required functions (even if not meeting MODES 1, 2, and 3 OPERABILITY requirements) with systems assumed to function during an event.

In the event of an accident during shutdown, this LCO ensures the capability of supporting systems necessary for avoiding immediate difficulty, assuming either a loss of all offsite power or a loss of all onsite (diesel generator (DG)) power.

The AC sources satisfy Criterion 3 of ~~the NRC Policy Statement~~ 10 CFR 50.36(c)(2)(ii). 2

3

LCO

One offsite circuit ~~capable of~~ supplying the onsite Class 1E power distribution subsystem(s) of LCO 3.8.~~10~~ 8, "Distribution Systems—Shutdown," ensures that all required loads are powered from offsite power. An OPERABLE DG, associated with a Distribution System ~~Engineered Safety Feature (ESF)~~ Essential Service System (ESS) bus required OPERABLE by LCO 3.8.~~10~~ 8, ensures that a diverse 4 2

(continued)

BASES

LCO (continued)

power source is available for providing electrical power support assuming a loss of the offsite circuit. Together, OPERABILITY of the required offsite circuit and DG ensures the availability of sufficient AC sources to operate the plant in a safe manner and to mitigate the consequences of postulated events during shutdown (e.g., fuel handling accidents and reactor vessel draindown).

The qualified offsite circuit(s) must be capable of maintaining rated frequency and voltage while connected to their respective ESF bus(es), and of accepting required loads during an accident. Qualified offsite circuits are those that are described in the FSAR and are part of the licensing basis for the unit. [The offsite circuit consists of incoming breaker and disconnect to the 20 or 21 startup auxiliary transformer (SAT), associated 20 or 21 SAT, and the respective circuit path including feeder breakers to all 4.16 kV ESF buses required by LCO 3.8.10.]

2 ESS u 5 S the R 22 4160 ESS from the 138 kV or 345 kV switchyard 22 reserve 32 Insert LCO B

The required DG must be capable of starting, accelerating to rated speed and voltage, connecting to its respective ESF bus on detection of bus undervoltage, and accepting required loads. This sequence must be accomplished within [12] seconds. Each DG must also be capable of accepting required loads within the assumed loading sequence intervals, and must continue to operate until offsite power can be restored to the ESF buses. These capabilities are required to be met from a variety of initial conditions such as DG in standby with engine hot and DG in standby with engine at ambient conditions. Additional DG capabilities must be demonstrated to meet required Surveillances~~, e.g., capability of the DG to revert to standby status on an ECCS signal while operating in parallel test mode~~.

4160 V ESS 2 13 4160 V ESS 2

Proper sequencing of loads, including tripping of nonessential loads, is a required function for DG OPERABILITY. ~~[In addition, proper sequence operation is an integral part of offsite circuit OPERABILITY since its inoperability impacts the ability to start and maintain energized loads required OPERABLE by LCO 3.8.10.]~~

The necessary portions of the DG Cooling Water System and Ultimate Heat Sink capable of providing cooling to the required DG is also required.

8 6

It is acceptable for divisions to be cross tied during shutdown conditions, permitting a single offsite power circuit to supply all required divisions. ~~No fast transfer capability is required for offsite circuits to be considered OPERABLE.~~ 2

(continued)

$\boxed{5}$ <u>Insert LCO</u>

Another qualified circuit is provided by the bus tie between the corresponding ESS buses of the two units.

BASES (continued)

APPLICABILITY

The AC sources are required to be OPERABLE in MODES 4 and 5 and during movement of irradiated fuel assemblies in the secondary containment to provide assurance that:

a. Systems providing adequate coolant inventory makeup are available for the irradiated fuel assemblies in the core in case of an inadvertent draindown of the reactor vessel;

b. Systems needed to mitigate a fuel handling accident are available;

c. Systems necessary to mitigate the effects of events that can lead to core damage during shutdown are available; and

d. Instrumentation and control capability is available for monitoring and maintaining the unit in a cold shutdown condition or refueling condition.

AC power requirements for MODES 1, 2, and 3 are covered in LCO 3.8.1.

7 Insert ACTIONS NOTE

ACTIONS

A.1

2 4160 V ESS bus

An offsite circuit is considered inoperable if it is not available to one required ~~ESF division~~. If two or more ~~ESF~~ 4160 V ESS 2 ~~4.16 kV~~ buses are required per LCO 3.8.~~10~~ 8, one division with offsite power available may be capable of supporting sufficient required features to allow continuation of CORE ALTERATIONS, fuel movement, and operations with a potential for draining the reactor vessel. By the allowance of the option to declare required features inoperable ~~with no~~ that are not powered from offsite power ~~available~~, appropriate restrictions can be implemented in accordance with the ~~affected~~ required feature(s) LCOs' ACTIONS. Required features remaining powered from a qualified offsite circuit, even if that circuit is considered inoperable because it is not powering other required features, are not declared inoperable by this Required Action. 8

4

A.2.1, A.2.2, A.2.3, A.2.4, B.1, B.2, B.3, and B.4

With the offsite circuit not available to all required divisions, the option still exists to declare all required features inoperable per Required Action A.1. 8 Since this option may involve undesired administrative efforts, the allowance for

(continued)

7 Insert ACTIONS Note

LCO 3.0.3 is not applicable while in MODE 4 or 5. However, since irradiated fuel assembly movement can occur in MODE 1, 2, or 3, the ACTIONS have been modified by a Note stating that LCO 3.0.3 is not applicable. If moving irradiated fuel assemblies while in MODE 4 or 5, LCO 3.0.3 would not specify any action. If moving irradiated fuel assemblies while in MODE 1, 2, or 3, the fuel movement is independent of reactor operations. Entering LCO 3.0.3 while in MODE 1, 2, or 3 would require the unit to be shutdown, but would not require immediate suspension of movement of irradiated fuel assemblies. The Note to the ACTIONS, "LCO 3.0.3 is not applicable," ensures that the actions for immediate suspension of irradiated fuel assembly movement are not postponed due to entry into LCO 3.0.3. 2

BASES

ACTIONS

A.2.1, A.2.2, A.2.3, A.2.4, B.1, B.2, B.3, and B.4 (continued)

sufficiently conservative actions is made. With the required DG inoperable, the minimum required diversity of AC power sources is not available. It is, therefore, required to suspend CORE ALTERATIONS, movement of irradiated fuel assemblies in the [secondary] containment, and activities that could result in inadvertent draining of the reactor vessel. 5

Suspension of these activities shall not preclude completion of actions to establish a safe conservative condition. These actions minimize the probability of the occurrence of postulated events. It is further required to immediately initiate action to restore the required AC sources and to continue this action until restoration is accomplished in order to provide the necessary AC power to the plant safety systems.

The Completion Time of immediately is consistent with the required times for actions requiring prompt attention. The restoration of the required AC electrical power sources should be completed as quickly as possible in order to minimize the time during which the plant safety systems may be without sufficient power.

Pursuant to LCO 3.0.6, the Distribution System ACTIONS would not be entered even if all AC sources to it are inoperable, resulting in de-energization. Therefore, the Required Actions of Condition A have been modified by a Note to indicate that when Condition A is entered with no AC power to any required ~~ESF~~ ESS bus, ACTIONS for LCO 3.8.~~10~~ 8 must be immediately entered. This Note allows Condition A to provide requirements for the loss of the offsite circuit whether or not a division is de-energized. LCO 3.8.~~10~~ provides the appropriate restrictions for the situation involving a de-energized division. 2 4

SURVEILLANCE REQUIREMENTS

SR 3.8.2.1

SR 3.8.2.1 requires the SRs from LCO 3.8.1 that are necessary for ensuring the OPERABILITY of the AC sources in other than MODES 1, 2, and ~~3~~. SR 3.8.1.~~8~~ 9 is not required to to be applicable 9 4

(continued)

BASES

SURVEILLANCE REQUIREMENTS

SR 3.8.2.1 (continued)

be met since only one offsite circuit is required to be OPERABLE. ~~SR 3.8.1.17 is not required to be met because the required OPERABLE DG(s) is not required to undergo periods of being synchronized to the offsite circuit.~~ 7 SR 3.8.1.20 is excepted because starting independence is not required with the DG(s) that is not required to be OPERABLE. Refer to the corresponding Bases for LCO 3.8.1 for a discussion of each SR.

9 SR 3.8.1.21 is not required to be met because the opposite unit's DG is not required to be OPERABLE in MODES 4 and 5, and during movement of irradiated fuel assemblies in secondary containment.

This SR is modified by ~~a~~ two Note~~.~~s. The reason for the Note 1 is to preclude requiring the OPERABLE DG(s) from being paralleled with the offsite power network or otherwise rendered inoperable during the performance of SRs, and to preclude de-energizing a required 4160 V ~~ESF~~ ESS bus or disconnecting a required offsite circuit during performance of SRs. With limited AC sources available, a single event could compromise both the required circuit and the DG. It is the intent that these SRs must still be capable of being met, but actual performance is not required during periods when the DG and offsite circuit ~~is~~ are required to be OPERABLE. Insert NOTE 2 7

7 2 1 1

REFERENCES None.

TSTF-300 Insert NOTE 2

7

Note 2 states that SRs 3.8.1.13 and 3.8.1.19 are not required to be met when its associated ECCS subsystem(s) are not required to be OPERABLE. These SRs demonstrate the DG response to an ECCS initiation signal (either alone or in conjunction with a loss of offsite power signal). This is consistent with the ECCS instrumentation requirements that do not require the ECCS initiation signals when the associated ECCS subsystem is not required to be OPERABLE per LCO 3.5.2, "ECCS — Shutdown." 9

JUSTIFICATION FOR DEVIATIONS FROM NUREG-1433, REVISION 1
ITS BASES: 3.8.2 - AC SOURCES — SHUTDOWN

1. Typographical/grammatical error corrected.

2. Changes have been made (additions, deletions, and/or changes to the NUREG) to reflect the plant specific nomenclature, number, reference, system description, analysis description, or licensing basis description.

3. These words have been deleted since, as stated in the actual LCO, the offsite circuit must be supplying onsite Class 1E power distribution subsystems, not just be capable of supplying them.

4. The proper LCO/SR number has been used.

5. The brackets have been removed and the proper plant specific information/value has been provided.

6. The bracketed requirement has been deleted since it is not applicable to Dresden 2 and 3.

7. Changes have been made to reflect those changes made to the Specification. The following requirements have been renumbered, where applicable, to reflect the changes.

8. Editorial change made for enhanced clarity or to be consistent with similar statements in other places in the Bases.

9. Changes have been made to be consistent with the Specification.

1

B 3.8 ELECTRICAL POWER SYSTEMS

B 3.8.3 Diesel Fuel Oil, ~~Lube Oil,~~ and Starting Air

BASES

BACKGROUND

~~Each diesel generator (DG) is provided with a storage tank having a fuel oil capacity sufficient to operate that DG for a period of 7 days while the DG is supplying maximum post loss of coolant accident (LOCA) load demand discussed in FSAR, Section [9.5.2] (Ref. 1). The maximum load demand is calculated using the assumption that at least two DGs are available. This onsite fuel oil capacity is sufficient to operate the DGs for longer than the time to replenish the onsite supply from outside sources.~~

~~Fuel oil is transferred from storage tank to day tank by either of two transfer pumps associated with each storage tank. Redundancy of pumps and piping precludes the failure of one pump, or the rupture of any pipe, valve, or tank to result in the loss of more than one DG. All outside tanks, pumps, and piping are located underground.~~ 1

For proper operation of the standby DGs, it is necessary to ensure the proper quality of the fuel oil. Regulatory Guide 1.137 (Ref. ~~2~~ 1) addresses the recommended fuel oil practices as supplemented by ANSI N195 (Ref. ~~3~~ 2). The fuel oil properties governed by these SRs are the water and sediment content, the kinematic viscosity, specific gravity (or API gravity), and impurity level. 2

~~The DG lubrication system is designed to provide sufficient lubrication to permit proper operation of its associated DG under all loading conditions. The system is required to circulate the lube oil to the diesel engine working surfaces and to remove excess heat generated by friction during operation. Each engine oil sump contains an inventory capable of supporting a minimum of [7] days of operation. [The onsite storage in addition to the engine oil sump is sufficient to ensure 7 days' continuous operation.] This supply is sufficient to allow the operator to replenish lube oil from outside sources.~~ 1

2 Each DG has ~~an air start~~ a starting air system, that includes two pair of air receivers, each with adequate capacity for ~~five~~ three successive start ~~attempts on the DG~~ s without recharging the air start receiver(s). 2

(continued)

1

BASES (continued)

2 2

APPLICABLE SAFETY ANALYSES

The initial conditions of Design Basis Accident (DBA) and transient analyses in FSAR, Chapter [6] (Ref. 4), and Chapter [15] (Ref. 5), assume Engineered Safety Feature (ESF) systems are OPERABLE. The DGs are designed to provide sufficient capacity, capability, redundancy, and reliability to ensure the availability of necessary power to ESF systems so that fuel, Reactor Coolant System, and containment design limits are not exceeded. These limits are discussed in more detail in the Bases for Section 3.2, Power Distribution Limits; Section 3.4, ~~Reactor Coolant System (RCS)~~; and Section 3.6, Containment Systems.

U 3 3 4 2

8 5. Emergency Core Cooling System (ECCS) and Isolation Condenser (IC) System

Since diesel fuel oil, ~~lube oil,~~ and starting air subsystem support the operation of the standby AC power sources, they satisfy Criterion 3 of ~~the NRC Policy Statement~~. 10 CFR 50.36 (c)(2)(ii)

1 2

LCO

Stored diesel fuel oil is required to ~~have sufficient supply for 7 days of full load operation. It is also required to~~ meet specific standards for quality. ~~Additionally, sufficient lube oil supply must be available to ensure the capability to operate at full load for 7 days.~~ This requirement~~, in conjunction with an ability to obtain replacement supplies within 7 days,~~ supports the availability of DGs required to shut down the reactor and to maintain it in a safe condition for an anticipated operational occurrence (AOO) or a postulated DBA with loss of offsite power. ~~DG day tank fuel oil requirements, as well as transfer capability from the storage tank to the day tank, are addressed in LCO 3.8.1, "AC Sources—Operating," and LCO 3.8.2, "AC Sources—Shutdown."~~

1

The starting air system is required to have a minimum capacity for ~~five~~ three successive DG start ~~attempts~~ without recharging the air start receivers.

2 5 2

APPLICABILITY

The AC sources (LCO 3.8.1 and LCO 3.8.2) are required to ensure the availability of the required power to shut down the reactor and maintain it in a safe shutdown condition after an AOO or a postulated DBA. Because stored diesel fuel oil, ~~lube oil,~~ and starting air subsystem support LCO 3.8.1 and LCO 3.8.2, stored diesel fuel oil, ~~lube oil,~~

5 4 1

(continued)

BASES

APPLICABILITY (continued)

and starting air are required to be within limits when the associated DG is required to be OPERABLE.

ACTIONS

The ACTIONS Table is modified by a Note indicating that separate Condition entry is allowed for each DG. This is acceptable, since the Required Actions for each Condition provide appropriate compensatory actions for each inoperable DG subsystem. Complying with the Required Actions for one inoperable DG subsystem may allow for continued operation, and subsequent inoperable DG subsystem(s) are ~~governed by~~ 4 separate Condition entry and application of associated Required Actions.

~~A.1~~ 1

~~In this Condition, the 7 day fuel oil supply for a DG is not available. However, the Condition is restricted to fuel oil level reductions that maintain at least a 6 day supply. These circumstances may be caused by events such as:~~

~~a. Full load operation required for an inadvertent start while at minimum required level; or~~

~~b. Feed and bleed operations that may be necessitated by increasing particulate levels or any number of other oil quality degradations.~~

~~This restriction allows sufficient time for obtaining the requisite replacement volume and performing the analyses required prior to addition of the fuel oil to the tank. A period of 48 hours is considered sufficient to complete restoration of the required level prior to declaring the DG inoperable. This period is acceptable based on the remaining capacity (> 6 days), the fact that procedures will be initiated to obtain replenishment, and the low probability of an event during this brief period.~~

~~B.1~~

~~With lube oil inventory < 500 gal, sufficient lube oil to support 7 days of continuous DG operation at full load conditions may not be available. However, the Condition is~~

(continued)

BASES

ACTIONS

~~B.1 (continued)~~

~~restricted to lube oil volume reductions that maintain at least a 6 day supply. This restriction allows sufficient time for obtaining the requisite replacement volume. A period of 48 hours is considered sufficient to complete restoration of the required volume prior to declaring the DG inoperable. This period is acceptable based on the remaining capacity (> 6 days), the low rate of usage, the fact that procedures will be initiated to obtain replenishment, and the low probability of an event during this brief period.~~ 1

1 A ~~C~~.1

This Condition is entered as a result of a failure to meet the acceptance criterion for particulates. Normally, trending of particulate levels allows sufficient time to correct high particulate levels prior to reaching the limit of acceptability. Poor sample procedures ~~(bottom sampling)~~, contaminated sampling equipment, and errors in laboratory analysis can produce failures that do not follow a trend. Since the presence of particulates does not mean failure of the fuel oil to burn properly in the diesel engine, since particulate concentration is unlikely to change significantly between Surveillance Frequency intervals, and since proper engine performance has been recently demonstrated (within 31 days), it is prudent to allow a brief period prior to declaring the associated DG inoperable. The 7 day Completion Time allows for further evaluation, resampling, and re-analysis of the DG fuel oil. 1

1 B ~~D~~.1

1 With the new fuel oil properties defined in the Bases for SR 3.8.3.3 not within the required limits, a period of 30 days is allowed for restoring the stored fuel oil properties. This period provides sufficient time to test the stored fuel oil to determine that the new fuel oil, when mixed with previously stored fuel oil, remains acceptable, or to restore the stored fuel oil properties. This restoration may involve feed and bleed procedures, filtering, or combination of these procedures. Even if a DG start and load was required during this time interval and

(continued)

BASES

ACTIONS

B ~~D~~.1 (continued)

the fuel oil properties were outside limits, there is high likelihood that the DG would still be capable of performing its intended function.

C ~~E~~.1

With the required starting air receiver pressure < ~~[225]~~ 220 psig, sufficient capacity for ~~five~~ three successive DG start ~~attempts~~ does not exist. However, as long as the receiver pressure is ≥ ~~[125]~~ 175 psig, there is adequate capacity for at least one start attempt, and the DG can be considered OPERABLE while the air receiver pressure is restored to the required limit. A period of 48 hours is considered sufficient to complete restoration to the required pressure prior to declaring the DG inoperable. This period is acceptable based on the remaining air start capacity, the fact that most DG starts are accomplished on the first attempt, and the low probability of an event during this brief period.

D ~~F~~.1

With a Required Action and associated Completion Time of Condition A, B, or C not met, or the stored diesel fuel oil~~, lube oil,~~ or starting air subsystem not within limits for reasons other than addressed by Condition~~s~~ A~~ through E~~, B, or C, the associated DG may be incapable of performing its intended function and must be immediately declared inoperable.

SURVEILLANCE REQUIREMENTS

~~SR 3.8.3.1~~

~~This SR provides verification that there is an adequate inventory of fuel oil in the storage tanks to support each DG's operation for 7 days at full load. The 7 day period is sufficient time to place the unit in a safe shutdown condition and to bring in replenishment fuel from an offsite location.~~

~~The 31 day Frequency is adequate to ensure that a sufficient supply of fuel oil is available, since low level alarms are~~

~~(continued)~~

BASES

SURVEILLANCE REQUIREMENTS

~~SR 3.8.3.1 (continued)~~

~~provided and unit operators would be aware of any large uses of fuel oil during this period.~~

~~SR 3.8.3.2~~

~~This Surveillance ensures that sufficient lubricating oil inventory is available to support at least 7 days of full load operation for each DG. The [500] gal requirement is based on the DG manufacturer's consumption values for the run time of the DG. Implicit in this SR is the requirement to verify the capability to transfer the lube oil from its storage location to the DG, when the DG lube oil sump does not hold adequate inventory for 7 days of full load operation without the level reaching the manufacturer's recommended minimum level.~~

~~A 31 day Frequency is adequate to ensure that a sufficient lube oil supply is onsite, since DG starts and run time are closely monitored by the plant staff.~~

SR 3.8.3.~~3~~ 1 of new fuel oil prior to addition to the storage tanks

The tests ~~listed below~~ are a means of determining whether new fuel oil is of the appropriate grade and has not been contaminated with substances that would have an immediate detrimental impact on diesel engine combustion. If results from these tests are within acceptable limits, the fuel oil may be added to the storage tanks without concern for contaminating the entire volume of fuel oil in the storage tanks. These tests are to be conducted prior to adding the new fuel to the storage tank(s)~~, but in no case is the time between receipt of new fuel and conducting the tests to exceed 31 days~~. The tests, limits, and applicable ASTM Standards are as follows:

a. Sample the new fuel oil in accordance with ASTM D4057-~~[ ]~~ 95 (Ref. ~~6~~ 5);

b. Verify ~~in accordance with the tests specified in ASTM D975-[ ] (Ref. 6)~~ that the new fuel oil sample has an absolute specific gravity at ~~60~~/60°F of ≥ 0.83 and ≤ 0.89 ;(1) or an API gravity at 60°F of ≥ 27° and ≤ 39° ;(2) when tested in accordance with ASTM D1298-85 (Ref. 5) or a kinematic

(continued)

1 The clear and bright appearance with proper color test is only applicable to fuels that meet the ASTM color requirements (i.e., ASTM color 5 or less).

1

BASES

1

2

SURVEILLANCE REQUIREMENTS

SR 3.8.3.3 (continued) when tested in accordance with ASTM D445-97 (Ref. 5)

when tested in accordance with ASTM D93-99a (Ref. 5)

viscosity at 40°C of ≥ 1.9 centistokes and ≤ 4.1 centistokes, and a flash point of ≥ 125°F; and

5 13 6

3

c. Verify that the new fuel oil has a clear and bright appearance with proper color when tested in accordance with ASTM D4176-[ ] (Ref. 6).

93

or a water and sediment content within limits when tested in accordance with ASTM D 2709-96 (Ref. 5)

5 Within 31 days following addition of the new fuel oil to the fuel oil storage tank(s)

Failure to meet any of the above limits is cause for rejecting the new fuel oil, but does not represent a failure to meet the LCO concern since the fuel oil is not added to the storage tanks.

2

~~Within [31] days~~ following the initial new fuel oil sample, the fuel oil is analyzed to establish that the other properties specified in Table 1 of ASTM D975-[ ] (Ref. 6) are met for new fuel oil when tested in accordance with ASTM D975-[ ] (Ref. 6), except that the analysis for sulfur may be performed in accordance with ASTM ~~D1552-[ ]~~ (Ref. 6) or ASTM D2622-[ ] (Ref. 6). The [31] day period is acceptable because the fuel oil properties of interest, even if they were not within stated limits, would not have an immediate effect on DG operation. This Surveillance ensures the availability of high quality fuel oil for the DGs.

98b 3 98 5 3 D4294-98 5 3 2

Fuel oil degradation during long term storage shows up as an increase in particulate, mostly due to oxidation. The presence of particulate does not mean that the fuel oil will not burn properly in a diesel engine. The particulate can cause fouling of filters and fuel oil injection equipment, however, which can cause engine failure.

3 D5452-98

Particulate concentrations should be determined in accordance with ~~ASTM D2276-[ ]~~ (Ref. 6), ~~Method A~~. This method involves a gravimetric determination of total particulate concentration in the fuel oil and has a limit of 10 mg/l. It is acceptable to obtain a field sample for subsequent laboratory testing in lieu of field testing. ~~[For those designs in which the total volume of stored fuel oil is contained in two or more interconnected tanks, each tank must be considered and tested separately.]~~

5 2 7

The Frequency of this test takes into consideration fuel oil degradation trends that indicate that particulate

(continued)

BASES

SURVEILLANCE REQUIREMENTS

SR 3.8.3.~~3~~ 1 (continued) 1

concentration is unlikely to change significantly between Frequency intervals.

SR 3.8.3.~~4~~ 2 1

This Surveillance ensures that, without the aid of the refill compressor, sufficient air start capacity for each DG is available. The system design~~/requirements provide for a~~ S 2 minimum of ~~[five]~~ three 3 engine start~~/cycles~~ without recharging. ~~[A start cycle is defined by the DG vendor, but usually is measured in terms of time (seconds of cranking) or engine cranking speed.]~~ 3 The pressure specified in this SR is intended to ~~reflect~~ support 2 the lowest value at which the ~~[five]~~ three 3 starts can be accomplished.

The ~~[~~31~~]~~ 3 day Frequency takes into account the capacity, capability, redundancy, and diversity of the AC sources and other indications available in the control room, including alarms, to alert the operator to below normal air start pressure.

~~SR 3.8.3.5~~

~~Microbiological fouling is a major cause of fuel oil degradation. There are numerous bacteria that can grow in fuel oil and cause fouling, but all must have a water environment in order to survive. Removal of water from the fuel storage tanks once every [31] days eliminates the necessary environment for bacterial survival. This is the most effective means of controlling microbiological fouling. In addition, it eliminates the potential for water entrainment in the fuel oil during DG operation. Water may come from any of several sources, including condensation, ground water, rain water, contaminated fuel oil, and from breakdown of the fuel oil by bacteria. Frequent checking for and removal of accumulated water minimizes fouling and provides data regarding the watertight integrity of the fuel oil system. The Surveillance Frequencies are established by Regulatory Guide 1.137 (Ref. 2). This SR is for preventive maintenance. The presence of water does not necessarily represent failure of this SR, provided the accumulated water is removed during performance of the Surveillance.~~ 1

~~(continued)~~

1

BASES

SURVEILLANCE REQUIREMENTS (continued)

~~SR 3.8.3.6~~

~~Draining of the fuel oil stored in the supply tanks, removal of accumulated sediment, and tank cleaning are required at 10 year intervals by Regulatory Guide 1.137 (Ref. 2), paragraph 2.f. This SR is typically performed in conjunction with ASME Boiler and Pressure Vessel Code, Section XI (Ref. 7), examinations of the tanks. To preclude the introduction of surfactants in the fuel oil system, the cleaning should be accomplished using sodium hypochlorite solutions or their equivalent, rather than soap or detergents. This SR is for preventive maintenance. The presence of sediment does not necessarily represent a failure of this SR, provided that accumulated sediment is removed during performance of the Surveillance.~~

TSTF -2

REFERENCES

~~1. FSAR, Section [9.5.2].~~

1 2. Regulatory Guide 1.137, Rev. 1, October 1979

2 3. ANSI N195, 1976.

2

3 4. U FSAR, Chapter [6].

4 5. U FSAR, Chapter [15].

3

5 6. ASTM Standards: D4057-[ ]95; D975-[ ]98b; D4176-[ ]93; D2709-96; D1552-[ ]; D4294-98; D2622-[ ]98; and D2276-[ ]. D5452-98

D1298-85; D445-97; D93-99a;

2

3

~~7. ASME, Boiler and Pressure Vessel Code, Section XI.~~

TSTF -2

JUSTIFICATION FOR DEVIATIONS FROM NUREG-1433, REVISION 1
ITS BASES: 3.8.3 - DIESEL FUEL OIL and STARTING AIR

1. Changes have been made to reflect those changes made to the Specification.

2. Changes have been made (additions, deletions, and/or changes to the NUREG) to reflect the plant specific nomenclature, number, reference, system description, analysis description, or licensing basis description.

3. The brackets have been removed and the proper plant specific information/value has been provided.

4. Typographical/grammatical error corrected.

5. Changes have been made to be consistent with the Specification.

6. Editorial change made for enhanced clarity or to be consistent with similar statements in other places in the Bases.

7. This bracketed requirement/information has been deleted because it is not applicable to Dresden 2 and 3.

8. This change has been made since ITS Section 3.5, "ECCS and IC Systems," provides the appropriate limits that are affected by the systems in this LCO.

All changes are $\boxed{1}$ unless otherwise identified

B 3.8 ELECTRICAL POWER SYSTEMS

B 3.8.4 DC Sources—Operating

BASES

BACKGROUND

The DC electrical power system provides the AC emergency power system with control power. ~~It~~ They also provides both motive and control power to selected safety related equipment. Also, these DC subsystems provide DC electrical power to inverters, which in turn power the AC ~~vital~~ essential service buses. As required by ~~10 CFR 50, Appendix A, GDC 17~~ UFSAR, Section 3.1.2.2.8 (Ref. 1), the DC electrical power system is designed to have sufficient independence, redundancy, and testability to perform its safety functions, assuming a single failure. The DC electrical power system ~~also conforms to~~ is consistent with the recommendations of ~~Regulatory~~ Safety Guide ~~1~~6 (Ref. 2) and IEEE-308 (Ref. 3).

The ~~station service~~ 250 V DC power sources provide ~~both~~ motive ~~and control~~ power to ~~selected safety related equipment, as well as circuit breaker control power for the nonsafety related 4160 V, and all 600 V and lower, AC distribution systems.~~ larger DC loads such as DC motor-driven pumps and valves. Each 250 V DC subsystem is energized by one ~~125/~~250 V ~~station service~~ battery and ~~three 125~~ two 250 V battery chargers (~~two~~ one normally inservice charger~~s~~ and one ~~spare~~ swing charger). Each battery is exclusively associated with a single ~~125/~~250 VDC ~~bus~~ subsystem. Each ~~set of~~ Normal battery charger~~s~~ exclusively associated with a ~~125/~~250 VDC subsystem ~~cannot be interconnected with any other 125/250 VDC subsystem.~~ an associated unit. The normal and ~~backup~~ swing chargers are normally supplied from ~~the same~~ AC load groups ~~for which the associated DC subsystem supplies the control power~~. These AC buses are arranged so they can be aligned to any viable available plant AC source. The loads between the redundant ~~125/~~250 VDC ~~subsystem~~ bus are not transferable ~~except for the Automatic Depressurization System, the logic circuits and valves of which are normally fed from the Division 1 DC system.~~

Insert BKGD-1

~~The diesel generator (DG) DC power sources provide control and instrumentation power for their respective DG. In addition, DG 2A and 2C DC power sources provide circuit breaker control power for the loads on the 4160 V 2E, 2F, and 2G emergency buses. Each DG DC subsystem is energized by one 125 V battery and one 125 V battery charger. Provisions exist for connecting a portable alternate battery charger.~~

During normal operation, the DC loads are powered from the battery chargers with the batteries floating on the system.

(continued)

The swing charger, shared between units, can be aligned to only one unit at a time.

I Insert BKGD-1

The Division 1 and Division 2 125 VDC power sources provide both motive and control power to selected safety related equipment, as well as circuit breaker control power for the nonsafety related 4160 V switchgear, and all 480 V load centers. Each 125 VDC subsystem is energized by two 125 V batteries (one normal battery and one alternate battery) and three 125 V battery chargers (one normal charger, one backup charger, and one alternate charger). Each battery is exclusively associated with a single 125 VDC subsystem. Each set of battery chargers exclusively associated with a 125 VDC subsystem cannot be interconnected with any other 125 VDC subsystem. The 125 VDC subsystem alternate battery and charger are susceptible to single failure and therefore are not reliable as normal or continuous use 125 VDC sources. The chargers are supplied from a 480 V AC bus. These AC buses are arranged so they can be aligned to any viable available plant AC source. The loads between the redundant 125 VDC subsystems are not automatically transferable except for the diesel generator (DG) (i.e., 2/3 DG control circuit), High Pressure Coolant Injection (HPCI) System, and Automatic Depressurization System, the logic circuits and valves of which are normally fed from the Division 1 125 VDC system. The Division 1 125 VDC electrical power subsystem consists of the unit battery, two chargers, and all the associated control equipment and interconnecting cabling up to the associated unit's 125 VDC Division 1 bus. The Division 2 125 VDC electrical power subsystem consists of the opposite unit battery, two chargers, and all the associated control equipment, buses, and interconnecting cabling up to the associated units Division 2 125 VDC bus.

The opposite unit Division 2 125 VDC electrical power subsystem source provides control power to safety related loads common to both units such as standby gas treatment. The Division 2 125 VDC electrical power subsystem consists of the opposite unit batteries, chargers, and all associated control equipment, buses, and interconnecting cabling up to the associated opposite Division 2 125 VDC bus.

All changes are 1 unless otherwise identified

BASES

BACKGROUND (continued)

In case of loss of normal power to the battery charger, the DC loads are automatically powered from the ~~station~~ associated batteries. 2

3 The DC power distribution system is described in more detail in Bases for LCO 3.8.~~9~~ 7, "Distribution System—Operating," and LCO 3.8.~~10~~ 8, "Distribution System—Shutdown."

Each battery has adequate storage capacity to carry the normal loads plus all loads required ~~load continuously for approximately 2 hours~~ for safe shutdown on one unit and operational loads required to limit the consequences of a design basis event on the other unit for a period of 4 hours (Ref. ~~3~~ 4).

Each DC battery ~~subsystem~~ is separately housed in a ventilated room apart from its charger and distribution centers. Each subsystem is located in an area separated physically and electrically from the other subsystems to ensure that a single failure in one subsystem does not cause a failure in a redundant subsystem. There is no sharing between redundant Class 1E subsystems such as batteries, battery chargers, or distribution panels.

The batteries for DC electrical power subsystems are sized to produce required capacity at 80% of nameplate rating, corresponding to warranted capacity at end of life cycles and the 100% design demand. The minimum design voltage limit is 105/210 V.

Each battery charger ~~of DC electrical power subsystem~~ has ample power output capacity for the steady state operation of connected loads required during normal operation, while at the same time maintaining its battery bank fully charged. Each ~~station service~~ battery charger has sufficient capacity to restore the battery from the design minimum charge to its fully charged state ~~within 24 hours~~ while supplying normal steady state loads (Ref. ~~3~~ 4).

APPLICABLE SAFETY ANALYSES

4 The initial conditions 6 of 4 Design Basis Accident (DBA) 5 and transient analyses in the FSAR, Chapter ~~6~~ (Ref. ~~4~~) and Chapter ~~15~~ (Ref. ~~5~~), assume that Engineered Safety Feature (ESF) systems are OPERABLE. The DC electrical power system provides normal and emergency DC electrical power for the DGs, emergency auxiliaries, and control and switching during all MODES of operation.

2 ¶ The OPERABILITY of the DC subsystems is consistent with the initial assumptions of the

(continued)

All changes are 1 unless otherwise identified

BASES

APPLICABLE SAFETY ANALYSES (continued)

accident analyses and is based upon meeting the design basis of the unit. This includes maintaining DC sources OPERABLE during accident conditions in the event of:

a. An assumed loss of all offsite AC power or all onsite AC power; and

b. A worst case single failure.

The DC sources satisfy Criterion 3 of ~~the NRC Policy Statement~~. 10CFR 50.36(c)(2)(ii)

LCO

The DC electrical power subsystems—with: (a) ~~(1)~~ 250 each ~~station service~~ DC 250 V subsystem consisting of ~~two 125~~ V batteries ~~in series~~ ~~two~~ battery chargers and the corresponding control equipment and interconnecting cabling supplying power to the associated bus, ~~and (2)~~ (b) ~~each~~ the Division 1 and 2 ~~DG~~ DC 125 VDC subsystems consisting of one battery ~~bank~~, one battery charger, and the corresponding control equipment, buses, and interconnecting cabling; and c) opposite unit Division 2 125 VDC subsystem each consisting of one battery, one charger, and the corresponding control equipment, buses, and interconnecting cabling are required to be OPERABLE to ensure the availability of the required power to shut down the reactor and maintain it in a safe condition after an anticipated operational occurrence (AOO) or a postulated DBA. Loss of any DC electrical power subsystem does not prevent the minimum safety function from being performed (Ref. ~~2~~ 4).

APPLICABILITY

The DC electrical power sources are required to be OPERABLE in MODES 1, 2, and 3 to ensure safe unit operation and to ensure that:

a. Acceptable fuel design limits and reactor coolant pressure boundary limits are not exceeded as a result of AOOs or abnormal transients; and

b. Adequate core cooling is provided, and containment integrity and other vital functions are maintained in the event of a postulated DBA.

The DC electrical power requirements for MODES 4 and 5 and other conditions in which the DC electrical power sources are required are addressed in ~~the Bases for~~ LCO 3.8.5, "DC Sources—Shutdown."

(continued)

Allcharges are 1 unless otherwise identified

5

Insert ACTIONS A.1 and B.1

BASES (continued)

ACTIONS 5 C ~~A~~.1

250 VDC electrical power subsystem

Condition ~~A~~ represents one ~~division~~ with a loss of ability to completely respond to an event, and a potential loss of ability to remain energized during normal operation. It is therefore imperative that the operator's attention focus on stabilizing the unit, minimizing the potential for complete loss of 250 V DC power to the affected ~~division~~ buses. The 2 hour limit is consistent with the allowed time for an inoperable DC Distribution System ~~division~~ subsystem.

7

With one 250 VDC electrical power subsystem inoperable for reasons other than Condition B or C, If one ~~of the required~~ DC electrical power subsystem~~s~~ is inoperable (e.g., inoperable battery, inoperable required battery charger(s), or inoperable required battery charger and associated inoperable battery), the remaining DC electrical power subsystems have the capacity to support a safe shutdown and to mitigate an accident condition. Since a subsequent worst case single failure could, however, result in the loss of minimum necessary DC electrical subsystems to mitigate a worst case accident, continued power operation should not exceed 2 hours. The 2 hour Completion Time is based on Regulatory Guide 1.93 (Ref. ~~8~~ 7) and reflects a reasonable time to assess unit status as a function of the inoperable DC electrical power subsystem and, if the DC electrical power subsystem is not restored to OPERABLE status, to prepare to effect an orderly and safe unit shutdown.

5

Insert ACTIONS D, E, F, and G

5 H ~~B~~.1 and H ~~B~~.2

If the ~~station service~~ DC electrical power subsystem cannot be restored to OPERABLE status within the required Completion Time, the unit must be brought to a MODE in which the LCO does not apply. To achieve this status, the unit must be brought to at least MODE 3 within 12 hours and to MODE 4 within 36 hours. The allowed Completion Times are reasonable, based on operating experience, to reach the required plant conditions from full power conditions in an orderly manner and without challenging plant systems. The Completion Time to bring the unit to MODE 4 is consistent with the time required in Regulatory Guide 1.93 (Ref. ~~8~~ 7).

(continued)

5 Insert ACTIONS A.1 and B.1

A.1

Condition A, 250 VDC battery inoperable as a result of maintenance or testing, represents one subsystem with a loss of ability to completely respond to an event. It is therefore imperative that the operator's attention focus on stabilizing the unit, minimizing the potential for complete loss of 250 VDC power to the affected subsystem. Operation in this Condition is needed during the operating cycle to ensure the battery is maintained OPERABLE.

If one of the 250 VDC batteries is inoperable, the remaining 250 VDC electrical power subsystem has the capacity to support a safe shutdown of one unit and to mitigate an accident condition in the other unit. Since a subsequent worst case single failure could, however, result in the loss of minimum necessary DC electrical subsystems to mitigate a worst case accident, continued power operation is limited. Required Action A.1 limits the time the unit can operate in this condition to 7 cumulative days per operating cycle, for any one battery. Therefore, each 250 VDC battery can be removed from service to perform maintenance or testing as long as the cumulative time is not exceeded for that battery.

The 7 day cumulative Completion Time is based on the capacity and capability of the remaining DC sources to supply the required loads.

B.1

Condition B, 250 VDC battery inoperable due to the need to replace the battery as determined by maintenance or testing, represents one subsystem with a loss of ability to completely respond to an event. It is therefore imperative that the operator's attention focus on stabilizing the unit, minimizing the potential for complete loss of 250 VDC power to the affected subsystem. Operation in this Condition may be needed during the operating cycle to completely replace a battery to maintain the 250 VDC subsystem OPERABLE for the remainder of the cycle.

If one of the 250 VDC batteries is inoperable, the remaining 250 VDC electrical power subsystem has the capacity to support a safe shutdown of one unit and to mitigate an accident condition in the other unit. Since a subsequent worst case single failure could, however, result in the loss of minimum necessary DC electrical subsystems to mitigate a worst case accident, continued power operation is limited. Required Action B.1 limits the time the unit can operate in this condition to 7 days. Therefore, each 250 VDC battery can be removed from service to completely replace a battery.

The 7 day Completion Time to restore the 250 VDC battery is based on the capacity and capability of the remaining DC sources to supply the required loads.

$\boxed{5}$ Insert ACTIONS D, E, F, and G

D.1 and D.2

Condition D, Division 1 or 2 125 VDC battery inoperable as a result of maintenance or testing, represents one division with a loss of ability to completely respond to an event. It is therefore imperative that the operator's attention focus on stabilizing the unit, minimizing the potential for complete loss of DC power to the affected division. Operation in this Condition is needed during the operating cycle to ensure the battery is maintained OPERABLE. Condition D is modified by a Note indicating that the Condition is only applicable when the opposite unit is in MODE 1, 2, or 3.

If one of the 125 VDC batteries is inoperable, the remaining 125 VDC electrical power subsystem has the capacity to support a safe shutdown of one unit and to mitigate an accident condition in the other unit. Since a subsequent worst case single failure could, however, result in the loss of minimum necessary DC electrical subsystems to mitigate a worst case accident, continued power operation is limited. Required Action D.2 limits the time the unit can operate in this condition to 7 cumulative days per operating cycle, for any one battery. Therefore, each 125 VDC battery can be removed from service to perform maintenance or testing as long as the cumulative time is not exceeded for that battery. In addition, Required Action D.1 requires the associated OPERABLE alternate 125 VDC electrical power subsystem to be placed in service. An OPERABLE alternate 125 VDC electrical power subsystem means that all SR requirements associated with the 125 VDC battery and charger must be met. Therefore, placement of the OPERABLE alternate 125 VDC electrical power subsystem will help ensure that the design basis can be met. However, the design configuration of the alternate battery is susceptible to single failure and hence, is not as reliable as the normal circuit. Therefore, a limited time of operation is allowed in this condition.

The 2 hour Completion Time to place the associated OPERABLE alternate 125 VDC electrical power subsystem in service provides sufficient time to safely remove the Division 1 or 2 125 VDC electrical power subsystem from service and place the alternate supply in service. The 7 day cumulative Completion Time is based on the capacity and capability of the remaining DC Sources, including the enhanced capability afforded by the capability of the alternate 125 VDC electrical power subsystem to supply the required loads.

5 Insert ACTIONS D, E, F, and G

E.1 and E.2

Condition E, Division 1 or 2 125 VDC battery inoperable due to the need to replace the battery as determined by maintenance or testing, represents one division with a loss of ability to completely respond to an event. It is therefore imperative that the operator's attention focus on stabilizing the unit, minimizing the potential for complete loss of DC power to the affected division. Operation in this Condition may be needed during the operating cycle to completely replace a battery to maintain the Division 1 or 2 VDC subsystem OPERABLE for the remainder of the cycle. Condition E is modified by a Note indicating that the Condition is only applicable when the opposite unit is in MODE 1, 2, or 3.

If one of the 125 VDC batteries is inoperable, the remaining 125 VDC electrical power subsystem has the capacity to support a safe shutdown of one unit and to mitigate an accident condition in the other unit. Since a subsequent worst case single failure could, however, result in the loss of minimum necessary DC electrical subsystems to mitigate a worst case accident, continued power operation is limited. Required Action E.2 limits the time the unit can operate in this condition to 7 days. Therefore, each 125 VDC battery can be removed from service to completely replace a battery. In addition, Required Action E.1 requires the associated OPERABLE alternate 125 VDC electrical power subsystem to be placed in service. An OPERABLE alternate 125 VDC electrical power subsystem means that all SR requirements associated with the 125 VDC battery and charger must be met. Therefore, placement of the OPERABLE alternate 125 VDC electrical power subsystem will help ensure that the design basis can be met. However, the design configuration of the alternate battery is susceptible to single failure and hence, is not as reliable as the normal circuit. Therefore, a limited time of operation is allowed in this condition.

The 2 hour Completion Time to place the associated OPERABLE alternate 125 VDC electrical power subsystem in service provides sufficient time to safely remove the Division 1 or 2 125 VDC electrical power subsystem from service and place the alternate supply in service. The 7 day Completion Time to restore the 125 VDC battery is based on the capacity and capability of the remaining DC Sources, including the enhanced capability afforded by the capability of the alternate 125 VDC electrical power subsystem to supply the required loads.

5 Insert ACTIONS D, E, F, and G

F.1

With one Division 1 or Division 2 125 VDC electrical power subsystem inoperable for reasons other than Conditions D or E, Condition F represents one division with a loss of ability to completely respond to an event, and a potential loss of ability to remain energized during normal operation. It is therefore imperative that the operator's attention focus on stabilizing the unit, minimizing the potential for complete loss of DC power to the affected division. The 2 hour limit is consistent with the allowed time for an inoperable DC Distribution System division.

If one 125 VDC electrical power subsystem is inoperable (e.g., inoperable battery, inoperable required battery charger(s), or inoperable required battery charger and associated inoperable battery), the remaining DC electrical power subsystems have the capacity to support a safe shutdown and to mitigate an accident condition. Since a subsequent worst case single failure could, however, result in the loss of minimum necessary DC electrical subsystems to mitigate a worst case accident, continued power operation should not exceed 2 hours. The 2 hour Completion Time is based on Regulatory Guide 1.93 (Ref. 7) and reflects a reasonable time to assess unit status as a function of the inoperable DC electrical power subsystem and, if the DC electrical power subsystem is not restored to OPERABLE status, to prepare to effect an orderly and safe unit shutdown.

G.1

With the opposite unit Division 2 125 VDC electrical power system inoperable, certain redundant Division 2 features (e.g., Standby Gas Treatment System) will not function if a design basis event were to occur. With a standby gas treatment subsystem inoperable, LCO 3.6.4.3, "Standby Gas Treatment System" requires restoration of the inoperable SGT subsystem to OPERABLE status in 7 days. Therefore, a 7 day Completion Time is provided to restore the opposite unit Division 2 125 VDC electrical power subsystem to OPERABLE status. The 7 day Completion Time is based on consideration of such factors as the availability of the OPERABLE redundant system(s) and the low probability of a DBA occurring during this time period.

BASES

ACTIONS (continued)

~~C.1~~

~~If the DG DC electrical power subsystem cannot be restored to OPERABLE status in the associated Completion Time, the associated DG may be incapable of performing its intended function and must be immediately declared inoperable. This declaration also requires entry into applicable Conditions and Required Actions for an inoperable DG, LCO 3.8.1, "AC Sources—Operating."~~ 5

SURVEILLANCE REQUIREMENTS

SR 3.8.4.1

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. Float charge is the condition in which the charger is supplying the continuous charge required to overcome the internal losses of a battery ~~(or battery cell)~~ and maintain the battery ~~(or a battery cell)~~ in a fully charged state. 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. The 7 day Frequency is ~~consistent~~ conservative when compared with manufacturer s recommendations and IEEE-450 (Ref. ~~7~~ 8). 2 2 1

SR 3.8.4.2

Visual inspection to detect corrosion of the battery cells and connections, or measurement of the resistance of each inter-cell~~, inter-rack, inter-tier,~~ and terminal connection, provides an indication of physical damage or abnormal deterioration that could potentially degrade battery performance. 1

The connection resistance limits established for this SR ~~must be no more than 20% above the resistance as measured during installation or not above the ceiling value~~ are within the values established by ~~the manufacturer~~ industry practice. The connection resistance limits of this SR are related to the resistance of individual bolted connections, and do not include the resistance of conductive components (e.g., cables or conductors located between cells, racks, or tiers). 1

The Frequency for these inspections, which can detect conditions that can cause power losses due to resistance heating, is 92 days. This Frequency is considered

(continued)

BASES

SURVEILLANCE REQUIREMENTS

SR 3.8.4.2 (continued)

2

Insert from page B 3.8-56

acceptable based on operating experience related to detecting corrosion trends.

5

SR 3.8.4.~~3~~ 4

Visual inspection of the battery cells, cell plates, and battery racks provides an indication of physical damage or abnormal deterioration that could potentially degrade battery performance.

Insert SR 3.8.4.4

TSTF -38

4

~~The 12 month Frequency for this SR is consistent with IEEE-450 (Ref. 7), which recommends detailed visual inspection of cell condition and rack integrity on a yearly basis.~~

5

SR 3.8.4.~~4~~ 5 and SR 3.8.4.~~5~~ 6

Visual inspection and resistance measurements of inter-cell, inter-rack, inter-tier, and terminal connections provides an indication of physical damage or abnormal deterioration that could indicate degraded battery condition. The anti-corrosion material is used to help ensure good electrical connections and to reduce terminal deterioration. The visual inspection for corrosion is not intended to require removal of and inspection under each terminal connection.

1

The removal of visible corrosion is a preventive maintenance SR. The presence of visible corrosion does not necessarily represent a failure of this SR, provided visible corrosion is removed during performance of this Surveillance.

~~Reviewer's Note: The requirement to verify that terminal connections are clean and tight applies only to nickel cadmium batteries as per IEEE Standard P1106, "IEEE Recommended Practice for Installation, Maintenance, Testing and Replacement of Vented Nickel - Cadmium Batteries for Stationary Applications." This requirement may be removed for lead acid batteries.~~

8

(continued)

TSTF-38

Insert SR 3.8.4.4

The presence of physical damage or deterioration does not necessarily represent a failure of this SR, provided an evaluation determines that the physical damage or deterioration does not affect the OPERABILITY of the battery (its ability to perform its design function).

The 24 month Frequency for the Surveillance is based on engineering judgement. Operating experience has shown that these components usually pass the SR when performed at the 24 month Frequency. Therefore, the Frequency was concluded to be acceptable from a reliability standpoint.

The connection resistance limits of this SR are related to the resistance of individual bolted connections, and do not include the resistance of conductive components (e.g., cables, or conductors located between cells, racks, or tiers).

BASES

SURVEILLANCE REQUIREMENTS

5 1

SR 3.8.4.~~4~~ 5 and SR 3.8.4.~~5~~ 6 (continued)

are within the values established by industry practice

The connection resistance limits ~~for this SR must be no more than 20% above the resistance as measured during installation, or not above the ceiling value established by the manufacturer~~.

4 Insert SR 3.8.4.5

2 move to page B 3.8-55 as indicated

~~The 12 month Frequency of these SRs is consistent with IEEE-450 (Ref. 7), which recommends detailed visual inspection of cell condition and inspection of cell to cell and terminal connection resistance on a yearly basis.~~

5 SR 3.8.4.3 and

SR 3.8.4.~~6~~ 7

4 1

Battery charger capability requirements ~~are~~ are based on the design capacity of the chargers (Ref. ~~3~~). According to Regulatory Guide 1.32 (Ref. ~~8~~ 9), the battery charger supply is required to be based on the largest combined demands of the various steady state loads and the charging capacity to restore the battery from the design minimum charge state to the fully charged state, irrespective of the status of the unit during these demand occurrences. The minimum required amperes and duration ensures that these requirements can be satisfied.

1 9

Insert SR 3.8.4.3

24 month

for SR 3.8.4.7

The Frequency is acceptable, given ~~the unit conditions required to perform the test and~~ the ~~other~~ administrative controls existing to ensure adequate charger performance during these ~~18~~ 24 month~~s~~ intervals. In addition, this Frequency is intended to be consistent with expected fuel cycle lengths.

5

4

~~This SR is modified by two Notes. The reason for Note 1 is that performing the Surveillance would remove a required DC electrical power subsystem from service, perturb the electrical distribution system, and challenge safety systems. Note 2 is added to this SR to acknowledge that credit may be taken for unplanned events that satisfy the Surveillance.~~

5 9

(continued)

5 Insert SR 3.8.4.3

The 18 month Frequency for SR 3.8.4.3 is acceptable based on engineering judgement. Operating experience has shown that the 250 V battery chargers usually pass the SR when performed at the 18 month Frequency. Therefore, the Frequency was concluded to be acceptable from a reliability standpoint.

4 Insert SR 3.8.4.5

The 24 month Frequency for the Surveillance is based on engineering judgement. Operating experience has shown that these components usually pass the SR when performed at the 24 month Frequency. Therefore, the Frequency was concluded to be acceptable from a reliability standpoint.

BASES

1

5

SURVEILLANCE REQUIREMENTS (continued)

SR 3.8.4.~~7~~ 8

This test can be performed using simulated or actual loads.

A battery service test is a special test of the battery's capability, as found, to satisfy the design requirements (battery duty cycle) of the DC electrical power system. The discharge rate and test length corresponds to the design duty cycle requirements as specified in Reference 4.

Insert SR 3.8.4.8

This substitution is acceptable because a modified performance discharge test represents a more severe test of battery capacity than SR 3.8.4.8

24

4

~~The Frequency of [18 months] is consistent with the recommendations of Regulatory Guide 1.32 (Ref. 8) and Regulatory Guide 1.129 (Ref. 9), which state that the battery service test should be performed during refueling operations or at some other outage, with intervals between tests not to exceed [18 months].~~

5

The Note

a

This SR is modified by ~~two~~ Notes. ~~Note 1~~ allows the performance of a modified performance discharge test in lieu of a service test ~~once per 60 months~~.

10

move to SR 3.8.4.9 as indicated

1

normally

~~The modified performance discharge test is~~ a simulated duty cycle consisting of just two rates; the one minute rate published for the battery or the largest current load of the duty cycle, followed by the test rate employed for the performance discharge test, both of which envelope the duty cycle of the service test. Since the ampere-hours removed by a rated one minute discharge represents a very small portion of the battery capacity, the test rate can be changed to that for the performance test without compromising the results of the performance discharge test. The battery terminal voltage for the modified performance discharge test should remain above the minimum battery terminal voltage specified in the battery service test for the duration of time equal to that of the service test.

1

(The test can consist of a single rate if the test rate employed for the performance discharge test exceeds the 1 minute rate.)

2

Performance

A modified performance discharge test is a test of the battery capacity and its ability to provide a high rate, short duration load (usually the highest rate of the duty cycle). This will often confirm the battery's ability to meet the critical period of the load duty cycle, in addition to determining its percentage of rated capacity. Initial conditions for the modified performance discharge test should be identical to those specified for a service test.

2

when the modified performance discharge test is performed in lieu of a service test

~~The reason for Note 2 is that performing the Surveillance would remove a required DC electrical power subsystem from service, perturb the electrical distribution system, and~~

5

(continued)

Provided the modified performance discharge test completely envelopes the service test

5 Insert SR 3.8.4.8

acceptable, given unit conditions required to perform the test and the other requirements existing to ensure adequate battery performance during these 24 month intervals. In addition, this Frequency is intended to be consistent with expected fuel cycle lengths.

BASES

5

SURVEILLANCE REQUIREMENTS

SR 3.8.4.7 (continued) 8 9 TSTF-8 not adopted

challenge safety systems. Credit may be taken for unplanned events that satisfy the Surveillance. 5

5

SR 3.8.4.8 9

A battery performance discharge test is a test of constant current capacity of a battery, normally done in the as found condition, after having been in service, to detect any change in the capacity determined by the acceptance test. The test is intended to determine overall battery degradation due to age and usage.

A battery modified performance discharge test is described in the Bases for SR 3.8.4.7. Insert from SR 3.8.4.8 10 Either the battery performance discharge test or the modified performance discharge test is acceptable for satisfying SR 3.8.4.8; however, only the modified performance discharge test may be used to satisfy SR 3.8.4.8 while satisfying the requirements of SR 3.8.4.7 at the same time. 9 8 5

The acceptance criteria for this Surveillance is consistent with IEEE-450 (Ref. 7) and IEEE-485 (Ref. 10). These references recommend that the battery be replaced if its capacity is below 80% of the manufacturer's rating. A capacity of 80% shows that the battery rate of deterioration is increasing, even if there is ample capacity to meet the load requirements.

1 8 ≥ since IEEE-485 (Ref. 10) recommends using an aging factor of 125% in the battery size calculation

The Frequency for this test is normally 60 months. If the battery shows degradation, or if the battery has reached 85% of its expected life and capacity is < 100% of the manufacturer's rating, the Surveillance Frequency is reduced to 12 months. However, if the battery shows no degradation but has reached 85% of its expected life, the Surveillance Frequency is only reduced to 24 months for batteries that retain capacity ≥ 100% of the manufacturer's rating. Degradation is indicated, according to IEEE-450 (Ref. 9), when the battery capacity drops by more than 10% relative to its capacity on the previous performance test or when it is 10% below the manufacturer's rating. All these Frequencies are consistent with the recommendations in IEEE-450 (Ref. 9). 8

Consistent with

2 ≥

The 12 month and 60 month

The 24 month frequency is derived from the recommendations of IEEE-450 (Ref. 8).

1

(continued)

All changes are 1 unless otherwise identified

BASES

5

SURVEILLANCE REQUIREMENTS

SR 3.8.4.~~8~~ 9 (continued)

~~This SR is modified by a Note. The reason for the Note is that performing the Surveillance would remove a required DC electrical power subsystem from service, perturb the electrical distribution system, and challenge safety systems. Credit may be taken for unplanned events that satisfy the Surveillance.~~ 5 9

REFERENCES

1. ~~10 CFR 50, Appendix A, GDC 17~~. UFSAR, Section 3.1.2.2.8
2. Safety ~~Regulatory~~ Guide ~~1.~~6, March 10, 1971.
3. IEEE Standard 308, ~~1978~~ 1974.
4. UFSAR, Section 8.3.2
5. ~~4.~~ FSAR, Chapter ~~[6]~~. 4
6. ~~5.~~ FSAR, Chapter ~~[15]~~.
7. ~~6.~~ Regulatory Guide 1.93, Revision 0, December 1974.
8. ~~7.~~ IEEE Standard 450, 1995.
9. ~~8.~~ Regulatory Guide 1.32, Revision 2, February 1977.

~~9. Regulatory Guide 1.129, December 1974.~~

10. IEEE Standard 485, ~~1983~~ 1978.

JUSTIFICATION FOR DEVIATIONS FROM NUREG-1433, REVISION 1
ITS BASES: 3.8.4 - DC SOURCES — OPERATING

1. Changes have been made (additions, deletions, and/or changes to the NUREG) to reflect the plant specific nomenclature, number, reference, system description, analysis description, or licensing basis description.

2. Editorial change made for enhanced clarity or to be consistent with similar statements in other places in the Bases.

3. The proper Dresden 2 and 3 plant specific LCO number has been provided.

4. The brackets have been removed and the proper plant specific information/value has been provided.

5. Changes have been made to reflect those changes made to the Specification. The following requirements have been renumbered, where applicable, to reflect the changes.

6. This change has been made to be consistent with the Applicability of LCO 3.8.5.

7. Since the Dresden 2 and 3 design has two 100% capacity battery chargers available per subsystem, with only one of the chargers per subsystem required to be OPERABLE, the word "required" has been added consistent with its use in other Specifications.

8. This Reviewer's Note has been deleted. This information is for the NRC reviewer to be keyed in to what is needed to meet the requirement. This is not meant to be retained in the final version of the plant specific submittal.

9. TSTF-8 change to the Bases has not been adopted since TSTF-8 has not been incorporated into the Specification.

10. The description of a modified performance discharge test has been moved to SR 3.8.4.9 Bases. This was done since SR 3.8.4.9 is the SR that requires the modified performance discharge test. Due to this move, the references to the service test have been replaced with the performance discharge test. In addition, the reason the Note of SR 3.8.4.8 is acceptable has been provided.

B 3.8 ELECTRICAL POWER SYSTEMS

B 3.8.5 DC Sources—Shutdown

BASES

BACKGROUND

A description of the DC sources is provided in the Bases for LCO 3.8.4, "DC Sources—Operating."

1

u

APPLICABLE SAFETY ANALYSES

The initial conditions of Design Basis Accident and transient analyses in the FSAR, Chapter [6] (Ref. 1) and Chapter [15] (Ref. 2), assume that Engineered Safety Feature systems are OPERABLE. The DC electrical power system provides normal and emergency DC electrical power for the diesel generators (DGs), emergency auxiliaries, and control and switching during all MODES of operation.

2

and during movement of irradiated fuel assemblies in the secondary containment

The OPERABILITY of the DC subsystems is consistent with the initial assumptions of the accident analyses and the requirements for the supported systems' OPERABILITY.

1

in the secondary containment

The OPERABILITY of the minimum DC electrical power sources during MODES 4 and 5 and during movement of irradiated fuel assemblies ensures that:

a. The facility can be maintained in the shutdown or refueling condition for extended periods;

b. Sufficient instrumentation and control capability is available for monitoring and maintaining the unit status; and

c. Adequate DC electrical power is provided to mitigate events postulated during shutdown, such as an inadvertent draindown of the vessel or a fuel handling accident.

The DC sources satisfy Criterion 3 of ~~the NRC Policy Statement~~.

10 CFR 50.36 (c)(2)(ii) 1

LCO

ONE 250 a 3

250 V

The DC electrical power subsystems—with: (1) each ~~station service~~ DC subsystem consisting of ~~two~~ ~~125~~ V batter~~ies in series~~, ~~two~~ battery charger~~s~~, and the corresponding control

DC y 1

ONE

(continued)

supplying power to the associated buses

the Division 1 and 2 125 VDC 1

BASES

3 each 3 b 4 8 1

LCO (continued)

; and c) opposite unit Division 2 125 VDC subsystem consisting of one battery, one charger, and the corresponding control equipment, buses, and interconnecting cabling supplying power to the associated opposite unit buses

equipment and interconnecting cabling; ~~and (2) each DG/DG~~ subsystem consisting of one battery bank, one battery charger, and the corresponding control equipment and interconnecting cabling are required to be OPERABLE to support required DC distribution subsystems required OPERABLE by LCO 3.8.10, "Distribution Systems—Shutdown." This requirement ensures the availability of sufficient DC electrical power sources to operate the unit in a safe manner and to mitigate the consequences of postulated events during shutdown (e.g., fuel handling accidents and inadvertent reactor vessel draindown). Insert LCO 1

APPLICABILITY

The DC electrical power sources required to be OPERABLE in MODES 4 and 5 and during movement of irradiated fuel assemblies in the secondary containment provide assurance that:

a. Required features to provide adequate coolant inventory makeup are available for the irradiated fuel assemblies in the core in case of an inadvertent draindown of the reactor vessel;

b. Required features needed to mitigate a fuel handling accident are available;

c. Required features necessary to mitigate the effects of events that can lead to core damage during shutdown are available; and

d. Instrumentation and control capability is available for monitoring and maintaining the unit in a cold shutdown condition or refueling condition.

The DC electrical power requirements for MODES 1, 2, and 3 are covered in LCO 3.8.4.

5 ACTIONS

Insert ACTIONS NOTE

A.1, A.2.1, A.2.2, A.2.3, and A.2.4 8 4

electrical power 3

If more than one DC distribution subsystem is required according to LCO 3.8.10, the DC subsystems remaining OPERABLE with one or more DC power sources inoperable may be

electrical power subsystems

(continued)

1 Insert LCO

The associated alternate 125 VDC electrical power subsystem may be used to satisfy the requirements of the Division 1 and 2 125 VDC subsystems as well as the opposite unit Division 2 125 VDC subsystem.

5 Insert ACTIONS NOTE

LCO 3.0.3 is not applicable while in MODE 4 or 5. However, since irradiated fuel assembly movement can occur in MODE 1, 2, or 3, the ACTIONS have been modified by a Note stating that LCO 3.0.3 is not applicable. If moving irradiated fuel assemblies while in MODE 4 or 5, LCO 3.0.3 would not specify any action. If moving irradiated fuel assemblies while in MODE 1, 2, or 3, the fuel movement is independent of reactor operations. Entering LCO 3.0.3 while in MODE 1, 2, or 3 would require the unit to be shutdown, but would not require immediate suspension of movement of irradiated fuel assemblies. The Note to the ACTIONS, "LCO 3.0.3 is not applicable," ensures that the actions for immediate suspension of irradiated fuel assembly movement are not postponed due to entry into LCO 3.0.3. 1

BASES

ACTIONS

A.1, A.2.1, A.2.2, A.2.3, and A.2.4 (continued)

capable of supporting sufficient required features to allow continuation of CORE ALTERATIONS, fuel movement, and operations with a potential for draining the reactor vessel. By allowance of the option to declare required features inoperable with associated DC power sources inoperable, appropriate restrictions are implemented in accordance with the affected system LCOs' ACTIONS. In many instances, this option may involve undesired administrative efforts. Therefore, the allowance for sufficiently conservative actions is made (i.e., to suspend CORE ALTERATIONS, movement of irradiated fuel assemblies, and any activities that could result in inadvertent draining of the reactor vessel).

electrical power subsystems

3

in the secondary containment

3

However,

Suspension of these activities shall not preclude completion of actions to establish a safe conservative condition. These actions minimize the probability of the occurrence of postulated events. It is further required to immediately initiate action to restore the required DC electrical power subsystems and to continue this action until restoration is accomplished in order to provide the necessary DC electrical power to the plant safety systems.

The Completion Time of immediately is consistent with the required times for actions requiring prompt attention. The restoration of the required DC electrical power subsystems should be completed as quickly as possible in order to minimize the time during which the plant safety systems may be without sufficient power.

SURVEILLANCE REQUIREMENTS

SR 3.8.5.1

6

to be applicable

SR 3.8.5.1 requires performance of all Surveillances required by SR 3.8.4.1 through SR 3.8.4.8. Therefore, see the corresponding Bases for LCO 3.8.4 for a discussion of each SR.

6

9

250 V

This SR is modified by a Note. The reason for the Note is to preclude requiring the OPERABLE DC sources from being discharged below their capability to provide the required power supply or otherwise rendered inoperable during the performance of SRs. It is the intent that these SRs must

(continued)

BASES

SURVEILLANCE REQUIREMENTS

SR 3.8.5.1 (continued)

still be capable of being met, but actual performance is not required.

REFERENCES

1 u

1. FSAR, Chapter [6].

2. FSAR, Chapter [15].

2

JUSTIFICATION FOR DEVIATIONS FROM NUREG-1433, REVISION 1
ITS BASES: 3.8.5 - DC SOURCES — SHUTDOWN

1. Changes have been made (additions, deletions, and/or changes to the NUREG) to reflect the plant specific nomenclature, number, reference, system description, analysis description, or licensing basis description.

2. The brackets have been removed and the proper plant specific information/value has been provided.

3. Editorial change made for enhanced clarity or to be consistent with similar statements in other places in the Bases.

4. The proper LCO number has been provided.

5. Changes have been made to reflect those changes made to the Specification.

6. Changes have been made to be consistent with the Specification.

B 3.8 ELECTRICAL POWER SYSTEMS

B 3.8.6 Battery Cell Parameters

BASES

BACKGROUND

This LCO delineates the limits on electrolyte temperature, level, float voltage, and specific gravity for the DC electrical power subsystems batteries. A discussion of these batteries and their OPERABILITY requirements is provided in the Bases for LCO 3.8.4, "DC Sources—Operating," and LCO 3.8.5, "DC Sources—Shutdown."

APPLICABLE SAFETY ANALYSES

U 1

The initial conditions of Design Basis Accident (DBA) and transient analyses in FSAR, Chapter [6] (Ref. 1) and Chapter [15] (Ref. 2), assume Engineered Safety Feature systems are OPERABLE. The DC electrical power subsystems provide normal and emergency DC electrical power for the diesel generators (DGs), emergency auxiliaries, and control and switching during all MODES of operation. 2

as discussed in the Bases for LCO 3.8.4 and LCO 3.8.5 3

The OPERABILITY of the DC subsystems is consistent with the initial assumptions of the accident analyses and is based upon meeting the design basis of the unit. ~~This includes maintaining at least one division of DC sources OPERABLE during accident conditions, in the event of:~~

~~a. An assumed loss of all offsite AC or all onsite AC power; and~~

~~b. A worst case single failure.~~

Since battery cell parameters support the operation of the DC electrical power subsystems, they satisfy Criterion 3 of ~~the NRC Policy Statement~~. 10 CFR 50.36 (c)(2)(ii) 1

LCO

Battery cell parameters must remain within acceptable limits to ensure availability of the required DC power to shut down the reactor and maintain it in a safe condition after an anticipated operational occurrence or a postulated DBA. Electrolyte limits are conservatively established, allowing continued DC electrical system function even with Category A and B limits not met.

(continued)

BASES (continued)

APPLICABILITY

associated

these cell parameters are

electrical power subsystem

4

The battery cell parameters are required solely for the support of the associated DC electrical power subsystem. Therefore, ~~battery electrolyte is~~ only required when the DC ~~power source~~ is required to be OPERABLE. Refer to the Applicability discussions in Bases for LCO 3.8.4 and LCO 3.8.5.

ACTIONS

4

Insert Actions

Table 3.8.6-1

5

A.1, A.2, and A.3

With parameters of one or more cells in one or more batteries not within limits (i.e., Category A limits not met or Category B limits not met, or Category A and B limits not met) but within the Category C limits specified in Table 3.8.6-1, the battery is degraded but there is still sufficient capacity to perform the intended function. Therefore, the affected battery is not required to be considered inoperable solely as a result of Category A or B limits not met, and continued operation is permitted for a limited period.

(s) 4

The pilot cell electrolyte level and float voltage are required to be verified to meet the Category C limits within 1 hour (Required Action A.1). This check provides a quick indication of the status of the remainder of the battery cells. One hour provides time to inspect the electrolyte level and to confirm the float voltage of the pilot cell. One hour is considered a reasonable amount of time to perform the required verification.

Verification that the Category C limits are met (Required Action A.2) provides assurance that during the time needed to restore the parameters to the Category A and B limits, the battery is still capable of performing its intended function. A period of 24 hours is allowed to complete the initial verification because specific gravity measurements must be obtained for each connected cell. Taking into consideration both the time required to perform the required verification and the assurance that the battery cell parameters are not severely degraded, this time is considered reasonable. The verification is repeated at 7 day intervals until the parameters are restored to Category A and B limits. This periodic verification is consistent with the normal Frequency of pilot cell Surveillances.

(continued)

$\boxed{4}$ Insert Actions

The ACTIONS Table is modified by a Note which indicates that separate Condition entry is allowed for each battery. This is acceptable, since the Required Actions for each Condition provide appropriate compensatory actions for each inoperable DC electrical power subsystem. Complying with the Required Actions for one inoperable DC electrical power subsystem may allow for continued operation, and subsequent inoperable DC electrical power subsystem(s) are governed by separate Condition entry and application of associated Required Actions.

BASES

ACTIONS

A.1, A.2, and A.3 (continued)

Continued operation is only permitted for 31 days before battery cell parameters must be restored to within Category A and B limits. Taking into consideration that, while battery capacity is degraded, sufficient capacity exists to perform the intended function and to allow time to fully restore the battery cell parameters to normal limits, this time is acceptable for operation prior to declaring the 4 associated DC batteries inoperable.

B.1

When any battery parameter is outside the Table 3.8.6-1 4 Category C limit for any connected cell, sufficient capacity to supply the maximum expected load requirement is not ensured and the corresponding DC electrical power subsystem must be declared inoperable. Additionally, other potentially extreme conditions, such as any ~~not completing the~~ Required Actions of and associated Condition A ~~within the required~~ not met Completion Time 4 or average electrolyte temperature of representative cells ~~falling~~ 5 ≤ 65 ~~below 60~~ °F, also are cause for immediately declaring the associated DC electrical power subsystem inoperable.

SURVEILLANCE REQUIREMENTS

SR 3.8.6.1

This SR verifies that Table 3.8.6-1 4 Category A battery cell parameters are consistent with IEEE-450 (Ref. 3), which recommends regular battery inspections (at least one per month) including voltage, specific gravity, and electrolyte ~~temperature~~ level 6 of pilot cells.

SR 3.8.6.2

The quarterly inspection of specific gravity ~~and~~ 5 voltage , and electrolyte level for each connected cell 4 is consistent with IEEE-450 (Ref. 3). In addition, within 5 7 days ~~24 hours~~ of a battery discharge < ~~[110]~~ 105 V for a 125 V battery and < 210 V for the 250 V battery, or a battery overcharge > [150] V for a 125 V battery and > 300 V for the 250 V battery, the battery must be demonstrated to meet 4 Table 3.8.6-1 Category B limits. Transients, such as motor starting transients, which may momentarily cause battery voltage to drop to ≤ ~~[110]~~ 105 or 210 V, as applicable V, do not constitute a battery discharge provided the battery terminal voltage and float current 2

(continued)

BASES

SURVEILLANCE REQUIREMENTS

SR 3.8.6.2 (continued)

return to pre-transient values. This inspection is also consistent with IEEE-450 (Ref. 3), which recommends special inspections following a severe discharge or overcharge, to ensure that no significant degradation of the battery occurs as a consequence of such discharge or overcharge.

The 7 day requirement is based on engineering judgement.

4

SR 3.8.6.3

This Surveillance verification that the average temperature of representative cells is within limits is consistent with a recommendation of IEEE-450 (Ref. 3) that states that the temperature of electrolytes in representative cells should be determined on a quarterly basis.

For this SR, a check of 10% of the connected cells is considered representative.

Lower than normal temperatures act to inhibit or reduce battery capacity. This SR ensures that the operating temperatures remain within an acceptable operating range. This limit is based on manufacturer's recommendations.

and the battery sizing calculations 1

Table 3.8.6-1

This ~~t~~Table delineates the limits on electrolyte level, float voltage, and specific gravity for three different categories. The meaning of each category is discussed below. 6

Category A defines the normal parameter limit for each designed pilot cell in each battery. The cells selected as pilot cells are those whose temperature, voltage, and electrolyte specific gravity approximate the state of charge of the entire battery.

The Category A limits specified for electrolyte level are based on manufacturer's recommendations and are consistent with the guidance in IEEE-450 (Ref. 3), with the extra ¼ inch allowance above the high water level indication for operating margin to account for temperature and charge effects. In addition to this allowance, footnote ~~b~~ (a) to Table 3.8.6-1 permits the electrolyte level to be temporarily above the specified maximum level during and following an equalizing charge, provided it is not overflowing. These limits ensure that the plates suffer no physical damage, and that adequate electron (i.e., for up to 3 days following the completion of an equalize charge) 4 5

(continued)

BASES

SURVEILLANCE REQUIREMENTS

Table 3.8.6-1 (continued)

transfer capability is maintained in the event of transient conditions. IEEE-450 (Ref. 3) recommends that electrolyte level readings should be made only after the battery has been at float charge for at least 72 hours.

The Category A limit specified for float voltage is ≥ 2.13 V per cell. This value is based on the recommendation of IEEE-450 (Ref. 3), which states that prolonged operation of cells below 2.13 V can reduce the life expectancy of cells. 6 The Category A limit specified for specific gravity for each pilot cell is ≥ [1.200] (0.015 below the manufacturer's fully charged nominal specific gravity or a battery charging current that had stabilized at a low value). This value is characteristic of a charged cell with adequate capacity. According to IEEE-450 (Ref. 3), the specific gravity readings are based on a temperature of 77°F (25°C). 2

The specific gravity readings are corrected for actual electrolyte temperature and level. For each 3°F (1.67°C) above 77°F (25°C), 1 point (0.001) is added to the reading; 1 point is subtracted for each 3°F below 77°F. The specific gravity of the electrolyte in a cell increases with a loss of water due to electrolysis or evaporation. Level correction will be in accordance with manufacturer's recommendations.

Category B defines the normal parameter limits for each connected cell. The term "connected cell" excludes any battery cell that may be jumpered out.

The Category B limits specified for electrolyte level and float voltage are the same as those specified for Category A and have been discussed above. The Category B limit specified for specific gravity for each connected cell is ≥ 1.195 (0.020 below the manufacturer's fully charged, nominal specific gravity) with the average of all connected cells [1.205] (0.010 below the manufacturer's fully charged, nominal specific gravity). These values are based on manufacturer's recommendations. The minimum specific gravity value required for each cell ensures that ~~the effects of a highly charged or newly installed cell do not mask overall degradation of the battery.~~ a cell with a marginal or unacceptable specific gravity is not masked by averaging with cells having higher specific gravities. 2 4

(continued)

BASES

SURVEILLANCE REQUIREMENTS

Table 3.8.6-1 (continued)

Category C defines the limits 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 C limits, the assurance of sufficient capacity described above no longer exists, and the battery must be declared inoperable.

The Category C limit specified for electrolyte level (above the top of the plates and not overflowing) ensures that the plates suffer no physical damage and maintain adequate electron transfer capability. The Category C ~~Allowable Value~~ 5 limit for voltage is based on IEEE-450 (Ref. 3), which states that a cell voltage of 2.07 V or below, under float conditions and not caused by elevated temperature of the cell, indicates internal cell problems and may require cell replacement.

The Category C limit on average specific gravity [≥ 1.195], 2 is based on manufacturer's recommendations (0.020 below the manufacturer's recommended fully charged, nominal specific gravity). In addition to that limit, it is required that the specific gravity for each connected cell must be no more 6 ~~less~~ than 0.020 below the average of all connected cells. This limit ensures that ~~the effect of a highly charged or new cell does not mask overall degradation of the battery.~~ 4 a cell with a marginal or unacceptable specific gravity is not masked by averaging with cells having higher specific gravities.

The footnotes to Table 3.8.6-1 that apply to specific gravity are applicable to Category A, B, and C specific gravity. Footnote (b) ~~of Table 3.8.6-1~~ 4 requires the above mentioned correction for electrolyte level and temperature~~, with the exception that level correction is not required when battery charging current, while on float charge, is < 1 amp for station service batteries and < 0.5 amp for DG batteries. This current provides, in general, an indication of overall battery condition~~ 5.

Because of specific gravity gradients that are produced during the recharging process, delays of several days may occur while waiting for the specific gravity to stabilize. A stabilized charg~~er~~ 6 ing current is an acceptable alternative to specific gravity measurement for determining the state of charge of the designated pilot cell. This phenomenon is discussed in IEEE-450 (Ref. 3). Footnote (c) ~~to Table 3.8.6-1~~ 4

(continued)

BASES

SURVEILLANCE REQUIREMENTS

Table 3.8.6-1 (continued)

allows the float charge current to be used as an alternate to specific gravity for up to 7 days following a battery recharge. Within [7] days, each connected cell's specific gravity must be measured to confirm the state of charge. Following a minor battery recharge (such as equalizing charge that does not follow a deep discharge) specific gravity gradients are not significant, and confirming measurements may be made in less than [7] days. 2

~~Reviewer's Note: The value of [2] amps used in footnote (b) and (c) is the nominal value for float current established by the battery vendor as representing a fully charged battery with an allowance for overall battery condition.~~ 7

REFERENCES 1 U

1. FSAR, Chapter [6]. 2
2. FSAR, Chapter [15].
3. IEEE Standard 450, ~~1987~~. 1995 1

JUSTIFICATION FOR DEVIATIONS FROM NUREG-1433, REVISION 1
ITS BASES: 3.8.6 - BATTERY CELL PARAMETERS

1. Changes have been made (additions, deletions, and/or changes to the NUREG) to reflect the plant specific nomenclature, number, reference, system description, analysis description, or licensing basis description.

2. The brackets have been removed and the proper plant specific information/value has been provided.

3. Battery Cell Parameters support the operation of the DC electrical power subsystems and the Battery Cell Parameter Specification is required to be applicable during the same MODES and conditions as in LCO 3.8.4, "DC Sources — Operating," and LCO 3.8.5, "DC Sources — Shutdown." The same safety analyses discussions as those discussed in the Bases for LCO 3.8.4 and LCO 3.8.5 are also applicable to the Battery Cell Parameter Specification. As a result, the Bases for the Battery Cell Parameter Specification in the Applicable Safety Analyses Section have been revised accordingly.

4. Editorial change made for enhanced clarity or to be consistent with similar statements in other places in the Bases. The change to the ACTIONS section (addition of Insert ACTIONS) is also consistent with TSTF-203.

5. Changes have been made to reflect those changes made to the Specification. The following requirements have been renumbered, where applicable, to reflect the changes.

6. Typographical/grammatical error corrected.

7. This Reviewer's Note has been deleted. This information is for the NRC reviewer to be keyed in to what is needed to meet the requirement. This is not meant to be retained in the final version of the plant specific submittal.

B 3.8 ELECTRICAL POWER SYSTEMS

B 3.8.7 Inverters—Operating

BASES

BACKGROUND

The inverters are the preferred source of power for the AC vital buses because of the stability and reliability they achieve. There is one inverter per AC vital bus, making a total of four inverters. The function of the inverter is to provide AC electrical power to the vital buses. The inverter can be powered from an internal AC source/rectifier or from the station battery. The station battery provides an uninterruptible power source for the instrumentation and controls for the Reactor Protection System (RPS) and the Emergency Core Cooling Systems (ECCS) initiation.

Specific details on inverters and their operating characteristics are found in FSAR, Chapter [8] (Ref. 1).

APPLICABLE SAFETY ANALYSES

The initial conditions of Design Basis Accident (DBA) and transient analyses in the FSAR, Chapter [6] (Ref. 2) and Chapter [15] (Ref. 3), assume Engineered Safety Feature systems are OPERABLE. The inverters are designed to provide the required capacity, capability, redundancy, and reliability to ensure the availability of necessary power to the RPS and ECCS instrumentation and controls so that the fuel, Reactor Coolant System, and containment design limits are not exceeded. These limits are discussed in more detail in the Bases for Section 3.2, Power Distribution Limits; Section 3.4, Reactor Coolant System (RCS); and Section 3.6, Containment Systems.

The OPERABILITY of the inverters is consistent with the initial assumptions of the accident analyses and is based on meeting the design basis of the unit. This includes maintaining electrical power sources OPERABLE during accident conditions in the event of:

a. An assumed loss of all offsite AC electrical power or all onsite AC electrical power; and

b. A worst case single failure.

(continued)

BASES

APPLICABLE SAFETY ANALYSES (continued)

The inverters are a part of the distribution system and, as such, satisfy Criterion 3 of the NRC Policy Statement.

LCO

The inverters ensure the availability of AC electrical power for the instrumentation for the systems required to shut down the reactor and maintain it in a safe condition after an anticipated operational occurrence (AOO) or a postulated DBA.

Maintaining the required inverters OPERABLE ensures that the redundancy incorporated into the design of the RPS and ECCS instrumentation and controls is maintained. The four battery powered inverters ensure an uninterruptible supply of AC electrical power to the AC vital buses even if the 4.16 kV safety buses are de-energized.

OPERABLE inverters require the associated vital bus to be powered by the inverter with output voltage and frequency within tolerances, and power input to the inverter from a [125 VDC] station battery. Alternatively, power supply may be from an internal AC source via rectifier as long as the station battery is available as the uninterruptible power supply.

This LCO is modified by a Note allowing [two] inverter[s] to be disconnected from their associated DC buses for ≤ 24 hours. This allowance is provided to perform an equalizing charge on one battery. If the inverters were not disconnected, the resulting voltage condition might damage the inverters energized from their associated DC bus. Disconnecting the inverters is allowed provided that the associated AC vital buses are energized from their [Class 1E constant voltage source transformer or inverter using an internal AC source] and that the AC vital buses for the other division(s) are energized from the associated inverters connected to their DC buses. These provisions minimize the loss of equipment that occurs in the event of a loss of offsite power. The 24 hour time period for the allowance minimizes the time during which a loss of offsite power could result in the loss of equipment energized from the affected AC vital bus while it takes into consideration the time required to perform an equalizing charge on the batteries.

(continued)

1

BASES

LCO (continued)

The intent of the Note is to limit the number of inverters that may be disconnected. Only those inverters associated with the single battery undergoing an equalizing charge may be disconnected. All other inverters must be aligned to their associated batteries, regardless of the number of inverters or plant design.

APPLICABILITY

The inverters are required to be OPERABLE in MODES 1, 2, and 3 to ensure that:

a. Acceptable fuel design limits and reactor coolant pressure boundary limits are not exceeded as a result of AOOs or abnormal transients; and

b. Adequate core cooling is provided, and containment OPERABILITY and other vital functions are maintained in the event of a postulated DBA.

Inverter requirement for MODES 4 and 5 are covered in the Bases for LCO 3.8.8, "Inverters—Shutdown."

ACTIONS

A.1

With a required inverter inoperable, its associated AC vital bus becomes inoperable until it is manually re-energized from its [Class 1E constant voltage source transformer or inverter using an internal AC source]. LCO 3.8.9 addresses this action; however, pursuant to LCO 3.0.6, these actions would not be entered even if the AC vital bus were de-energized. Therefore, the ACTIONS are modified by a Note to require the ACTIONS for LCO 3.8.9 be entered immediately. This ensures the vital bus is re-energized within 2 hours.

Required Action A.1 allows 24 hours to fix the inoperable inverter and return it to service. The 24 hour limit is based upon engineering judgment and takes into consideration the time required to repair an inverter and the additional risk to which the unit is exposed because of the inverter inoperability. This risk has to be balanced against the risk of an immediate shutdown, along with the potential challenges to safety systems that such a shutdown might entail. When the AC vital bus is powered from its constant

(continued)

BASES

ACTIONS

A.1 (continued)

voltage source, it is relying upon interruptible AC electrical power sources (offsite and onsite). Similarly, the uninterruptible inverter source to the AC vital buses is the preferred source for powering instrumentation trip setpoint devices.

B.1 and B.2

If the inoperable devices or components cannot be restored to OPERABLE status within the associated Completion Time, the unit must be brought to a MODE in which the LCO does not apply. To achieve this status, the plant must be brought to at least MODE 3 within 12 hours and to MODE 4 within 36 hours. The allowed Completion Times are reasonable, based on operating experience, to reach the required plant conditions from full power conditions in an orderly manner and without challenging unit systems.

SURVEILLANCE REQUIREMENTS

SR 3.8.7.1

This Surveillance verifies that the inverters are functioning properly with all required circuit breakers closed and AC vital buses energized from the inverter. The verification of proper voltage and frequency output ensures that the required power is readily available for instrumentation connected to the AC vital buses. The 7 day Frequency takes into account the redundant capability of the inverters and other indications available in the control room that alert the operator to inverter malfunctions.

REFERENCES

1. FSAR, Chapter [8].

2. FSAR, Chapter [6].

3. FSAR, Chapter [15].

1. The Bases section has been deleted because the associated Specification has been deleted.

B 3.8 ELECTRICAL POWER SYSTEMS

B 3.8.8 Inverters—Shutdown

BASES

BACKGROUND

A description of the inverters is provided in the Bases for LCO 3.8.7, "Inverters—Operating."

APPLICABLE SAFETY ANALYSES

The initial conditions of Design Basis Accident (DBA) and transient analyses in the FSAR, Chapter [6] (Ref. 1) and Chapter [15] (Ref. 2), assume Engineered Safety Feature systems are OPERABLE. The DC to AC inverters are designed to provide the required capacity, capability, redundancy, and reliability to ensure the availability of necessary power to the Reactor Protection System and Emergency Core Cooling Systems instrumentation and controls so that the fuel, Reactor Coolant System, and containment design limits are not exceeded.

The OPERABILITY of the inverters is consistent with the initial assumptions of the accident analyses and the requirements for the supported systems' OPERABILITY.

The OPERABILITY of the minimum inverters to each AC vital bus during MODES 4 and 5 ensures that:

a. The facility can be maintained in the shutdown or refueling condition for extended periods;

b. Sufficient instrumentation and control capability are available for monitoring and maintaining the unit status; and

c. Adequate power is available to mitigate events postulated during shutdown, such as an inadvertent draindown of the vessel or a fuel handling accident.

The inverters were previously identified as part of the Distribution System and, as such, satisfy Criterion 3 of the NRC Policy Statement.

(continued)

BASES (continued)

LCO

The inverters ensure the availability of electrical power for the instrumentation for systems required to shut down the reactor and maintain it in a safe condition after an anticipated operational occurrence or postulated DBA. The battery powered inverters provide uninterruptible supply of AC electrical power to the AC vital buses even if the 4.16 kV safety buses are de-energized. OPERABLE inverters require the AC vital bus be powered by the inverter through inverted DC voltage. This ensures the availability of sufficient inverter power sources to operate the plant in a safe manner and to mitigate the consequences of postulated events during shutdown (e.g., fuel handling accidents and inadvertent reactor vessel draindown).

APPLICABILITY

The inverters required to be OPERABLE in MODES 4 and 5 and also any time during movement of irradiated fuel assemblies in the [primary or secondary] containment provide assurance that:

a. 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;

b. Systems needed to mitigate a fuel handling accident are available;

c. Systems necessary to mitigate the effects of events that can lead to core damage during shutdown are available; and

d. Instrumentation and control capability is available for monitoring and maintaining the unit in a cold shutdown condition or refueling condition.

Inverter requirements for MODES 1, 2, and 3 are covered in LCO 3.8.7.

ACTIONS

A.1, A.2.1, A.2.2, A.2.3, and A.2.4

If two divisions are required by LCO 3.8.10, "Distribution Systems—Shutdown," the remaining OPERABLE inverters may be

(continued)

BASES

ACTIONS

A.1, A.2.1, A.2.2, A.2.3, and A.2.4 (continued)

capable of supporting sufficient required feature(s) to allow continuation of CORE ALTERATIONS, fuel movement, and operations with a potential for draining the reactor vessel. By the allowance of the option to declare required feature(s) inoperable with the associated inverter(s) inoperable, appropriate restrictions are implemented in accordance with the affected required feature(s) of the LCOs' ACTIONS. In many instances, this option may involve undesired administrative efforts. Therefore, the allowance for sufficiently conservative actions is made (i.e., to suspend CORE ALTERATIONS, movement of irradiated fuel assemblies in the [primary or secondary] containment, and any activities that could result in inadvertent draining of the reactor vessel).

Suspension of these activities shall not preclude completion of actions to establish a safe conservative condition. These actions minimize the probability of the occurrence of postulated events. It is further required to immediately initiate action to restore the required inverters and to continue this action until restoration is accomplished in order to provide the necessary inverter power to the plant safety systems.

The Completion Time of immediately is consistent with the required times for actions requiring prompt attention. The restoration of the required inverters should be completed as quickly as possible in order to minimize the time the plant safety systems may be without power or powered from a constant voltage source transformer.

SURVEILLANCE REQUIREMENTS

SR 3.8.8.1

This Surveillance verifies that the inverters are functioning properly with all required circuit breakers closed and AC vital buses energized from the inverter. The verification of proper voltage and frequency output ensures that the required power is readily available for the instrumentation connected to the AC vital buses. The 7 day Frequency takes into account the redundant capability of the inverters and other indications available in the control room that alert the operator to inverter malfunctions.

(continued)

BASES (continued)

REFERENCES

1. FSAR, Chapter [6].
2. FSAR, Chapter [15].

JUSTIFICATION FOR DEVIATIONS FROM NUREG-1433, REVISION 1
ISTS BASES: 3.8.8 - INVERTERS — SHUTDOWN

1. The Bases section has been deleted because the associated Specification has been deleted.

All changes are 2 unless otherwise identified.

B 3.8 ELECTRICAL POWER SYSTEMS

B 3.8.9 Distribution Systems—Operating

1 7

BASES

(Divisions 1 and 2)

BACKGROUND

The onsite Class 1E AC ~~and DC~~ electrical power distribution system, for the most part, is divided into redundant and independent ~~AC, DC, and~~ AC ~~vital bus~~ electrical power distribution subsystems.

for each unit

Each ~~The primary~~ AC distribution subsystem consists of two 4160 V ~~three 4.16 kV~~ Essential Service System (ESS) ~~Engineered Safety Feature (ESF)~~ buses ~~each~~ having an offsite source of power as well as a n ~~dedicated~~ onsite diesel generator (DG) source. ~~Each 4.16 kV ESF bus is normally connected to a normal source startup auxiliary transformer (SAT) (2D).~~ Insert BKGD-1 During a loss of the normal offsite power source to the 4160 V ESS ~~4.16 kV ESF~~ buses, the alternate supply breaker ~~from SAT/2C~~ attempts to close. If all offsite sources are unavailable, the onsite emergency unit DGs supply power to the 4160 V ESS ~~4.16 kV ESF~~ buses.

Each AC ~~The secondary plant~~ distribution subsystem also includes 480 ~~600~~ VAC ESS ~~emergency~~ buses ~~2C and 2D and~~ associated motor control ~~load~~ centers, ~~and~~ transformers, and distribution panels.

~~The 120 VAC vital buses 2YV1, 2YV2, 2YV3, and 2YV4 are arranged in four load groups and are normally powered from DC. The alternate power supply for the vital buses is a Class 1E constant voltage source transformer powered from the same division as the associated inverter, and its use is governed by LCO 3.8.7, "Inverters—Operating." Each constant voltage source transformer is powered from AC.~~ 28 and 29 (Unit 2) and buses 38 and 39 (Unit 3), Insert BKGD-2

There is one ~~are two independent~~ ~~125~~/250 VDC station service electrical power distribution subsystem (i.e., the 250 VDC system consists of one subsystem) and two ~~three~~ independent 125 VDC ~~DG~~ electrical power distribution subsystems that support the necessary power for ESF functions. Insert BKGD-3

The list of required ~~all~~ distribution buses is presented in Table B 3.8.9-1.

1 7

APPLICABLE SAFETY ANALYSES

The initial conditions of Design Basis Accident (DBA) and transient analyses in the UFSAR, Chapter ~~6~~ (Ref. 1) and Chapter ~~15~~ (Ref. 2), assume ESF systems are OPERABLE. The 3

(continued)

$\boxed{2}$ Insert BKGD-1

During normal operation, each subsystem's ESS buses are connected such that power is supplied to the Division 1 4160 V loads from the unit's main generator through the unit auxiliary transformer (UAT) and from the offsite circuit (via the 138 kV switchyard for Unit 2 and the 345 kV switchyard for Unit 3) through the reserve auxiliary transformer (RAT) to supply the Division 2 4160 V loads. The RAT is the primary (normal) offsite power source to the ESS buses of a given unit. The RAT of the opposite unit provides the alternate qualified offsite source through bus ties provided between the corresponding ESS buses of the two units.

$\boxed{2}$ Insert BKGD-2

The 120 VAC instrument bus is normally powered from 480 VAC bus 28-2 for Unit 2 and 480 VAC bus 38-2 for Unit 3. The alternate power supply for the Unit 2 120 VAC instrument bus is supplied from 480 VAC MCC 25-2 and the Unit 3 120 VAC instrument bus is supplied from 480 VAC MCC 35-2. On a loss of normal power to the instrument bus an automatic bus transfer (ABT) switches to the alternate supply and automatically switches back to the normal supply when the normal supply is restored.

The 120 VAC essential service bus is normally supplied by a static uninterruptible power supply (UPS). Power to the UPS is supplied in order of preference; for Unit 2 by 480 VAC bus 29, 250 VDC bus 2, or 480 VAC bus 25; and for Unit 3 by 480 VAC bus 39, 250 VDC bus 3, or 480 VAC bus 36. An alternate supply via an ABT for the Unit 2 120 VAC essential service bus is supplied from 480 VAC bus 28-2 and the Unit 3 120 VAC essential service bus is supplied from 480 VAC bus 38-2.

$\boxed{2}$ Insert BKGD-3

The 250 VDC electrical power distribution subsystem provides motive power to the larger Division 2 DC loads such as DC motor-driven pumps and valves. The power source for the reactor building 250 VDC buses (2A/2B and 3A/3B) is the opposite unit's battery. Division 1 and 2 125 VDC electrical power distribution subsystems provide control power to selected safety related equipment as well as circuit breaker control power for 4160 V, 480 V, control relays, and annunciators. The Division 2 125 VDC subsystem for each unit is provided power by the opposite unit's battery and provides control power to a shared standby gas treatment subsystem.

BASES

APPLICABLE SAFETY ANALYSES (continued)

AC and DC electrical power distribution systems 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. These limits are discussed in more detail in the Bases for Section 3.2, Power Distribution Limits; Section 3.4, ~~Reactor Coolant System (RCS)~~ *Emergency Core Cooling Systems (ECCS) and Isolation Condenser (IC) System*; and Section 3.6, Containment Systems. 4 5 7

The OPERABILITY of the AC, ~~DC, and AC vital bus~~ electrical power distribution subsystems is consistent with the initial assumptions of the accident analyses and is based upon meeting the design basis of the unit. This includes maintaining distribution systems OPERABLE during accident conditions in the event of: 2

a. An assumed loss of all offsite power or all onsite AC electrical power; and

b. A worst case single failure.

The AC and DC electrical power distribution system satisfies Criterion 3 of ~~the NRC Policy Statement.~~ *10 CFR 50.36(c)(2)(ii).* 2

LCO

The required electrical power distribution subsystems listed in Table B 3.8.7-1 ensure the availability of AC, ~~DC, and AC vital bus~~ electrical power for the systems required to shut down the reactor and maintain it in a safe condition after an anticipated operational occurrence (AOO) or a postulated DBA. The AC, ~~DC, and AC vital bus~~ electrical power distribution subsystems are required to be OPERABLE. 1 7 1 3

As noted in Table B 3.8.7-1 (Footnote a), each division of the AC and DC electrical power distribution systems is a subsystem. 8

Maintaining the ~~[Division 1 and 2]~~ AC, ~~DC, and AC vital bus~~ electrical power distribution subsystems OPERABLE*, as well as the portions of the opposite unit's Division 2 AC and DC electrical power distribution subsustem necessary to support equipment required to be OPERABLE by LCO 3.6.4.3, "Standby Gas Treatment (SGT) System," LCO 3.7.4, "Control Room Emergency Ventilation (CREV) System" (Unit 3 only), LCO 3.7.5, "Control Room Emergency Ventilation Air Conditioning (AC) System" (Unit 3 only), and LCO 3.8.1, "AC Sources - Operating,"* ensures that the redundancy incorporated into the design of ESF is not defeated. Therefore, a single failure within any system or within the electrical power distribution subsystems will not prevent safe shutdown of the reactor. 1 1

The AC electrical power distribution subsystems require the associated buses and electrical circuits to be energized to their proper voltages. OPERABLE DC electrical power distribution subsystems require the associated buses to be energized to their proper voltage from either the associated

(continued)

BASES

LCO (continued)

battery or charger. ~~OPERABLE vital bus electrical power distribution subsystems require the associated buses to be energized to their proper voltage from the associated [inverter via inverted DC voltage, inverter using interval AC source, or Class 1E constant voltage transformer].~~ 2

2 9 Insert B3.8.7 LCO

In addition, tie breakers between redundant safety related AC, DC, and AC/vital bus power distribution subsystems, if they exist, must be open. This prevents any electrical malfunction in any power distribution subsystem from propagating to the redundant subsystem, which could cause the failure of a redundant subsystem and a loss of essential safety function(s). If any tie breakers are closed, the affected redundant electrical power distribution subsystems that are not being powered from their normal source (i.e., they are being powered from their redundant electrical power distribution subsystem) are considered inoperable. This applies to the onsite, safety related, redundant electrical power distribution subsystems. It does not, however, preclude redundant Class 1E 4/16 kV ESF 4160 V ESS buses from being powered from the same offsite circuit. 1 7

APPLICABILITY

The electrical power distribution subsystems are required to be OPERABLE in MODES 1, 2, and 3 to ensure that:

a. Acceptable fuel design limits and reactor coolant pressure boundary limits are not exceeded as a result of AOOs or abnormal transients; and

b. Adequate core cooling is provided, and containment OPERABILITY and other vital functions are maintained in the event of a postulated DBA.

5 Electrical power distribution subsystem requirements for MODES 4 and 5 and other conditions in which AC and DC electrical power distribution subsystems are required are covered in the Bases for LCO 3.8.10, "Distribution Systems—Shutdown." 8 6

ACTIONS

A.1

With one or more required AC buses, load centers, motor control centers, or distribution panels in one division inoperable and a loss of function has not yet occurred, the remaining AC electrical power distribution subsystems are capable of supporting the minimum safety functions necessary to shut down the reactor and maintain it 1

(continued)

2 Insert B 3.8.7 LCO

Based on the number of safety significant electrical loads associated with each bus listed in Table B 3.8.7-1, if one or more of the buses becomes inoperable, entry into the appropriate ACTIONS of LCO 3.8.7 is required. Some buses, such as distribution panels, which help comprise the AC and DC distribution systems are not listed in Table B 3.8.7-1. The loss of electrical loads associated with these buses may not result in a complete loss of a redundant safety function necessary to shut down the reactor and maintain it in a safe condition. Therefore, should one or more of these buses become inoperable due to a failure not affecting the OPERABILITY of a bus listed in Table B 3.8.7-1 (e.g., a breaker supplying a single distribution panel fails open), the individual loads on the bus would be considered inoperable, and the appropriate Conditions and Required Actions of the LCOs governing the individual loads would be entered. However, if one or more of these buses is inoperable due to a failure also affecting the OPERABILITY of a bus listed in Table B 3.8.7-1 (e.g., loss of 4160 V ESS bus, which results in de-energization of all buses powered from the 4160 V ESS bus), then although the individual loads are still considered inoperable, the Conditions and Required Actions of the LCO for the individual loads are not required to be entered, since LCO 3.0.6 allows this exception (i.e., the loads are inoperable due to the inoperability of a support system governed by a Technical Specification; the 4160 V ESS bus).

BASES

ACTIONS

A.1 (continued)

in a safe shutdown condition, assuming no single failure. The overall reliability is reduced, however, because a single failure in the remaining (electrical) [3] power distribution subsystems could result in the minimum required ESF functions not being supported. Therefore, the required AC buses, ~~load centers,~~ [1] motor control centers, and distribution panels must be restored to OPERABLE status within 8 hours.

The Condition A worst scenario is one division without AC power (i.e., no offsite power to the division and the associated DG inoperable). In this ~~Condition~~ (Situation) [8], the unit is more vulnerable to a complete loss of AC power. It is, therefore, imperative that the unit operators' attention be focused on minimizing the potential for loss of power to the remaining division by stabilizing the unit, and ~~on~~ restoring power to the affected division. The 8 hour time limit before requiring a unit shutdown in this Condition is acceptable because ~~:~~ (of) [7]

a. The~~re is a~~ potential for decreased safety if the unit operators' attention is diverted from the evaluations and actions necessary to restore power to the affected division to the actions associated with taking the unit to shutdown within this time limit.

b. The (low) [8] potential for an event in conjunction with a single failure of a redundant component in the division with AC power. (The redundant component is verified OPERABLE in accordance with Specification 5.5.~~12~~ (11) [6], "Safety Function Determination Program (SFDP).")

The second Completion Time for Required Action A.1 establishes a limit on the maximum time allowed for any combination of required distribution subsystems to be inoperable during any single contiguous occurrence of failing to meet ~~the~~ LCO (3.8.7.a or b) [1]. If Condition A is entered while, for instance, a DC ~~bus~~ (electrical power distribution subsystem) [9] is inoperable and subsequently returned OPERABLE, ~~this~~ LCO (3.8.7.a or b) [1] may already have been not met for up to 2 hours. This situation could lead to a total duration of 10 hours, since initial failure of ~~the~~ LCO (3.8.7.a or b) [1], to restore the AC (electrical power) distribution (subsystem) [9] ~~system~~. At this time a DC ~~circuit~~ (electrical power) [9] could again become (sub) inoperable, and (the) [7] AC (electrical power) distribution (subsystem) [9]

(continued)

All changes are [3] unless otherwise identified

BASES

ACTIONS

A.1 (continued)

could be restored OPERABLE. This could continue indefinitely.

This Completion Time allows for an exception to the normal "time zero" for beginning the allowed outage time "clock." This results in establishing the "time zero" at the time ~~this~~ 3.8.7.a or b LCO was initially not met, instead of at the time Condition A was entered. The 16 hour Completion Time is an acceptable limitation on this potential to fail to meet ~~the~~ LCO (i.e., a standby gas treatment subsystem) indefinitely. [1]

electrical power distribution systems

B.1

With ~~one AC vital~~ the essential service 120 VAC bus inoperable, the ~~remaining~~ opposite unit's OPERABLE ~~AC vital buses~~ are capable of supporting the minimum safety functions necessary to shut down the unit and maintain it in the safe shutdown condition. Overall reliability is reduced, however, since an additional single failure could result in the minimum required ESF functions not being supported. Therefore, the ~~required AC vital~~ bus must be restored to OPERABLE status within ② hours by powering the bus from the associated ~~inverter via inverted DC, inverter using internal AC source, or Class 1E constant voltage transformer~~ uninterruptible power supply (UPS) / rectifier. ⑧

Condition B represents ~~one AC vital~~ the essential service 120 VAC bus without power; potentially both the DC source and the associated AC source are nonfunctioning. In this situation ~~the plant is significantly more vulnerable to a complete loss of all noninterruptible power.~~ ~~It is, therefore,~~ imperative that the operator's attention focus on stabilizing the plant, ~~minimizing the potential for loss of power to the remaining vital buses,~~ and restoring power to the ~~affected AC vital~~ essential service bus~~es~~. ⑧

This ② hour limit is more conservative than Completion Times allow for the ~~majority of~~ components that are without ~~adequate vital AC~~ supporting ESF functions power. Taking exception to LCO 3.0.2 for components without ~~adequate vital AC~~ essential service 120 VAC power, that would have Required Action Completion Times shorter than ② hours if declared inoperable, is acceptable because of: ⑧ [1]

(continued)

All changes are [1] unless otherwise identified

BASES

ACTIONS

B.1 (continued)

a. The potential for decreased safety when requiring a change in plant conditions (i.e., requiring a shutdown) while not allowing stable operations to continue;

b. The potential for decreased safety when requiring entry into numerous applicable Conditions and Required Actions for components without adequate vital AC essential service 120 VAC power, while not providing sufficient time for the operators to perform the necessary evaluations and actions to restore power to the affected division essential service bus; and

c. The potential for an event in conjunction with a single failure of a redundant component.

[3] The 2 8 hour Completion Time takes into account the importance to safety of restoring the AC/vital essential service 120 VAC bus to OPERABLE status, the redundant capability afforded by the other opposite unit's OPERABLE vital essential service buses, and the low probability of a DBA occurring during this period. [3]

16 The second Completion Time for Required Action B.1 establishes a limit on the maximum time allowed for any combination of required distribution subsystems to be inoperable during any single contiguous occurrence of failing to meet the LCO 3.8.7.a or b. If Condition B is entered while, for instance, an AC bus is inoperable and subsequently returned OPERABLE, the LCO may already have been not met for up to 8 hours. This situation could lead to a total duration of 10 hours, since initial failure of the LCO, to restore the vital essential service 120 VAC bus distribution system. At this time an AC division electrical power distribution subsystem could again become inoperable, and vital bus distribution could be restored OPERABLE. This could continue indefinitely.

Sub This Completion Time allows for an exception to the normal "time zero" for beginning the allowed outage time "clock." This allowance results in establishing the "time zero" at the time that the LCO was initially not met, instead of at the time that Condition B was entered. The 16 hour Completion Time is an acceptable limitation on this potential to fail to meet the LCO 3.8.7.a or b indefinitely.

Insert B3.8.7 ACTION C

(continued)

1 Insert B 3.8.7 ACTION C

C.1

With the instrument 120 VAC bus inoperable, the unit will still remain capable of supporting the minimum safety functions necessary to shut down the unit and maintain it in the safe shutdown condition. Overall reliability is reduced, however, since an additional single failure could result in the minimum required ESF functions not being supported. Therefore, the instrument 120 VAC bus must be restored to OPERABLE status within 8 hours by powering the bus from the associated automatic bus transfer (ABT) normal Class 1E power source.

Condition C represents the instrument 120 VAC bus without power; potentially both the associated Class 1E AC source and the non-Class 1E source are nonfunctioning. In this situation it is imperative that the operator's attention focus on stabilizing the plant and restoring power to the instrument bus.

This 8 hour limit is equivalent to or more conservative than the Completion Times allowed for the majority of the components that are without instrument 120 VAC power. Taking exception to LCO 3.0.2 for components without instrument 120 VAC power, that would have Required Action Completion Times shorter than 8 hours if declared inoperable, is acceptable because of:

a. The potential for decreased safety when requiring a change in plant conditions (i.e., requiring a shutdown) while not allowing stable operations to continue;

b. The potential for decreased safety when requiring entry into numerous applicable Conditions and Required Actions for components without instrument 120 VAC power, while not providing sufficient time for the operators to perform the necessary evaluations and actions to restore power to the instrument bus; and

c. The potential for an event in conjunction with a single failure of a redundant component.

The 8 hour Completion Time takes into account the importance to safety of restoring the instrument 120 VAC bus to OPERABLE status, the existing capability to support the minimum ESF functions, and the low probability of a DBA occurring during this period.

1 Insert B 3.8.7 ACTION C (continued)

The second Completion Time for Required Action C.1 establishes a limit on the maximum time allowed for any combination of required distribution subsystems to be inoperable during any single contiguous occurrence of failing to meet LCO 3.8.7.a or b. If Condition C is entered while, for instance, an AC electrical power distribution subsystem is inoperable and subsequently returned OPERABLE, LCO 3.8.7.a or b may already have been not met for up to 8 hours. This situation could lead to a total duration of 16 hours, since initial failure of LCO 3.8.7.a or b to restore the instrument 120 VAC bus distribution subsystem. At this time an AC electrical power distribution subsystem could again become inoperable, and instrument 120 VAC bus distribution could be restored OPERABLE. This could continue indefinitely.

This Completion Time allows for an exception to the normal "time zero" for beginning the allowed outage time "clock." This allowance results in establishing the "time zero" at the time that LCO 3.8.7.a or b was initially not met, instead of at the time that Condition C was entered. The 16 hour Completion Time is an acceptable limitation on this potential to fail to meet LCO 3.8.7.a or b indefinitely.

BASES

1 ACTIONS (continued) D

C.1

or more es and a loss of safety function has not yet occurred 1

With one station service DC bus inoperable, the remaining DC (may be the opposite unit's subsystem for a loss of the 250 VDC turbine building bus) electrical power distribution subsystem is capable of supporting the minimum safety functions necessary to shut down the reactor and maintain it in a safe shutdown condition, assuming no single failure. The overall reliability is reduced, however, because a single failure in the remaining DC electrical power distribution subsystem could result in the minimum required ESF functions not being supported. Therefore, the required DC buses must be restored to OPERABLE status within 2 hours by powering the bus from the associated battery or charger. 9 electrical power distribution subsystem(s)

1 D worst scenario is 8 Subsystem

Condition C represents one division without adequate DC power, potentially with both the battery significantly degraded and the associated charger nonfunctioning. In this situation the plant is significantly more vulnerable to a complete loss of all DC power. It is, therefore, imperative that the operator's attention focus on stabilizing the plant, minimizing the potential for loss of power to the remaining divisions, and restoring power to the affected division.

8 Subsystem

This 2 hour limit is more conservative than Completion Times allowed for the majority of components that would be without power. Taking exception to LCO 3.0.2 for components without adequate DC power, which would have Required Action Completion Times shorter than 2 hours, is acceptable because of:

a. The potential for decreased safety when requiring a change in plant conditions (i.e., requiring a shutdown) while not allowing stable operations to continue;

b. The potential for decreased safety when requiring entry into numerous applicable Conditions and Required Actions for components without DC power, while not providing sufficient time for the operators to perform the necessary evaluations and actions for restoring power to the affected division;

c. The potential for an event in conjunction with a single failure of a redundant component.

(continued)

BASES

1 ACTIONS D C.1 (continued)

The 2 hour Completion Time for DC buses electrical power distribution subsystems 9 is consistent with Regulatory Guide 1.93 (Ref. 3).

The second Completion Time for Required Action C.1 D 1 establishes a limit on the maximum time allowed for any combination of required distribution subsystems to be inoperable during any single contiguous occurrence of failing to meet the LCO 3.8.7.a or b. If Condition C D is entered while, for instance, an AC bus electrical power distribution subsystem is inoperable and subsequently restored OPERABLE, the LCO 3.8.7.a or b may already have been not met for up to 8 hours. This situation could lead to a total duration of 10 hours, since initial failure of the LCO 3.8.7.a or b to restore the DC electrical power 9 distribution system. At this time, an AC division could again become inoperable, and DC electrical power distribution could be restored OPERABLE. This could continue indefinitely. Sub

This Completion Time allows for an exception to the normal "time zero" for beginning the allowed outage time "clock." This allowance results in establishing the "time zero" at the time the LCO 3.8.7.a or b was initially not met, instead of at the time Condition C D 1 was entered. The 16 hour Completion Time is an acceptable limitation on this potential of failing to meet the LCO indefinitely.

1 Insert B 3.8.7 ACTION E

F D.1 and D.2

If the inoperable distribution subsystem cannot be restored to OPERABLE status within the associated Completion Time, the unit must be brought to a MODE in which the LCO does not apply. To achieve this status, the plant must be brought to at least MODE 3 within 12 hours and to MODE 4 within 36 hours. The allowed Completion Times are reasonable, based on operating experience, to reach the required plant conditions from full power conditions in an orderly manner and without challenging plant systems.

1 ~~E.1~~

~~With one or more DG DC buses inoperable, the associated DG(s) may be incapable of performing their intended functions. In this situation the DG(s) must be immediately~~

(continued)

[1] Insert B 3.8.7 ACTION E

E.1

With the required opposite unit Division 2 AC and DC electrical power distribution subsystem inoperable, the redundant required features of the standby gas treatment (SGT) subsystem may not function if a design basis event were to occur. In addition, Unit 2 and Unit 3 share the single train Control Room Emergency Ventilation (CREV) and the associated Air Conditioning (AC) System. Since these systems are powered only from Unit 2, an inoperable Unit 2 Division 2 AC electrical power distribution subsystem could result in a loss of the CREV System and Control Room Emergency Ventilation AC System functions (for both units).

With a standby gas treatment (SGT) subsystem inoperable, LCO 3.6.4.3 requires restoration of the inoperable SGT subsystem to OPERABLE status in 7 days. Similarly, with the CREV System inoperable, LCO 3.7.4 requires restoration of the inoperable CREV System to OPERABLE status within 7 days. With the Control Room Emergency Ventilation AC System inoperable, LCO 3.7.5 requires restoration of the inoperable Control Room Emergency Ventilation AC System to OPERABLE status in 30 days. Therefore, a 7 day Completion Time is provided to restore the required opposite unit Division 2 AC and DC electrical power subsystem to OPERABLE status. The 7 day Completion Time is based on consideration of such factors as the availability of the OPERABLE redundant system(s) and the low probability of a DBA occurring during this time period.

BASES

ACTIONS

1

E.1 (continued)

~~declared inoperable. This action also requires entry into applicable Conditions and Required Actions of LCO 3.8.1, "AC Sources—Operating."~~

G

F.1

Condition F corresponds to a level of degradation in the electrical distribution system that causes a required safety function to be lost. When more than one AC or DC electrical power distribution subsystem is lost, and this results in the loss of a required function, the plant is in a condition outside the accident analysis. Therefore, no additional time is justified for continued operation. LCO 3.0.3 must be entered immediately to commence a controlled shutdown.

two

or

2 (single division systems are not included)

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SURVEILLANCE REQUIREMENTS

SR 3.8.9.1

7

This Surveillance verifies that the AC and DC electrical power distribution systems are functioning properly, with the correct circuit breaker alignment. The correct breaker alignment ensures the appropriate separation and independence of the electrical buses are maintained, and the appropriate voltage is available to each required bus. The verification of proper voltage availability on the buses ensures that the required voltage is readily available for motive as well as control functions for critical system loads connected to these buses. The 7 day Frequency takes into account the redundant capability of the AC, DC, and AC vital bus electrical power distribution subsystems, and other indications available in the control room that alert the operator to subsystem malfunctions.

8 and the essential service and instrument 120 VAC buses

sub

divisions 1

1

redundant power supplies available to the essential service and instrument 120 VAC buses,

bus and

u

REFERENCES

1. FSAR, Chapter [6].

2. FSAR, Chapter [15].

3. Regulatory Guide 1.93, December 1974.

3

7

Table B 3.8.9-1 (page 1 of 1)
AC and DC Electrical Power Distribution Systems

TYPE	VOLTAGE	[DIVISION 1]*	[DIVISION 2]*
AC safety buses	[4160 V]	[ESF Bus] [NB01]	[ESF Bus] [NB02]
	[480 V]	Load Centers [NG01, NG03]	Load Centers [NG02, NG04]
	[480 V]	Motor Control Centers [NG01A, NG01I, NG01B, NG03C, NG03I, NG03D]	Motor Control Centers [NG02A, NG02I, NG02B, NG04C, NG04I, NG04D]
	[120 V]	Distribution Panels [NP01, NP03]	Distribution Panels [NP02, NP04]
DC buses	[125 V]	Bus [NK01] Bus [NK03] Distribution Panels [NK41, NK43, NK51]	Bus [NK02] Bus [NK04] Distribution Panels [NK42, NK44, NK52]
AC vital buses	[120 V]	Bus [NN01] Bus [NN03]	Bus [NN02] Bus [NN04]

* Each [division] of the AC and DC electrical power distribution systems is a subsystem.

Insert B3.8-88 9

9 Insert B 3.8-88

TYPE	VOLTAGE	DIVISION 1[a]	DIVISION 2[a][b]
AC safety bus	4160 V (Unit 2)	ESS buses 23, 23-1	ESS buses 24, 24-1
	4160 V (Unit 3)	ESS buses 33, 33-1	ESS bus 34, 34-1
	480 V (Unit 2)	ESS bus 28	ESS bus 29
	480 V (Unit 3)	ESS bus 38	ESS bus 39
	120 V (Units 2 and 3)	Unit instrument bus	Unit essential service bus
250 VDC buses	250 V (Unit 2)	NA	TB MCC 2, RB MCC 2A, RB MCC 2B
	250 V (Unit 3)	NA	TB MCC 3, RB MCC 3A, RB MCC 3B
125 VDC buses	125 V (Unit 2)	TB main buses 2, 2A-1; RB distribution panel 2	TB reserve buses 2, 2B, 2B-1
	125 V (Unit 3)	TB main buses 3, 3A, 3A-1; RB distribution panel 3	TB reserve buses 3B, 3B-1

(a) Each division of the AC and DC electrical power distribution systems is a subsystem. The 250 VDC buses constitute a single subsystem (Division 2).

(b) OPERABILITY requirements of the opposite unit's Division 2 AC and DC electrical power distribution subsystem require OPERABILITY of the opposite unit's Division 2 4160 VAC, 480 VAC, essential service 120 VAC, and 125 VDC buses.

JUSTIFICATION FOR DEVIATIONS FROM NUREG-1433, REVISION 1
ITS BASES: 3.8.7 - DISTRIBUTION SYSTEMS — OPERATING

1. Changes have been made to reflect those changes made to the Specification. The following requirements have been renumbered, where applicable, to reflect the changes.

2. Changes have been made (additions, deletions, and/or changes to the NUREG) to reflect the plant specific nomenclature, number, reference, system description, analysis description, or licensing basis description.

3. The brackets have been removed and the proper plant specific information/value has been provided.

4. This change has been made since Section 3.5, "ECCS and IC System" provides the appropriate limits that are affected by the systems in this LCO.

5. This change has made to be consistent with the Applicability of LCO 3.8.8.

6. The proper LCO number has been used.

7. Typographical/grammatical error corrected.

8. Editorial change made for enhanced clarity or to be consistent with similar statements in other places in the Bases.

9. Changes have been made to match the Specification.

B 3.8 ELECTRICAL POWER SYSTEMS

B 3.8.10 Distribution Systems—Shutdown

BASES

BACKGROUND

A description of the AC, DC, and AC vital bus electrical power distribution system is provided in the Bases for LCO 3.8.9, "Distribution Systems—Operating."

APPLICABLE SAFETY ANALYSES

The initial conditions of Design Basis Accident and transient analyses in the FSAR, Chapter [6] (Ref. 1) and Chapter [15] (Ref. 2), assume Engineered Safety Feature (ESF) systems are OPERABLE. The AC, DC, and AC vital bus electrical power distribution systems 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 OPERABILITY of the AC, DC, and AC vital bus electrical power distribution system is consistent with the initial assumptions of the accident analyses and the requirements for the supported systems' OPERABILITY.

The OPERABILITY of the minimum AC, DC, and AC vital bus electrical power sources and associated power distribution subsystems during MODES 4 and 5, and during movement of irradiated fuel assemblies in the secondary containment ensures that:

a. The facility can be maintained in the shutdown or refueling condition for extended periods;

b. Sufficient instrumentation and control capability is available for monitoring and maintaining the unit status; and

c. Adequate power is provided to mitigate events postulated during shutdown, such as an inadvertent draindown of the vessel or a fuel handling accident.

The AC and DC electrical power distribution systems satisfy Criterion 3 of ~~the NRC Policy Statement~~. 10 CFR 50.36(c)(2)(ii)

(continued)

BASES (continued)

LCO

Various combinations of subsystems, equipment, and components are required OPERABLE by other LCOs, depending on the specific plant condition. Implicit in those requirements is the required OPERABILITY of necessary support required features. This LCO explicitly requires energization of the portions of the electrical distribution system necessary to support OPERABILITY of Technical Specifications required systems, equipment, and components—both specifically addressed by their own LCO, and implicitly required by the definition of OPERABILITY.

Maintaining these portions of the distribution system energized ensures the availability of sufficient power to operate the plant in a safe manner to mitigate the consequences of postulated events during shutdown (e.g., fuel handling accidents and inadvertent reactor vessel draindown).

APPLICABILITY

The AC and DC electrical power distribution subsystems required to be OPERABLE in MODES 4 and 5 and during movement of irradiated fuel assemblies in the [secondary] containment provide assurance that:

a. 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;

b. Systems needed to mitigate a fuel handling accident are available;

c. Systems necessary to mitigate the effects of events that can lead to core damage during shutdown are available; and

d. Instrumentation and control capability is available for monitoring and maintaining the unit in a cold shutdown condition or refueling condition.

The AC, DC, and AC vital bus electrical power distribution subsystem requirements for MODES 1, 2, and 3 are covered in LCO 3.8.9.

(continued)

BASES (continued)

ACTIONS

1 Insert B3.8.8 ACTIONS

A.1, A.2.1, A.2.2, A.2.3, A.2.4, and A.2.5

Although redundant required features may require redundant divisions of electrical power distribution subsystems to be OPERABLE, one OPERABLE distribution subsystem division may be capable of supporting sufficient required features to allow continuation of CORE ALTERATIONS, fuel movement, and operations with a potential for draining the reactor vessel. By allowing the option to declare required features associated with an inoperable distribution subsystem inoperable, appropriate restrictions are implemented in accordance with the affected distribution subsystem LCO's Required Actions. In many instances this option may involve undesired administrative efforts. Therefore, the allowance for sufficiently conservative actions is made, (i.e., to suspend CORE ALTERATIONS, movement of irradiated fuel assemblies in the [secondary] containment, and any activities that could result in inadvertent draining of the reactor vessel). 3

Suspension of these activities shall not preclude completion of actions to establish a safe conservative condition. These actions minimize the probability of the occurrence of postulated events. It is further required to immediately initiate action to restore the required AC and DC electrical power distribution subsystems and to continue this action until restoration is accomplished in order to provide the necessary power to the plant safety systems.

2 Notwithstanding performance of the above conservative Required Actions, a required ~~residual heat removal~~-shutdown cooling (~~RHR~~-SDC) subsystem may be inoperable. In this case, Required Actions A.2.1 through A.2.4 do not adequately address the concerns relating to coolant circulation and heat removal. Pursuant to LCO 3.0.6, the ~~RHR~~-SDC ACTIONS would not be entered. Therefore, Required Action A.2.5 is provided to direct declaring ~~RHR~~-SDC inoperable, which results in taking the appropriate ~~RHR~~-SDC ACTIONS.

The Completion Time of immediately is consistent with the required times for actions requiring prompt attention. The restoration of the required distribution subsystems should be completed as quickly as possible in order to minimize the time the plant safety systems may be without power.

(continued)

1 Insert B 3.8.8 ACTIONS

LCO 3.0.3 is not applicable while in MODE 4 or 5. However, since irradiated fuel assembly movement can occur in MODE 1, 2, or 3, the ACTIONS have been modified by a Note stating that LCO 3.0.3 is not applicable. If moving irradiated fuel assemblies while in MODE 4 or 5, LCO 3.0.3 would not specify any action. If moving irradiated fuel assemblies while in MODE 1, 2, or 3, the fuel movement is independent of reactor operations. Entering LCO 3.0.3 while in MODE 1, 2, or 3 would require the unit to be shutdown, but would not require immediate suspension of movement of irradiated fuel assemblies. The Note to the ACTIONS, "LCO 3.0.3 is not applicable," ensures that the actions for immediate suspension of irradiated fuel assembly movement are not postponed due to entry into LCO 3.0.3. 2

BASES (continued)

SURVEILLANCE REQUIREMENTS

SR 3.8.10.1

This Surveillance verifies that the AC, DC, and AC vital bus electrical power distribution subsystem is functioning properly, with the buses energized. 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 7 day Frequency takes into account the redundant capability of the electrical power distribution subsystems, as well as other indications available in the control room that alert the operator to subsystem malfunctions.

REFERENCES

1. FSAR, Chapter [8].
2. FSAR, Chapter [15].

JUSTIFICATION FOR DEVIATIONS FROM NUREG-1433, REVISION 1
ITS BASES: 3.8.8 - DISTRIBUTION SYSTEMS — SHUTDOWN

1. Changes have been made to reflect those changes made to the Specifications. The following requirements have been renumbered, where applicable, to reflect the changes.

2. Changes have been made (additions, deletions, and/or changes to the NUREG) to reflect the plant specific nomenclature, number, reference, system description, analysis description, or licensing basis description.

3. The brackets have been removed and the proper plant specific information/value has been provided.

4. Typographical/grammatical error corrected.

5. Changes have been made to more closely reflect the requirements of the Specification.

ADMINISTRATIVE CHANGES
("A.x" Labeled Comments/Discussions)

In accordance with the criteria set forth in 10 CFR 50.92, ComEd has evaluated this proposed Technical Specifications change and determined it does not represent a significant hazards consideration. The following is provided in support of this conclusion.

1. Does the change involve a significant increase in the probability or consequences of an accident previously evaluated?

   The proposed change involves reformatting, renumbering, and rewording the existing Technical Specifications. The reformatting, renumbering, and rewording process involves no technical changes to the existing Technical Specifications. As such, this change is administrative in nature and does not impact initiators of analyzed events or assumed mitigation of accident or transient events. Therefore, this change does not involve a significant increase in the probability or consequences of an accident previously evaluated.

2. Does the change create the possibility of a new or different kind of accident from any accident previously evaluated?

   The proposed change does not involve a physical alteration of the plant (no new or different type of equipment will be installed) or changes in methods governing normal plant operation. The proposed change will not impose any new or eliminate any old requirements. Thus, this change does not create the possibility of a new or different kind of accident from any accident previously evaluated.

3. Does this change involve a significant reduction in a margin of safety?

   The proposed change will not reduce a margin of safety because it has no impact on any safety analyses assumptions. This change is administrative in nature. Therefore, the change does not involve a significant reduction in a margin of safety.

TECHNICAL CHANGES - MORE RESTRICTIVE
("M.x" Labeled Comments/Discussions)

In accordance with the criteria set forth in 10 CFR 50.92, ComEd has evaluated this proposed Technical Specifications change and determined it does not represent a significant hazards consideration. The following is provided in support of this conclusion.

1. Does the change involve a significant increase in the probability or consequences of an accident previously evaluated?

   The proposed change provides more stringent requirements for operation of the facility. These more stringent requirements do not result in operation that will increase the probability of initiating an analyzed event and do not alter assumptions relative to mitigation of an accident or transient event. The more restrictive requirements continue to ensure process variables, structures, systems, and components are maintained consistent with the safety analyses and licensing basis. Therefore, this change does not involve a significant increase in the probability or consequences of an accident previously evaluated.

2. Does the change create the possibility of a new or different kind of accident from any accident previously evaluated?

   The proposed change does not involve a physical alteration of the plant (no new or different type of equipment will be installed) or changes in the methods governing normal plant operation. The proposed change does impose different requirements. However, these changes are consistent with the assumptions in the safety analyses and licensing basis. Thus, this change does not create the possibility of a new or different kind of accident from any accident previously evaluated.

3. Does this change involve a significant reduction in a margin of safety?

   The imposition of more restrictive requirements either has no impact on or increases the margin of plant safety. As provided in the discussion of the change, each change in this category is by definition, providing additional restrictions to enhance plant safety. The change maintains requirements within the safety analyses and licensing basis. Therefore, this change does not involve a significant reduction in a margin of safety.

"GENERIC" LESS RESTRICTIVE CHANGES:
RELOCATING DETAILS TO TECHNICAL SPECIFICATION BASES, UFSAR, TRM, OR OTHER PLANT CONTROLLED DOCUMENTS
("LA.x" Labeled Comments/Discussions)

In accordance with the criteria set forth in 10 CFR 50.92, ComEd has evaluated this proposed Technical Specifications change and determined it does not represent a significant hazards consideration. The following is provided in support of this conclusion.

1. Does the change involve a significant increase in the probability or consequences of an accident previously evaluated?

   The proposed change relocates certain details from the Technical Specifications to the Bases, UFSAR, TRM, or other plant controlled documents. The Bases, UFSAR, TRM, and other plant controlled documents containing the relocated information will be maintained in accordance with 10 CFR 50.59. In addition to 10 CFR 50.59 provisions, the Technical Specification Bases are subject to the change control provisions in the Administrative Controls Chapter of the ITS. The UFSAR is subject to the change control provisions of 10 CFR 50.71(e), and the plant procedures and other plant controlled documents are subject to controls imposed by plant administrative procedures, which endorse applicable regulations and standards. Since any changes to the Bases, UFSAR, TRM, or other plant controlled documents will be evaluated per the requirements of the Bases Control Program in Chapter 5.0 of the ITS or 10 CFR 50.59, no increase (significant or insignificant) in the probability or consequences of an accident previously evaluated will be allowed. Therefore, this change does not involve a significant increase in the probability or consequences of an accident previously evaluated.

2. Does the change create the possibility of a new or different kind of accident from any accident previously evaluated?

   The proposed change does not involve a physical alteration of the plant (no new or different type of equipment will be installed) or a change in the methods governing normal plant operation. The proposed change will not impose or eliminate any requirements, and adequate control of the information will be maintained. Thus, this change does not create the possibility of a new or different kind of accident from any accident previously evaluated.

3. Does this change involve a significant reduction in a margin of safety?

   The proposed change will not reduce a margin of safety because it has no impact on any safety analysis assumptions. In addition, the details to be transposed from the Technical Specifications to the Bases, UFSAR, TRM, or other plant controlled

"GENERIC" LESS RESTRICTIVE CHANGES:
RELOCATING DETAILS TO TECHNICAL SPECIFICATION BASES, UFSAR, TRM, OR OTHER PLANT CONTROLLED DOCUMENTS
("LA.x" Labeled Comments/Discussions)

3. (continued)

documents are the same as the existing Technical Specifications. Since any future changes to these details in the Bases, UFSAR, TRM, or other plant controlled documents will be evaluated per the requirements of 10 CFR 50.59, no reduction (significant or insignificant) in a margin of safety will be allowed. Based on 10 CFR 50.92, the existing requirement for NRC review and approval of revisions, to these details proposed for relocation, does not have a specific margin of safety upon which to evaluate. However, since the proposed change is consistent with the BWR ISTS, NUREG-1433, Rev. 1, approved by the NRC Staff, revising the Technical Specifications to reflect the approved level of detail ensures no significant reduction in the margin of safety.

"GENERIC" LESS RESTRICTIVE CHANGES:
EXTENDING SURVEILLANCE FREQUENCIES FROM 18 MONTHS TO 24 MONTHS FOR SURVEILLANCES OTHER THAN CHANNEL CALIBRATIONS
("LD.x" Labeled Comments/Discussions)

In accordance with the criteria set forth in 10 CFR 50.92, ComEd has evaluated this proposed Technical Specifications change and determined it does not represent a significant hazards consideration. The following is provided in support of this conclusion.

1. Does the change involve a significant increase in the probability or consequences of an accident previously evaluated?

   The proposed change involves a change in the surveillance testing intervals from 18 months to 24 months. The proposed change does not physically impact the plant nor does it impact any design or functional requirements of the associated systems. That is, the proposed change does not degrade the performance or increase the challenges of any safety systems assumed to function in the accident analysis. The proposed change does not impact the Surveillance Requirements themselves nor the way in which the Surveillances are performed. Additionally, the proposed change does not introduce any new accident initiators since no accidents previously evaluated have as their initiators anything related to the frequency of surveillance testing. The proposed change does not affect the availability of equipment or systems required to mitigate the consequences of an accident because of the availability of redundant systems or equipment and because other test performed more frequently will identify potential equipment problems. Furthermore, an historical review of surveillance test results indicated that all failures identified were unique, non-repetitive, and not related to any time-based failure modes, and indicated no evidence of any failures that would invalidate the above conclusions. Therefore, the proposed change does not increase the probability or consequences of an accident previously evaluated.

2. Does the change create the possibility of a new or different kind of accident from any accident previously evaluated?

   The proposed change involves a change in the surveillance testing intervals from 18 months to 24 months. The proposed change does not introduce any failure mechanisms of a different type than those previously evaluated since there are no physical changes being made to the facility. In addition, the Surveillance Requirements themselves and the way Surveillances are performed will remain unchanged. Furthermore, an historical review of surveillance test results indicated no evidence of any failures that would invalidate the above conclusions. Therefore, the proposed change does not create the possibility of a new or different kind of accident from any previously evaluated.

"GENERIC" LESS RESTRICTIVE CHANGES:
EXTENDING SURVEILLANCE FREQUENCIES FROM 18 MONTHS TO 24 MONTHS FOR SURVEILLANCES OTHER THAN CHANNEL CALIBRATIONS
("LD.x" Labeled Comments/Discussions) (continued)

3. Does this change involve a significant reduction in a margin of safety?

Although the proposed change will result in an increase in the interval between surveillance tests, the impact on system availability is minimal based on other, more frequent testing or redundant systems or equipment, and there is no evidence of any failures that would impact the availability of the systems. Therefore, the assumptions in the licensing basis are not impacted, and the proposed change does not involve a significant reduction in a margin of safety.

NO SIGNIFICANT HAZARDS CONSIDERATION
ITS: 3.8.1 - AC SOURCES — OPERATING

L.1 CHANGE

In accordance with the criteria set forth in 10 CFR 50.92, ComEd has evaluated this proposed Technical Specifications change and determined it does not represent a significant hazards consideration. The following is provided in support of this conclusion.

1. Does the change involve a significant increase in the probability or consequences of an accident previously evaluated?

   The AC Sources are used to support mitigation of the consequences of an accident; however, they are not considered the initiator of any previously analyzed accident. As such, additional time for repair of an inoperable AC Source will not increase the probability of any accident previously evaluated. The ITS ACTIONS continues to provide adequate assurance of OPERABLE AC Sources and therefore, does not involve an increase in the consequences of any accident previously evaluated.

2. Does the change create the possibility of a new or different kind of accident from any accident previously evaluated?

   The proposed change does not introduce a new mode of plant operation and does not involve physical modification to the plant. Therefore, it does not create the possibility of a new or different kind of accident from any accident previously evaluated.

3. Does this change involve a significant reduction in a margin of safety?

   This change does not involve a significant reduction in a margin of safety since the OPERABILITY of the AC Sources continues to be required. Overlapping inoperabilities of the AC Sources are expected to be infrequent, and any reduction due to the extended time frame is off-set by not subjecting the plant to a shutdown transient.

L.2 CHANGE

In accordance with the criteria set forth in 10 CFR 50.92, ComEd has evaluated this proposed Technical Specifications change and determined it does not represent a significant hazards consideration. The following is provided in support of this conclusion.

1. Does the change involve a significant increase in the probability or consequences of an accident previously evaluated?

   The diesel generators (DGs) are used to support mitigation of the consequences of an accident; however, they are not considered the initiator of any previously analyzed accident. As such, the elimination of an Action which requires starting and/or loading the DGs due to the inoperability of another DG will not increase the probability of any accident previously evaluated. The proposed Action continues to provide adequate assurance of OPERABLE DGs and, therefore, does not involve an increase in the consequences of any accident previously evaluated.

2. Does the change create the possibility of a new or different kind of accident from any accident previously evaluated?

   The proposed change does not introduce a new mode of plant operation and does not involve a physical modification to the plant. Therefore, it does not create the possibility of a new or different kind of accident from any accident previously evaluated.

3. Does this change involve a significant reduction in a margin of safety?

   This change does not involve a significant reduction in a margin of safety since the OPERABILITY of the DGs, before or after the inoperability of a DG, is determined in the same manner. Since the power sources are generally independent and the other DGs will be tested or common failure cause will be evaluated, the proposed change provides an equivalent assurance of the capability of the DGs to perform their safety function.

L.3 CHANGE

In accordance with the criteria set forth in 10 CFR 50.92, ComEd has evaluated this proposed Technical Specifications change and determined it does not represent a significant hazards consideration. The following is provided in support of this conclusion.

1. Does the change involve a significant increase in the probability or consequences of an accident previously evaluated?

   The diesel generators (DGs) are used to support mitigation of the consequences of an accident; however, they are not considered the initiator of any previously analyzed accident. As such, the extension of the time provided to perform the Action of starting of a DG due to the inoperability of another DG and the deletion of the requirement to evaluate or test the OPERABLE DG in the subsequent 72 hours will not increase the probability of any accident previously evaluated. The proposed time and the performance of the normal Surveillances continue to provide adequate assurance of OPERABLE DGs and therefore, does not involve an increase in the consequences of any accident previously evaluated.

2. Does the change create the possibility of a new or different kind of accident from any accident previously evaluated?

   The proposed change does not introduce a new mode of plant operation and does not involve physical modification to the plant. Therefore, it does not create the possibility of a new or different kind of accident from any accident previously evaluated.

3. Does this change involve a significant reduction in a margin of safety?

   This change does not involve a significant reduction in a margin of safety since the OPERABILITY of the DGs, before or after the inoperability of another DG, is determined in the same manner. Since the DGs are generally independent and either the other DGs will be tested or common failure cause will be evaluated, the proposed change provides an equivalent assurance of the capability of the DGs to perform their safety function.

L.4 CHANGE

In accordance with the criteria set forth in 10 CFR 50.92, ComEd has evaluated this proposed Technical Specifications change and determined it does not represent a significant hazards consideration. The following is provided in support of this conclusion.

1. Does the change involve a significant increase in the probability or consequences of an accident previously evaluated?

   This change removes the requirement to verify that each DG is aligned to provide standby power to the associated emergency buses once per 31 days. This verification is not considered in the initiation of any previously analyzed accident. Therefore, this change does not significantly increase the frequency of such accidents. The requirement to verify that each DG is aligned to provide standby power to the associated emergency buses is not necessary to be included in the ITS because the requirements of ITS 3.8.1, which require the DGs to be OPERABLE, and the associated Surveillance Requirements for the DGs are adequate to ensure the DGs are maintained OPERABLE. In addition, the definition of OPERABILITY and procedural controls on DG standby alignment are sufficient to ensure the DG remains aligned to provide standby power. In general, this type of requirement is addressed by plant specific processes which continuously monitor plant conditions to ensure that changes in the status of plant equipment that require entry into ACTIONS (as a result of failure to maintain equipment OPERABLE) are identified in a timely manner. This verification is an implicit part of using Technical Specifications and determining the appropriate Conditions to enter and Actions to take in the event of inoperability of Technical Specification equipment. In addition, plant and equipment status is continuously monitored by control room personnel. The results of this monitoring process are documented in records/logs maintained by control room personnel, as required. The continuous monitoring process includes re-evaluating the status of compliance with Technical Specification requirements when Technical Specification equipment becomes inoperable using the control room records/logs as aids. Therefore, the explicit requirement to periodically verify that each DG is aligned to provide standby power to the associated emergency buses is considered to be unnecessary for ensuring compliance with the applicable Technical Specification OPERABILITY requirements. The status of compliance with Technical Specification requirements will continue to be monitored to assure the potential consequences are not significantly increased. Therefore, this change does not significantly increase the probability or consequences of any previously analyzed accident.

L.4 CHANGE (continued)

2. Does the change create the possibility of a new or different kind of accident from any accident previously evaluated?

   The proposed change does not introduce a new mode of plant operation and does not involve physical modification to the plant. Therefore, this change does not create the possibility of a new or different kind of accident from any previously analyzed accident.

3. Does this change involve a significant reduction in a margin of safety?

   The verification of the status of compliance with Technical Specifications is an implicit part of using Technical Specifications and determining the appropriate Conditions to enter and Actions to take in the event of a failure to meet equipment OPERABILITY requirements. In addition, plant status is continuously monitored by control room personnel. The results of this monitoring process are documented in records/logs maintained by control room personnel, as required. The continuous monitoring process includes re-evaluating the status of compliance with Technical Specification requirements when the status of the plant or equipment changes. Therefore, the explicit requirement to periodically verify that each DG is aligned to provide standby power to the associated emergency buses is considered to be unnecessary for ensuring compliance with the applicable Technical Specification OPERABILITY requirements. The status of compliance with Technical Specification requirements will continue to be monitored to assure the appropriate previously approved actions are taken in the event of a failure to meet Technical Specification requirements. In addition, procedural controls on DG standby alignment will continue to ensure the DG remains aligned to provide standby power. Therefore, this change does not involve a significant reduction in the margin of safety.

L.5 CHANGE

In accordance with the criteria set forth in 10 CFR 50.92, ComEd has evaluated this proposed Technical Specifications change and determined it does not represent a significant hazards consideration. The following is provided in support of this conclusion.

1. Does the change involve a significant increase in the probability or consequences of an accident previously evaluated?

   The requested amendment does not result in any hardware or operating procedure changes. Diesel fuel oil properties are not assumed to be an initiator of any analyzed event. Diesel fuel oil supports the operation of the DGs. As such, it mitigates consequences of a design basis accident by helping to assure the DGs supply power to equipment assumed to function during an accident. The change to the diesel fuel oil removal of accumulated water Surveillance Frequency still provides adequate assurance that diesel fuel oil remains capable of supporting DG OPERABILITY. Therefore, this proposed change will not involve a significant increase in the probability or consequences of an accident previously evaluated.

2. Does the change create the possibility of a new or different kind of accident from any accident previously evaluated?

   The proposed change does not introduce a new mode of plant operation and does not involve physical modification to the plant. Therefore, it does not create the possibility of a new or different kind of accident from any accident previously evaluated.

3. Does the change involve a significant reduction in a margin of safety?

   No significant reduction in a margin of safety is involved with this change since the 31 day Frequency is adequate for assuring an unacceptable amount of water does not accumulate in the day tanks. Additionally, water content of the fuel oil in the fuel oil storage tanks is checked prior to addition of new fuel and once per 31 days. As such, assurance is provided that the water content of diesel fuel oil in the day tank is within limits and that the diesel fuel oil remains capable of supporting DG OPERABILITY.

L.6 CHANGE

In accordance with the criteria set forth in 10 CFR 50.92, ComEd has evaluated this proposed Technical Specifications change and determined it does not represent a significant hazards consideration. The following is provided in support of this conclusion.

1. Does the change involve a significant increase in the probability or consequences of an accident previously evaluated?

   The DGs are used to support mitigation of the consequences of an accident; however, they are not considered the initiator of any previously analyzed accident. Furthermore, equipment powered by the DGs, which may be considered as an initiator, continues to be evaluated for loss of function and previously determined appropriate ACTIONS for such inoperabilities continue to be required. As such the proposed increase in the Completion Time will not increase the probability of any accident previously evaluated. The proposed ACTION continues to provide adequate assurance of OPERABLE required equipment and therefore, does not involve an increase in the consequences of any accident previously evaluated.

2. Does the change create the possibility of a new or different kind of accident from any accident previously evaluated?

   The proposed change does not introduce a new mode of plant operation and does not involve physical modification to the plant. Therefore, it does not create the possibility of a new or different kind of accident from any accident previously evaluated.

3. Does this change involve a significant reduction in a margin of safety?

   This change does not involve a significant reduction in a margin of safety since the OPERABILITY of the equipment and loss of function continue to be evaluated in the same manner. The increase in time allowed for such a evaluation is minimal and provides additional potential for preferred restoration of the equipment to OPERABLE status rather than subjecting the unit to the transients associated with a shutdown.

L.7 CHANGE

In accordance with the criteria set forth in 10 CFR 50.92, ComEd has evaluated this proposed Technical Specifications change and determined it does not represent a significant hazards consideration. The following is provided in support of this conclusion.

1. Does the change involve a significant increase in the probability or consequence of an accident previously evaluated?

   The DGs are used to support mitigation of the consequences of an accident; however, they are not considered the initiator of any previously analyzed accident. The DGs are still tested to ensure their capability to mitigate the consequences of an accident. The tests in question are those that automatically start the DG but do not tie it to a bus. Verification that the minimum voltage and frequency limits are met within the proper time is sufficient to ensure the DG can perform its design function. When called upon, the DG must start and tie within the proper time. Once the minimum voltage and frequency limits are met, the DG can tie to the bus. When a test is performed that does not result in tieing the DG to the bus, a voltage or frequency overshoot can occur since no loads are being tied (the loading tends to minimize the overshoot). This overshoot could be such that the voltage or frequency is outside the band high when the time limit expires. This condition however, is not indicative of an inoperable DG, provided that steady state voltage and frequency are maintained. The time to reach the minimum voltage and frequency has not been changed. Furthermore, since the DG start times are monitored and trend evaluated to identify degradation of governor and voltage regulator performance and since the minimum voltage and frequency limits still ensure the DG can tie to the bus, this change does not involve an increase in the consequences of a previously analyzed accident.

2. Does the change create the possibility of a new or different kind of accident from any accident previously evaluated?

   The proposed change does not introduce a new mode of plant operation and does not involve physical modification to the plant. Therefore, it does not create the possibility of a new or different kind of accident from any accident previously evaluated.

3. Does this change involve a significant reduction in a margin of safety?

   This change does not involve a significant reduction in a margin of safety since the proposed testing still ensures the DGs can perform their intended function. The allowance to overshoot the upper voltage and frequency bands does not impact the capability of the DG, provided the minimum voltage and frequency are met within the

L.7 CHANGE

3. (continued)

assumed time, and the steady state limits are reached and maintained. These limits are not being modified and the DG start times are monitored and trend evaluated to identify degradation of governor and voltage regulator performance. In addition, other DG tests will continue to show capability of the DGs to start and accept loads while maintaining proper voltage and frequency.

L.8 CHANGE

In accordance with the criteria set forth in 10 CFR 50.92, ComEd has evaluated this proposed Technical Specifications change and determined it does not represent a significant hazards consideration. The following is provided in support of this conclusion.

1. Does the change involve a significant increase in the probability or consequences of an accident previously evaluated?

   The phrase "actual or," in reference to the automatic loss of offsite power signal or ECCS actuation signal, as applicable, has been added to the system functional test surveillance test description. This does not impose a requirement to create an "actual" signal, nor does it eliminate any restriction on producing an "actual" signal. While creating an "actual" signal could increase the probability of an event, existing procedures (and the 10 CFR 50.59 control of revisions to them) dictate the acceptability of generating this signal. The proposed change does not affect the procedures governing plant operations or the acceptability of creating these signals; it simply would allow such a signal to be utilized in evaluating the acceptance criteria for the system functional test requirements. Therefore, the change does not involve a significant increase in the probability of an accident previously evaluated. Since the method of initiation will not affect the acceptance criteria of the system functional test, the change does not involve a significant increase in the consequences of an accident previously evaluated.

2. Does the change create the possibility of a new or different kind of accident from any accident previously evaluated?

   The proposed change does not introduce a new mode of plant operation and does not involve physical modification to the plant. Therefore, it does not create the possibility of a new or different kind of accident from any accident previously evaluated.

3. Does this change involve a significant reduction in a margin of safety?

   Use of an actual signal instead of the existing requirement, which limits use to a test signal will not affect the performance or acceptance criteria of the Surveillance. Operability is adequately demonstrated in either case since the system itself can not discriminate between "actual" or "test" signals. Therefore, the change does not involve a significant reduction in a margin of safety.

L.9 CHANGE

In accordance with the criteria set forth in 10 CFR 50.92, ComEd has evaluated this proposed Technical Specifications change and determined it does not represent a significant hazards consideration. The following is provided in support of this conclusion.

1. Does the change involve a significant increase in the probability or consequences of an accident previously evaluated?

   The diesel generators (DGs) are used to support mitigation of the consequences of an accident; however, they are not considered the initiator of any previously analyzed accident. As such, the elimination of a requirement that the DG be within proper voltage and frequency in 13 seconds after the DG is started for the 24 hour run will not increase the probability of any accident previously evaluated. These limits are already tested by other Surveillance Requirements done at the same Frequency or more frequently. These other Surveillances continue to ensure the voltage and frequency limits can be met, thus continuing to ensure DG OPERABILITY. Therefore, this change does not involve an increase in the consequences of any accident previously evaluated.

2. Does the change create the possibility of a new or different kind of accident from any accident previously evaluated?

   The proposed change does not introduce a new mode of plant operation and does not involve physical modification to the plant. Therefore, it does not create the possibility of a new or different kind of accident from any accident previously evaluated.

3. Does this change involve a significant reduction in a margin of safety?

   The frequency and voltage limits are continued to be maintained and are currently tested by other Surveillance Requirements at Frequencies consistent with or more frequent than the current requirements being deleted. Therefore, this change does not involve a significant reduction in margin of safety.

L.10 CHANGE

In accordance with the criteria set forth in 10 CFR 50.92, ComEd has evaluated this proposed Technical Specifications change and determined it does not represent a significant hazards consideration. The following is provided in support of this conclusion.

1. Does the change involve a significant increase in the probability or consequences of an accident previously evaluated?

   The requirement to perform the interdependence test after any modification that could affect diesel generator interdependence is not assumed in the initiation of any analyzed event. This requirement was specified in the Technical Specifications to ensure the independence of the diesel generators was positively verified following modifications that could impact diesel generator independence. The proposed deletion of this explicit requirement is considered acceptable since proposed SR 3.0.1 requires the appropriate SRs to be performed to demonstrate OPERABILITY after restoration of a component that caused the SR to be failed. In this case, proposed SR 3.0.1 would require proposed SR 3.8.1.20 to be performed, which requires performance of the diesel generator interdependence test. As a result, the accident consequences are unaffected by this change. Therefore, this change will not involve a significant increase in the probability or consequences of an accident previously evaluated.

2. Does the change create the possibility of a new or different kind of accident from any accident previously evaluated?

   The possibility of a new or different kind of accident from any accident previously evaluated is not created because the proposed change does not introduce a new mode of plant operation and does not involve physical modification to the plant.

3. Does this change involve a significant reduction in a margin of safety?

   The proposed deletion of the explicit requirement to perform the interdependence test after any modification that could affect diesel generator interdependence is considered acceptable since proposed SR 3.0.1 requires the appropriate SRs to be performed to demonstrate OPERABILITY after restoration of a component that caused the SR to be failed. In this case, proposed SR 3.0.1 would require proposed SR 3.8.1.20 to be performed, which requires performance of the diesel generator interdependence test. As a result, the existing requirement to perform the interdependence test after any modification that could affect diesel generator interdependence is maintained. Therefore, this change does not involve a significant reduction in a margin of safety.

L.11 CHANGE

In accordance with the criteria set forth in 10 CFR 50.92, ComEd has evaluated this proposed Technical Specifications change and determined it does not represent a significant hazards consideration. The following is provided in support of this conclusion.

1. Does the change involve a significant increase in the probability or consequences of an accident previously evaluated?

   The diesel generators (DGs) are used to support mitigation of the consequences of an accident; however, they are not considered the initiator of any previously analyzed accident. As such, the revised acceptance criteria for frequency will not increase the probability of any accident previously evaluated. The new criteria is consistent with the steady state frequency limit of other Surveillances, which have been determined to be sufficient to demonstrate OPERABILITY, and are consistent with the accident analyses. Therefore, since the DG will continue to be tested to show that it meets the assumptions of the accident analysis, the change does not involve any increase to the consequences of any accident previously evaluated.

2. Does the change create the possibility of a new or different kind of accident from any accident previously evaluated?

   The proposed change does not introduce a new mode of plant operation and does not involve physical modification to the plant. Therefore, it does not create the possibility of a new or different kind of accident from any accident previously evaluated.

3. Does this change involve a significant reduction in a margin of safety?

   This change does not involve a significant reduction in a margin of safety since the OPERABILITY of the DG continues to be determined based on its capability to perform its safety related function. The new acceptance criteria is consistent with the other DG Surveillances and with the accident analyses.

L.12 CHANGE

In accordance with the criteria set forth in 10 CFR 50.92, ComEd has evaluated this proposed Technical Specifications change and determined it does not represent a significant hazards consideration. The following is provided in support of this conclusion.

1. Does the change involve a significant increase in the probability or consequences of an accident previously evaluated?

   The load range requirements of the DG monthly full load test, the full load rejection test, and the 24 hour endurance test (22 hour full load test portion only) are proposed to be relaxed slightly. The DGs are not assumed to be an initiator of any analyzed event. The DGs function to mitigate the consequences of an analyzed event by supplying sufficient power to equipment assumed to function during an accident. Therefore, this change will not significantly increase the probability of a previously analyzed event. This proposed change slightly increases the margin to the continuous rating to ensure the DGs will not become degraded due to overloading during required full load testing. The new load range is consistent with the recommendations of Regulatory Guide 1.9, Revision 3, and the slight (5%) increase in the allowable load range is not considered significant relative to demonstrating DG full load carrying capability and the DG's response to a full load rejection transient. Furthermore, it will still be required to demonstrate on a 24 month basis that the DGs are capable of being loaded to 105% to 110% of their continuous rating in accordance with the 24 hour endurance test (2 hour overload test portion). This provides additional assurance that the DGs maintain the capability to carry their full design load. Therefore, this proposed change reduces the potential for degradation of the DGs due to overloading during testing while still demonstrating that the DGs can carry and reject their full rated load as designed. As such, this change will not significantly increase the consequences of an accident previously evaluated.

2. Does the change create the possibility of a new or different kind of accident from any accident previously evaluated?

   The proposed change does not involve any physical alterations to plant structures, systems, or components (SSCs), or significantly affect the manner in which these SSCs are operated, maintained, modified, tested, or inspected. Thus, the DGs and the supported safety-related equipment will continue to function as previously analyzed. Therefore, the proposed change will not create the possibility of a new or different kind of an accident from any accident previously evaluated.

L.12 CHANGE (continued)

3. Does the change involve a significant reduction in a margin of safety?

The load range proposed for the DG monthly full load test, the full load rejection test, and the 24 hour endurance test (22 hour full load test portion only) of 90% to 100% of the continuous rating of the DGs is consistent with the recommendations of Regulatory Guide 1.9, Revision 3. Furthermore, based on operating and testing experience, the slight (5%) increase in the allowable load range is not considered significant relative to demonstrating DG full load carrying capability and the DG's response to a full load rejection transient. It will still be required to demonstrate on a 24 month basis that the DGs are capable of being loaded to 105% to 110% of their continuous rating in accordance with the 24 hour endurance test (2 hour overload test portion). This provides assurance that any margin of safety associated with the full load carrying capability of the DGs is not reduced. Also, any reduction in a margin of safety associated with the proposed increase in the allowable load range for performing the full load rejection test will be offset by the enhanced DG reliability and availability gained by reducing the potential for degradation of the DGs due to overloading. Therefore, this proposed change does not involve a significant reduction in a margin of safety.

L.13 CHANGE

In accordance with the criteria set forth in 10 CFR 50.92, ComEd has evaluated this proposed Technical Specifications change and determined it does not represent a significant hazards consideration. The following is provided in support of this conclusion.

1. Does the change involve a significant increase in the probability or consequences of an accident previously evaluated?

   This change deletes the restriction to perform the DG full load rejection or DG 24 hour endurance run on only one DG at a time. This restriction was included in the Technical Specifications to avoid common cause failures that might result from offsite circuit or grid perturbations. Although this restriction may be applicable to other CTS Surveillances associated with the AC Sources (e.g., the single largest load rejection test, the simulated loss of offsite power test, the simulated offsite power test in conjunction with an ECCS actuation test signal), there is no similar Technical Specification restriction on these Surveillances. This restriction is therefore controlled in accordance with plant operating procedures. This type of control is considered sufficient to avoid common cause failures that might result from offsite circuit or grid perturbations. The DGs are used to support mitigation of the consequences of an accident; however, they are not considered the initiator of any previously analyzed accident. The DGs are still tested to ensure their capability to mitigate the consequences of an accident. Therefore, this change does not involve an increase in the consequences of a previously analyzed accident.

2. Does the change create the possibility of a new or different kind of accident from any accident previously evaluated?

   The proposed change does not introduce a new mode of plant operation and does not involve physical modification to the plant. Therefore, it does not create the possibility of a new or different kind of accident from any accident previously evaluated.

L.13 CHANGE (continued)

3. Does the change involve a significant reduction in a margin of safety?

This change does not involve a significant reduction in a margin of safety since the proposed testing still ensures DGs can perform their intended function. This change deletes the restriction to perform the DG full load rejection test and DG 24 hour endurance run on only one DG at a time. This restriction was included in the Technical Specifications to avoid common cause failures that might result from offsite circuit or grid perturbations. Although this restriction may be applicable to other CTS Surveillances associated with the AC Sources, there is no similar Technical Specification restriction on these Surveillances. This restriction is therefore controlled in accordance with plant operating procedures. This type of control is considered sufficient to avoid common cause failures that might result from offsite circuit or grid perturbations. Therefore, this change does not involve a significant reduction in a margin of safety.

NO SIGNIFICANT HAZARDS CONSIDERATION
ITS: 3.8.2 - AC SOURCES — SHUTDOWN

L.1 CHANGE

In accordance with the criteria set forth in 10 CFR 50.92, ComEd has evaluated this proposed Technical Specifications change and determined it does not represent a significant hazards consideration. The following is provided in support of this conclusion.

1. Does the change involve a significant increase in the probability or consequences of an accident previously evaluated?

   An AC Source is necessary to support the equipment used to mitigate the consequences of an accident; however, the AC Source is not considered the initiator of any previously analyzed accident. As such, the proposed revision to the Surveillance Requirements will not increase the probability of any accident previously evaluated. The proposed SRs continue to provide adequate assurance of OPERABLE DGs and available offsite circuits and therefore, does not involve an increase in the consequences of any accident previously evaluated.

2. Does the change create the possibility of a new or different kind of accident from any accident previously evaluated?

   The proposed change does not introduce a new mode of plant operation and does not involve physical modification to the plant. Therefore, it does not create the possibility of a new or different kind of accident from any accident previously evaluated.

3. Does this change involve a significant reduction in a margin of safety?

   This change does not involve a significant reduction in a margin of safety since the proposed change removes requirements for paralleling the required DG to the required offsite circuit. Omitting this condition represents a significant improvement in the margin of safety by removing the potential for a single fault to affect both required AC power sources.

L.2 CHANGE

In accordance with the criteria set forth in 10 CFR 50.92, ComEd has evaluated this proposed Technical Specifications change and determined it does not represent a significant hazards consideration. The following is provided in support of this conclusion.

1. Does the change involve a significant increase in the probability or consequences of an accident previously evaluated?

   The requirement for the DGs to start on an ECCS initiation signal when the associated ECCS subsystem(s) are not required to be Operable has been deleted. The DGs are not considered the initiator of any previously analyzed accident. As such, the proposed revision to the Surveillance Requirement will not increase the probability of any accident previously evaluated. The ECCS subsystem(s) are not required to be Operable in Mode 5 when the spent fuel storage pool gates are removed and water level is ≥ 23 ft over the top of the reactor pressure vessel flange, or when defueled. The DGs are required to support the equipment powered from the emergency buses. However, when the ECCS subsystem(s) are not required to be Operable, then there is no reason to require the DGs to autostart on an ECCS initiation signal. In addition, the ECCS initiation signal is only an anticipatory start signal; the DGs are only needed during a LOCA if a loss of offsite power occurs concurrently. Therefore, this change does not involve an increase in the consequences of any accident previously evaluated.

2. Does the change create the possibility of a new or different kind of accident from any accident previously evaluated?

   The proposed change does not introduce a new mode of plant operation and does not involve physical modification to the plant. Therefore, it does not create the possibility of a new or different kind of accident from any accident previously evaluated.

3. Does this change involve a significant reduction in a margin of safety?

   The requirement for the DGs to start on an ECCS initiation signal when the associated ECCS subsystem(s) are not required to be Operable has been deleted. The ECCS subsystem(s) are not required to be Operable in Mode 5 when the spent fuel storage pool gates are removed and water level is ≥ 23 ft over the top of the reactor pressure vessel flange, or when defueled. The DGs are required to support the equipment powered from the emergency buses. However, when the ECCS subsystem(s) are not required to be Operable, then there is no reason to require the DGs to autostart on an ECCS initiation signal. In addition, the ECCS initiation signal is only an anticipatory start signal; the DGs are only needed during a LOCA if a loss of offsite power occurs concurrently. In addition, the ECCS initiation signal is only an anticipatory start

L.2 CHANGE

3. (continued)

signal; the DGs are only needed during a LOCA if a loss of offsite power occurs concurrently. The DGs are also required to autostart if a loss of offsite power occurs. The requirement to autostart the required DG(s) on a loss of offsite power signal is being maintained in the ITS (proposed SR 3.8.1.12). Thus, when in these conditions (associated ECCS subsystem(s) not required to be Operable), there is no reason to require the DGs to be capable of automatically starting on an ECCS actuation signal (either by itself or concurrent with a loss of offsite power signal). Therefore, this change does not involve a significant reduction in a margin of safety.

NO SIGNIFICANT HAZARDS CONSIDERATION
ITS: 3.8.3 - DIESEL FUEL OIL and STARTING AIR

L.1 CHANGE

In accordance with the criteria set forth in 10 CFR 50.92, ComEd has evaluated this proposed Technical Specifications change and determined it does not represent a significant hazards consideration. The following is provided in support of this conclusion.

1. Does the change involve a significant increase in the probability or consequences of an accident previously evaluated?

   The diesel generators (DGs) are used to support mitigation of the consequences of an accident; however, they are not considered the initiator of any previously analyzed accident. As such, the evaluation of operational parameters and allowance of time for restoration of these parameters will not increase the probability of any accident previously evaluated. The proposed ACTIONS continue to provide adequate assurance of OPERABLE DGs since substantial margin for these parameters exists. Therefore, this change does not involve an increase in the consequences of any accident previously evaluated.

2. Does the change create the possibility of a new or different kind of accident from any accident previously evaluated?

   The proposed change does not introduce a new mode of plant operation and does not involve physical modification to the plant. Therefore, it does not create the possibility of a new or different kind of accident from any accident previously evaluated.

3. Does this change involve a significant reduction in a margin of safety?

   This change does not involve a significant reduction in a margin of safety since the OPERABILITY of the DGs continues to be determined in the same manner. The substantial margin provided for these parameters allows for some degradation without significantly affecting the capability of the DG to perform its safety function. Since the degradation is limited in both capacity and time, it is not considered significant.

L.2 CHANGE

In accordance with the criteria set forth in 10 CFR 50.92, ComEd has evaluated this proposed Technical Specifications change and determined it does not represent a significant hazards consideration. The following is provided in support of this conclusion.

1. Does the change involve a significant increase in the probability or consequences of an accident previously evaluated?

   The diesel generators (DGs) are used to support mitigation of the consequences of an accident; however, they are not considered the initiator of any previously analyzed accident. As such, the evaluation of operational parameters and allowance of time for restoration of these parameters will not increase the probability of any accident previously evaluated. The proposed ACTIONS continue to provide adequate assurance of OPERABLE DGs since substantial margin for these parameters exists. Therefore, this change does not involve an increase in the consequences of any accident previously evaluated.

2. Does the change create the possibility of a new or different kind of accident from any accident previously evaluated?

   The proposed change does not introduce a new mode of plant operation and does not involve physical modification to the plant. Therefore, it does not create the possibility of a new or different kind of accident from any accident previously evaluated.

3. Does this change involve a significant reduction in a margin of safety?

   This change does not involve a significant reduction in a margin of safety since the OPERABILITY of the DGs continues to be determined in the same manner. The substantial margin provided for these parameters allows for some degradation without significantly affecting the capability of the DG to perform its safety function. Since the degradation is limited in both capacity and time, it is not considered significant.

NO SIGNIFICANT HAZARDS CONSIDERATION
ITS: 3.8.3 - DIESEL FUEL OIL and STARTING AIR

L.3 CHANGE

In accordance with the criteria set forth in 10 CFR 50.92, ComEd has evaluated this proposed Technical Specifications change and determined it does not represent a significant hazards consideration. The following is provided in support of this conclusion.

1. Does the change involve a significant increase in the probability or consequences of an accident previously evaluated?

   The diesel generators (DGs) are not assumed to be an initiator of any analyzed event. The DGs function to mitigate the consequences of an analyzed event by supplying sufficient power to equipment assumed to function during an accident. The DG fuel oil storage tanks support operation of the DGs and therefore, help mitigate the consequences of design basis accidents. The proposed change does not impact the capability of the diesel fuel oil storage tanks to perform their intended function, since more frequent DG fuel oil testing will detect sediment and water buildup in the tanks, and testing of the fuel oil transfer pumps and their capability to pump oil through the system piping will ensure the piping is intact. In addition, ASME requirements, as well as other governmental regulations will continue to ensure that the storage tanks meet all requirements. Therefore, this proposed change will not involve a significant increase in the probability or consequences of an accident previously evaluated.

2. Does the change create the possibility of a new or different kind of accident from any accident previously evaluated?

   The proposed change does not introduce a new mode of plant operation and does not involve physical modification to the plant. Therefore, it does not create the possibility of a new or different kind of accident from any accident previously evaluated.

3. Does this change involve a significant reduction in a margin of safety?

   No significant reduction in a margin of safety will result from this change since more frequent DG fuel oil testing will detect sediment and water buildup in the tanks, and testing of the fuel oil transfer pumps and their capability to pump oil through the system piping will ensure the piping is intact. In addition, ASME requirements, as well as other governmental regulations will continue to ensure that the storage tanks meet all requirements.

NO SIGNIFICANT HAZARDS CONSIDERATION
ITS: 3.8.4 - DC SOURCES — OPERATING

L.1 CHANGE

In accordance with the criteria set forth in 10 CFR 50.92, ComEd has evaluated this proposed Technical Specifications change and determined it does not represent a significant hazards consideration. The following is provided in support of this conclusion.

1. Does the change involve a significant increase in the probability or consequences of an accident previously evaluated?

   The DC electrical power sources are used to support mitigation of the consequences of an accident; however, they are not considered the initiator of any previously analyzed accident. As such, the removal of the requirement for performance of a surveillance to assure the integrity and quality of the battery terminals and connectors will not increase the probability of any accident previously evaluated. The proposed SRs continue to provide adequate assurance of integrity and quality of the battery terminals and connectors through retention of the periodic surveillance requirement. The initiating circumstances for the conditional surveillance are not directly or immediately likely to cause a degradation in the integrity or quality of the battery terminals or connectors. Therefore, the proposed change does not involve an increase in the consequences of any accident previously evaluated.

2. Does the change create the possibility of a new or different kind of accident from any accident previously evaluated?

   The proposed change does not introduce a new mode of plant operation and does not involve physical modification to the plant. Therefore, the possibility of a new or different kind of accident from any accident previously evaluated is not created.

3. Does this change involve a significant reduction in a margin of safety?

   This change does not involve a significant reduction in a margin of safety, since the integrity and quality of the battery terminals and connections will be assured through the periodic performance of the surveillance.

NO SIGNIFICANT HAZARDS CONSIDERATION
ITS: 3.8.4 - DC SOURCES — OPERATING

L.2 CHANGE

In accordance with the criteria set forth in 10 CFR 50.92, ComEd has evaluated this proposed Technical Specifications change and determined it does not represent a significant hazards consideration. The following is provided in support of this conclusion.

1. Does the change involve a significant increase in the probability or consequences of an accident previously evaluated?

   The DC electrical power sources are used to support mitigation of the consequences of an accident; however, they are not considered the initiator of any previously analyzed accident. As such, the removal of a requirement for clean and tight connections will not increase the probability of any accident previously evaluated. The proposed SRs continue to provide adequate assurance of OPERABLE DC electrical power sources since the resistance measurements and corrosion checks provide sufficient indication of an adequate connection. Therefore, the proposed change does not involve an increase in the consequences of any accident previously evaluated.

2. Does the change create the possibility of a new or different kind of accident from any accident previously evaluated?

   The proposed change does not introduce a new mode of plant operation and does not involve physical modification to the plant. Therefore, it does not create the possibility of a new or different kind of accident from any accident previously evaluated.

3. Does this change involve a significant reduction in a margin of safety?

   This change does not involve a significant reduction in a margin of safety since the cleanliness and tightness of the connections will be assured through the evaluation of connection resistance and corrosion checks.

NO SIGNIFICANT HAZARDS CONSIDERATION
ITS: 3.8.5 - DC SOURCES — SHUTDOWN

L.1 CHANGE

In accordance with the criteria set forth in 10 CFR 50.92, ComEd has evaluated this proposed Technical Specifications change and determined it does not represent a significant hazards consideration. The following is provided in support of this conclusion.

1. Does the change involve a significant increase in the probability or consequences of an accident previously evaluated?

   A DC power source is necessary to support the equipment used to mitigate the consequences of an accident; however, the DC power source is not considered the initiator of any previously analyzed accident. As such, the proposed revision to the Surveillance Requirements will not increase the probability of any accident previously evaluated. The proposed SRs continue to provide adequate assurance of OPERABLE batteries. Therefore, this change does not involve an increase in the probability or consequences of any accident previously evaluated.

2. Does the change create the possibility of a new or different kind of accident from any accident previously evaluated?

   The proposed change does not introduce a new mode of plant operation and does not involve physical modification to the plant. Therefore, it does not create the possibility of a new or different kind of accident from any accident previously evaluated.

3. Does this change involve a significant reduction in a margin of safety?

   This change does not involve a significant reduction in a margin of safety since the proposed change removes requirements for rendering the required battery inoperable. Omitting this condition represents a significant improvement in the margin of safety by removing the potential for an event without the required power source.

NO SIGNIFICANT HAZARDS CONSIDERATION
ITS: 3.8.6 - BATTERY CELL PARAMETERS

L.1 CHANGE

In accordance with the criteria set forth in 10 CFR 50.92, ComEd has evaluated this proposed Technical Specifications change and determined it does not represent a significant hazards consideration. The following is provided in support of this conclusion.

1. Does the change involve a significant increase in the probability or consequences of an accident previously evaluated?

   The DC electrical power subsystems are used to support mitigation of the consequences of an accident; however, they are not considered the initiator of any previously analyzed accident. As such, the removal of this Surveillance following a battery discharge or overcharge will not increase the probability of any accident previously evaluated. The proposed SR Frequency continues to provide adequate assurance of OPERABLE batteries since the batteries temperatures are not significantly affected (i.e., battery temperature does not normally decrease) by a severe discharge or overcharge. Therefore, the proposed change does not involve any increase to the consequence of any accident previously evaluated.

2. Does the change create the possibility of a new or different kind of accident from any accident previously evaluated?

   The proposed change does not introduce a new mode of plant operation and does not involve physical modification to the plant. Therefore, it does not create the possibility of a new or different kind of accident from any accident previously evaluated.

3. Does this change involve a significant reduction in a margin of safety?

   This change does not involve a significant reduction in a margin of safety since the SR Frequency will continue to assure the batteries are not degraded beyond current accepted temperature allowances and severe discharges or overcharges normally increase, not decrease, temperature.

L.2 CHANGE

In accordance with the criteria set forth in 10 CFR 50.92, ComEd has evaluated this proposed Technical Specifications change and determined it does not represent a significant hazards consideration. The following is provided in support of this conclusion.

1. Does the change involve a significant increase in the probability or consequences of an accident previously evaluated?

   The proposed change does not involve any physical alteration of plant systems, structures or components, changes in parameters governing normal plant operation, or methods of operation. The proposed change will reduce the number of battery cells in which the electrolyte temperature will be verified to 6 for the 58 and 60 cell 125 VDC Division 1 and 2 station batteries and to 12 for the 120 cell 250 VDC station batteries. The use of representative cells (10% of the total) is consistent with the guidelines presented in IEEE-450, 1995. The battery is necessary to support the equipment used to mitigate the consequences of an accident; however, the battery is not considered the initiator of any previously analyzed accident. As such, this change will not increase the probability or consequences of any accident previously evaluated.

2. Does the change create the possibility of a new or different kind of accident from any accident previously evaluated?

   The proposed change does not involve any physical alteration of plant systems, structures or components, changes in parameters governing normal plant operation, or methods of operation. Therefore, it does not create the possibility of a new or different kind of accident from any accident previously evaluated.

3. Does this change involve a significant reduction in a margin of safety?

   The proposed change does not involve any physical alteration of plant systems, structures or components, changes in parameters governing normal plant operation, or methods of operation. The proposed change retains the electrolyte temperature verification but reduces the number of battery cells in which the electrolyte temperature is verified. In addition, the electrolyte temperature is integral to other Surveillance Requirements which are retained consistent with the requirements of IEEE-450, 1995. Therefore, this change does not involve a significant reduction in a margin of safety.

L.3 CHANGE

In accordance with the criteria set forth in 10 CFR 50.92, ComEd has evaluated this proposed Technical Specifications change and determined it does not represent a significant hazards consideration. The following is provided in support of this conclusion.

1. Does the change involve a significant increase in the probability or consequences of an accident previously evaluated?

   The DC power sources are not assumed to be initiators of any analyzed event. Their role is in providing power to components required in the mitigation of design basis accidents, thereby limiting consequences. The proposed change will not allow continuous operation when sufficient battery capacity to perform the intended function does not exist. The proposed change allows 31 days for restoration of battery cell parameters provided Category C parameter limits are met. In addition, the consequences of an event occurring during the proposed Completion Time are the same as the consequences of an event occurring under the current ACTIONS. Therefore, the proposed change does not involve a significant increase in the probability or consequences of an accident previously evaluated.

2. Does the change create the possibility of a new or different kind of accident from any accident previously evaluated?

   The proposed change does not introduce a new mode of plant operation and does not involve physical modification to the plant. The proposed change will still ensure sufficient battery capacity exists to perform the intended function. Therefore, this change does not create the possibility of a new or different kind of accident from any previously evaluated.

3. Does this change involve a significant reduction in a margin of safety?

   The increased time allowed to continue operation with degraded batteries prior to requiring the batteries to be declared inoperable is acceptable based on the small probability of an event requiring the DC power sources to perform their intended function and the desire to minimize unnecessary plant transients. The requested allowed outage time will provide sufficient time to restore battery cell parameters without subjecting the unit to the transients associated with a shutdown. During the requested allowed outage time, the battery will still be capable of performing its intended function even though it may be degraded (Category C Limits are required to be met during this allowed outage time). As such, any reduction in a margin of safety will be insignificant and offset by the benefit of avoiding an unnecessary plant transient.

L.4 CHANGE

In accordance with the criteria set forth in 10 CFR 50.92, ComEd has evaluated this proposed Technical Specifications change and determined it does not represent a significant hazards consideration. The following is provided in support of this conclusion.

1. Does the change involve a significant increase in the probability or consequences of an accident previously evaluated?

   The DC electrical power sources are used to support mitigation of the consequences of an accident; however, they are not considered the initiator of any previously analyzed accident. As such, a temporary change in battery electrolyte level due to an equalizing charge will not increase the probability of any accident previously evaluated. The proposed LCO and SRs continue to provide adequate assurance of OPERABLE batteries since the temporary change in level does not affect the battery's capability to perform its required function. Therefore, the proposed change does not involve an increase in the consequences of any accident previously evaluated.

2. Does the change create the possibility of a new or different kind of accident from any accident previously evaluated?

   The proposed change does not introduce a new mode of plant operation and does not involve physical modification to the plant. Therefore, it does not create the possibility of a new or different kind of accident from any accident previously evaluated.

3. Does this change involve a significant reduction in a margin of safety?

   This change does not involve a significant reduction in a margin of safety since the cause of the change in electrolyte level is understood, known to be temporary, and recognized as not impacting the battery capability to perform its safety function.

L.5 CHANGE

In accordance with the criteria set forth in 10 CFR 50.92, ComEd has evaluated this proposed Technical Specifications change and determined it does not represent a significant hazards consideration. The following is provided in support of this conclusion.

1. Does the change involve a significant increase in the probability or consequences of an accident previously evaluated?

   The DC power sources are not assumed to be initiators of any analyzed event. Their role is in providing power to components required in the mitigation of design basis accidents, thereby limiting consequences. The proposed change will not allow continuous operation when sufficient battery capacity to perform the intended function does not exist. The proposed change allows 31 days for restoration of battery cell parameters provided Category C parameter limits are met. In addition, the consequences of an event occurring during the proposed Completion Time are the same as the consequences of an event occurring under the current ACTIONS. Therefore, the proposed change does not involve a significant increase in the probability or consequences of an accident previously evaluated.

2. Does the change create the possibility of a new or different kind of accident from any accident previously evaluated?

   The proposed change does not introduce a new mode of plant operation and does not involve physical modification to the plant. The proposed change will still ensure sufficient battery capacity exists to perform the intended function. Therefore, this change does not create the possibility of a new or different kind of accident from any previously evaluated.

3. Does this change involve a significant reduction in a margin of safety?

   The increased time allowed to continue operation with degraded batteries prior to requiring the batteries to be declared inoperable is acceptable based on the small probability of an event requiring the DC power sources to perform their intended function and the desire to minimize unnecessary plant transients. The requested allowed outage time will provide sufficient time to restore battery cell parameters without subjecting the unit to the transients associated with a shutdown. During the requested allowed outage time, the battery will still be capable of performing its intended function even though it may be degraded (Category C Limits are required to be met during this allowed outage time). As such, any reduction in a margin of safety will be insignificant and offset by the benefit of avoiding an unnecessary plant transient.

NO SIGNIFICANT HAZARDS CONSIDERATION
ITS: 3.8.7 - DISTRIBUTION SYSTEMS — OPERATING

L.1 CHANGE

In accordance with the criteria set forth in 10 CFR 50.92, ComEd has evaluated this proposed Technical Specifications change and determined it does not represent a significant hazards consideration. The following is provided in support of this conclusion.

1. Does the change involve a significant increase in the probability or consequences of an accident previously evaluated?

   The proposed change will allow more than one AC or DC electrical power distribution subsystem to be inoperable provided a loss of function does not occur. The electrical power distribution system is not an assumed initiator of any previously analyzed accident. Therefore, the change will have no impact on the probability of an accident previously analyzed. This change will not significantly increase the consequences of any accident previously evaluated because adequate electrical power distribution subsystems continue to be available to support the features necessary to respond to an analyzed event.

2. Does the change create the possibility of a new or different kind of accident from any accident previously evaluated?

   This proposed change will not involve any physical changes to plant systems, structures, or components. Any changes in normal plant operation do not alter assumptions made in the safety analysis and licensing basis. Therefore, this change will not create the possibility of a new or different kind of accident from any accident previously evaluated.

3. Does this change involve a significant reduction in a margin of safety?

   The proposed change continues to provide assurance that the appropriate electrical power distribution subsystems are available. Furthermore, the change recognizes that there is a potential for decreased safety if the unit operators attention is diverted from the evaluations and action necessary to restore power to the affected electrical power distribution subsystem. As a result, any reduction in a margin of safety will be insignificant and offset by the benefit gained in reducing unnecessary plant shutdown transients when equivalent compensatory measures exist to ensure no loss of safety function exists. There is no detrimental impact on any equipment design parameter, and the plant will still be required to operate within prescribed limits. Therefore, the change does not involve a significant reduction in the margin of safety.

NO SIGNIFICANT HAZARDS CONSIDERATION
ITS: 3.8.8 - DISTRIBUTION SYSTEMS – SHUTDOWN

There were no plant specific less restrictive changes identified for this Specification.

ENVIRONMENTAL ASSESSMENT
ITS: SECTION 3.8 - ELECTRICAL POWER SYSTEMS

In accordance with the criteria set forth in 10 CFR 50.21, ComEd has evaluated this proposed Technical Specification change for identification of licensing and regulatory actions requiring environmental assessment, determined it meets the criteria for a categorical exclusion set forth in 10 CFR 51.22(c)(9) and as such, has determined that no irreversible consequences exist in accordance with 10 CFR 50.92(b). This determination is based on the fact that this change is being proposed as an amendment to a license issued pursuant to 10 CFR which changes a requirement with respect to installation or use of a facility component located within the restricted area, as defined in 10 CFR 20, or which changes an inspection or a surveillance requirement, and the amendment meets the following specific criteria:

1. The amendment involves no significant hazards consideration.

   As demonstrated in the No Significant Hazards Consideration, this proposed amendment does not involve any significant hazards consideration.

2. There is no significant change in the type or significant increase in the amounts of any effluents that may be released offsite.

   The proposed change will not result in changes in the operation or configuration of the facility. There will be no change in the level of controls or methodology used for processing of radioactive effluents or handling of solid radioactive waste, nor will the proposal result in any change in the normal radiation levels within the plant. Therefore, there will be no change in the types or significant increase in the amounts of any effluents released offsite resulting from this change.

3. There is no significant increase in individual or cumulative occupational radiation exposure.

   The proposed change will not result in changes in the operation or configuration of the facility which impact radiation exposure. There will be no change in the level of controls or methodology used for processing of radioactive effluents or handling of solid radioactive waste, nor will the proposal result in any change in the normal radiation levels within the plant. Therefore, there will be no increase in individual or cumulative occupational radiation exposure resulting from this change.

Therefore, based upon the above evaluation, ComEd has concluded that no irreversible consequences exist with the proposed change.