

Apr 12, 1992

Mr. Patrick W. Marriott, Manager
Licensing & Consulting Services
GE Nuclear Energy
175 Curtner Avenue
San Jose, California 95125

Dear Mr. Marriott:

SUBJECT: ADVANCED BOILING WATER REACTOR (ABWR) TECHNICAL SPECIFICATION (TS)

Our review of the ABWR TS is closely tied to the review of the new BWR/6 Standard Technical Specifications (STS). The review of the ABWR TS is being conducted in two pieces. For most of the Limiting Conditions of Operation (LCOs) the ABWR TS will be almost identical to the new BWR/6 STS which will be issued in June 1992. We will make whatever minor changes are necessary for these "similar" LCOs in the new BWR/6 STS to create the ABWR TS.

Your December 12, 1991, submittal identified the LCOs which need to be modified significantly due to design differences of the ABWR as compared to the BWR/6 and provided proposed TS for all these "different" LCOs except those in the Instrumentation and Control (I&C) Section. We have recast and typed these "different" LCOs in the format of the new STS (Enclosure 1). We understand that you plan to submit the proposed TS for the i&C Section by April 10, 1992.

You are requested to review the enclosed TS and mark them to indicate any changes you believe are necessary to properly reflect the ABWR design and safety analyses. You are also requested to provide notes explaining the necessity for each change. The marked TS and notes should be submitted to us by April 24, 1992, to allow us to maintain the schedule for development of the ABWR TS.

Sincerely,

Original signed by Robert C. Pierson

Robert C. Pierson, Director
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and Special Projects
Office of Nuclear Reactor Regulation

Enclosure:
As stated

cc w/enclosure:
See next page

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3.1 REACTIVITY CONTROL SYSTEMS

3.1.5 Control Rod Scram Accumulators

LCO 3.1.5 Each control rod scram accumulator shall be OPERABLE.

APPLICABILITY: MODES 1 and 2.

- NOTES-----
1. When the pressure in any one of the control rod scram accumulators cannot be verified, this LCO must be entered, and the applicable Required Actions of Condition A applies.
 2. For this LCO, all control rod scram accumulators are treated as an entity with a single Completion Time.
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ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One or more control rod scram accumulator(s) inoperable.	<p>A.1 Declare the associated control rod(s) or control rod pair(s) inoperable.</p> <p style="text-align: center;"><u>AND</u></p> <p>A.2.1 Verify that the associated control rod(s) or control rod pair(s) are fully inserted and disarmed.</p>	1 hour

(continued)

SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
SR 3.1.5.1 Verify each control rod scram accumulator pressure is \geq [1850] psig.	7 days

3.4 REACTOR COOLANT SYSTEM (RCS)

3.4.1 Reactor Internal Pumps (RIPs) - Operating

LCO 3.4.1 At least nine RIPs shall be OPERABLE.
OR
 With only eight RIPs OPERABLE THERMAL POWER shall be < 95% RTP.
OR
 With only seven RIPs OPERABLE THERMAL POWER shall be < 90% RTP.

APPLICABILITY: MODES 1 and 2.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
		-----NOTE----- Completion time is on a Conditional basis. -----
A. Five or Six RIPs OPERABLE.	A.1 Reduce THERMAL POWER to < 25% RTP.	4 hours
	<u>AND</u> A.2 Restore at least seven RIPs to OPERABLE status.	12 hours
B. Four or less RIPs OPERABLE.	B.1 Reduce THERMAL POWER to < 5% RTP.	4 hours
	<u>AND</u> B.2 Restore at least seven RIPs to OPERABLE status.	12 hours

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
C. Required Actions and associated Completion Times of Condition A or B not met.	C.1 Be in MODE 3.	12 hours

SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
SR 3.4.1.1 Verify at least nine RIPs are OPERABLE at any THERMAL POWER level. OR With only eight RIPs OPERABLE, verify THERMAL POWER is < 95%. OR With only seven RIPs OPERABLE, verify THERMAL POWER is < 90%.	24 hours

3.5 EMERGENCY CORE COOLING SYSTEMS (ECCS)

3.5.1 ECCS— Operating

LCO 3.5.1 All ECCS subsystems shall be OPERABLE.

AND

[Eight] required Automatic Depressurization System (ADS) valves shall be OPERABLE.

APPLICABILITY: MODE 1,
MODES 2 and 3, except that ADS is not required to be OPERABLE with reactor steam dome pressure \leq 50 psig; and RCIC is not required to be OPERABLE with the reactor steam dome pressure $<$ 150 psig.

-----NOTE-----
For this LCO, all ECCS subsystems and all ADS valves are treated as an entity with a single Completion Time.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One injection subsystem inoperable.	A.1 Restore inoperable subsystem to OPERABLE status.	30 days
B. Two injection subsystems inoperable, both in the same division.	B.1 Restore one inoperable subsystem to OPERABLE status.	30 days

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
C. Two injection subsystems inoperable, each in a different division.	C.1 Restore one inoperable subsystem to OPERABLE status.	7 days
D. Three injection subsystems inoperable, two of which are in the same division.	D.1 Restore one inoperable division to OPERABLE status.	7 days
F. Required Action and associated Completion Time of Condition A, B, C, or D not met.	F.1 Be in MODE 3 <u>AND</u> F.2 Be in MODE 4.	12 hours 36 hours
G. Three injection subsystems inoperable, each in a different division. <u>OR</u> Four or more injection subsystems inoperable.	G.1 Enter LCO 3.0.3	Immediately
H. One required ADS valve inoperable.	H.1 Restore ADS valve to OPERABLE status.	14 days

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
I. Two required ADS valves inoperable.	I.1 Restore one ADS valve to OPERABLE status.	7 days
J. Three or more ADS valves inoperable. <u>OR</u> Required Action and associated Completion Time of Conditions H, or I not met.	J.1 Be in MODE 3 <u>AND</u> J.2 Reduce reactor steam dome pressure to < 50 psig.	12 hours 36 hours

SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
SR 3.5.1.1 Demonstrate that ECCS subsystem piping is filled with water from the pump discharge valve to the isolation valve.	31 days

(continued)

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE		FREQUENCY									
SR 3.5.1.2	<p>-----NOTE----- Low pressure f 1 (LPFL) subsystems may be considered OPERABLE during alignment to and operation in the residual heat removal (RHR) shutdown cooling mode when below 135 psig in MODE 3, if capable of being manually realigned and not otherwise inoperable. -----</p> <p>Verify that each ECCS subsystem manual, power-operated, and automatic valve in the flow path, that is not locked, sealed, or otherwise secured in position, is in its correct position.</p>	31 days									
SR 3.5.1.3	Verify that the Atmospheric Control System supply pressure to the ADS valves is ≥ 161 psig.	31 days									
SR 3.5.1.4	<p>Demonstrate that each ECCS pump develops the specified flow rate against a system head corresponding to the specified reactor pressure:</p> <table border="1" data-bbox="446 1276 1156 1532"> <thead> <tr> <th>SYSTEM</th> <th>FLOW RATE</th> <th>SYSTEM HEAD CORRESPONDING TO A REACTOR PRESSURE OF</th> </tr> </thead> <tbody> <tr> <td>LPFL</td> <td>≥ 4200 gpm</td> <td>≥ 40 psig</td> </tr> <tr> <td>HPCF</td> <td>≥ 800 gpm</td> <td>≥ 1177 psig</td> </tr> </tbody> </table>	SYSTEM	FLOW RATE	SYSTEM HEAD CORRESPONDING TO A REACTOR PRESSURE OF	LPFL	≥ 4200 gpm	≥ 40 psig	HPCF	≥ 800 gpm	≥ 1177 psig	In accordance with the Inservice Testing Program or 92 days
SYSTEM	FLOW RATE	SYSTEM HEAD CORRESPONDING TO A REACTOR PRESSURE OF									
LPFL	≥ 4200 gpm	≥ 40 psig									
HPCF	≥ 800 gpm	≥ 1177 psig									

(continued)

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE	FREQUENCY
<p>SR 3.5.1.5 Demonstrate, with reactor pressure < 1177 psig, that the RCIC pump can develop a flowrate > 800 gpm against a system head corresponding to reactor pressure > 1177 psig.</p>	<p>92 days <u>OR</u> 12 hours when reactor steam dome pressure is > 920 psig.</p>
<p>SR 3.5.1.6 -----NOTE----- SR 3.0.4 is not applicable. ----- Demonstrate, with reactor pressure < 165 psig, that the RCIC pump can develop a flowrate > 800 gpm against a system head corresponding to reactor pressure > 150 psig.</p>	<p>18 months <u>OR</u> Once only, 12 hours when reactor steam dome pressure is > 150 psig.</p>
<p>SR 3.5.1.7 -----NOTE----- Vessel injection may be excluded. ----- Demonstrate that each ECCS subsystem actuates on an actual or simulated automatic initiation signal.</p>	<p>13 months</p>
<p>SR 3.5.1.8 -----NOTE----- Valve actuation may be excluded. ----- Demonstrate that the ADS actuates on an actual or simulated automatic initiation signal.</p>	<p>18 months</p>

SR 3.5.1.9 -----NOTE-----
SR 3.0.4 is not applicable.

Demonstrate that each ADS valve opens when
manually actuated at reactor steam dome
pressure \geq [] psig.

18 months

OR

Once only,
12 hours after
reactor steam
dome pressure
is \geq [] psig

3.6 CONTAINMENT SYSTEMS

3.6.2.3 Residual Heat Removal (RHR) Suppression Pool Cooling System

LCO 3.6.2.3 Three RHR suppression pool cooling subsystems shall be OPERABLE.

APPLICABILITY: MODES 1, 2, and 3.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One RHR suppression pool cooling subsystem inoperable.	A.1 Restore RHR suppression pool cooling subsystem to OPERABLE status.	30 days
B. Two RHR suppression pool cooling subsystems inoperable.	B.1 Restore one RHR suppression pool cooling subsystem to operable status.	7 days
C. Three RHR suppression pool cooling subsystems inoperable.	C.1 Restore one RHR suppression pool cooling subsystem to operable status.	8 hours
D. Required Action and associated Completion Time not met.	D.1 Be in MODE 3.	12 hours
	<u>AND</u> D.2 Be in MODE 4.	36 hours

SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
<p>SR 3.6.2.3.1 Verify each RHR suppression pool cooling manual, power-operated, or automatic valve, that is not locked, sealed, or otherwise secured in position, is in its correct position or can be aligned to its correct position.</p>	<p>31 days</p>
<p>SR 3.6.2.3.2 Demonstrate each RHR pump develops a flow rate \geq [4200] gpm through the associated RHR heat exchanger(s) while operating in the suppression pool cooling mode.</p>	<p>In accordance with the Inservice Inspection and Testing Program, or 92 days</p>

3.7 PLANT SYSTEMS

3.7.1.1 [Standby] Service Water (SSW) System

LCO 3.7.1.1 Division I and II SSW subsystems shall be OPERABLE.

APPLICABILITY: MODES 1, 2, and 3.

-----NOTE-----
For this LCO, all the components of the SSW System are treated as an entity with a single Completion Time.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One SSW subsystem inoperable.	A.1 Restore the SSW subsystem to OPERABLE status.	72 hours
	<u>AND</u>	
	A.2 Verify that the Required Actions for those supported systems declared inoperable by the inoperability of the support SSW subsystem have been initiated.	[] hours, [where [] hours is the most limiting Completion Time of all the supported systems' Required Actions]

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
<p>B. a. One SSW subsystem inoperable.</p> <p><u>AND</u></p> <p>b. One or more required support or supported features inoperable associated with the other redundant SSW subsystem.</p>	<p>B.1 Enter LCO 3.0.3, unless the loss of functional capability is allowed in the support or supported feature LCO.</p>	<p>Immediately</p>
<p>C. a. Required Actions and associated Completion Times not met.</p> <p><u>OR</u></p> <p>b. Both SSW subsystems inoperable.</p>	<p>C.1 Be in MODE 3.</p> <p><u>AND</u></p> <p>C.2 Be in MODE 4.</p>	<p>12 hours</p> <p>36 hours</p>

SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
SR 3.7.1.1.1 Verify the water level in each SSW pump well of the intake structure is \geq [] ft.	24 hours
SR 3.7.1.1.2 Verify each SSW manual, power operated, and automated valve in the flow path servicing safety-related systems or components, not locked, sealed, or otherwise secured in position is in the correct position	31 days
SR 3.7.1.1.3 Demonstrate each SSW subsystem actuates on an actual or simulated initiation signal.	[18] months

3.7 PLANT SYSTEMS

3.7.1.2 Ultimate Heat Sink (UHS)

LCO 3.7.1.2 UHS shall be OPERABLE.

APPLICABILITY: MODES 1, 2, and 3.

-----NOTE-----
For this LCO, all the components of the UHS are treated as an entity with a single Completion Time.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One or more cooling tower fans inoperable.	A.1 Verify at least [one] cooling tower fan in each cooling tower OPERABLE.	1 hour
	<u>AND</u>	
	A.2 Restore cooling tower fans to OPERABLE status.	7 days
B. Less than [one] cooling tower fan(s) in one or more cooling towers inoperable.	B.1 Verify that the Required Actions for those supported systems declared inoperable by the inoperability of the support cooling tower fans have been initiated.	[] hours, [where [] hours is the most limiting Completion Time of all the supported systems' Required Actions]

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
<p>C. a. No more than one [one] cooling tower fan inoperable.</p> <p><u>AND</u></p> <p>b. One or more required support or supported features associated with the other cooling tower fans inoperable.</p>	<p>C.1 Enter LCO 3.0.3, unless the loss of functional capability is allowed in the support or supported features LCO.</p>	<p>Immediately</p>
<p>D. Required Actions and associated Completion Times not met.</p> <p><u>OR</u></p> <p>UHS inoperable for reasons other than Condition A.</p>	<p>D.1 Be in MODE 3.</p> <p><u>AND</u></p> <p>D.2 Be in MODE 4.</p>	<p>12 hours</p> <p>36 hours</p>

(continued)

SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
SR 3.7.1.2.1 Verify the water level of each cooling tower basin is \geq [] ft.	24 hours
SR 3.7.1.2.2 Verify that the average water temperature of the UHS is \leq []°F.	24 hours
SR 3.7.1.2.3 Operate each cooling tower fan for \geq [15] minutes.	31 days

3.7 PLANT SYSTEMS

3.7.2 Reactor Building Cooling Water (RCW) and Reactor Service Water System (RWS)

LCO 3.7.2 The Division 1, 2, and 3 RCW and RSW subsystems shall be OPERABLE.

APPLICABILITY: MODES 1, 2, and 3.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One RCW pump, one RSW pump and/or one RCW/RSW heat exchanger in the same subsystem.	A.1 Restore the inoperable RCW/RSW component(s) to OPERABLE status.	30 days
	OR A.2 Declare affected RCW/RSW subsystem inoperable.	30 days

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR	3.7.2.1 Verify water level in the RSW pump well of the intake structure is > [] feet.	14 days AND 12 hours when pump well is < [] feet.
SR	3.7.2.2 Verify for each required RCW/RSWS subsystem each manual, power-operated, and automatic valve in RCW/RSW flow paths that are servicing safety-related systems or components and is not locked, sealed, or otherwise secured in position, is in the correct position.	31 days
SR	3.7.2.3 Demonstrate each RCW/RSW subsystem actuates and/or reconfigures to the safety related mode of operation on an actual or simulated initiation signal.	[18] months

3.7 PLANT SYSTEMS

3.7.8 Main Turbine Overspeed Protection System (MTOPS)

LCO 3.7.8 The three trains of the Main Turbine Overspeed Protection System shall be OPERABLE.

APPLICABILITY: MODES 1 and 2.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One of three MTOPS subsystems inoperable.	A.1 Restore inoperable MTOPS subsystem to OPERABLE Status.	30 days
B. One Turbine Control Valve or One Stop Valve per high pressure turbine steam line inoperable. <u>OR</u> One Turbine Intercept or Intermediate Stop Valve per low pressure turbine steam line inoperable.	B.1 Restore inoperable valves to OPERABLE Status.	72 hours
C. Two of Three MTOPS subsystems inoperable.	C.1 Isolate turbine from steam supply.	6 hours
B. Required Action and associated Completion Time not met.	B.1 Isolate turbine from steam supply.	Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
<p>SR 3.7.8.1 Cycle each of the following valves through at least one complete cycle from the running position:</p> <ul style="list-style-type: none"> a. For the Electro-hydraulic Overspeed Protection subsystem; <ul style="list-style-type: none"> 1. Six low pressure turbine intercept valves, and 2. Four high pressure turbine control valves. b. For the Electrical Overspeed Protection subsystem and the Mechanical Overspeed Protection subsystem; <ul style="list-style-type: none"> 1. Four high pressure turbine stop valves, and 2. Six low pressure turbine intermediate stop valves, and 3. Four high pressure turbine control valves. 	<p>7 days</p>

(continued)

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE	FREQUENCY
SR 3.7.8.2 Perform a functional test of the electro-hydraulic, mechanical and electrical overspeed trip devices.	18 months
SR 3.7.8.3 Disassemble at least one of each of the above valves and perform a visual and surface inspection of all valve seats, disks and stems and verify no unacceptable flaws or excessive corrosion. If unacceptable flaws or excessive corrosion are found, all other valves of that type shall be inspected.	40 months

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 circuits between the offsite transmission network and the onsite Class 1E Distribution System, and
 - B. Three diesel generators (DGs).

APPLICABILITY: MODES 1, 2, and 3.

-----NOTE-----
For this LCO, all required AC electrical power sources and all required [automatic sequencers] shall be treated as an entity with a single Completion Time.

(continued)

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
<p>A. -----NOTE----- Other offsite SRs: see SR 3.8.1.1. ----- One required offsite circuit inoperable.</p>	<p>A.1 Perform SR 3.8.1.1 (offsite circuit check) for OPERABLE required offsite circuit.</p>	<p>1 hour <u>AND</u></p>
	<p><u>AND</u></p>	<p>Once per 8 hours thereafter</p>
	<p>A.2 Declare supported features with no offsite power available, associated with cross division failure, inoperable.</p>	<p>24 hours from discovery of no offsite power to one division concurrent with cross division failure</p>
	<p><u>AND</u></p>	
	<p>A.3.1 Restore all required AC electrical power sources to OPERABLE status.</p>	<p>72 hours</p>
	<p><u>OR</u></p>	
	<p>A.3.2.1 Verify onsite combustion turbine is available and capable of being aligned to each of three essential buses.</p>	<p>4 hours <u>AND</u> Once per 24 hours thereafter</p>
<p><u>AND</u></p>		
<p>A.3.2.2 Restore required offsite circuit to OPERABLE status.</p>	<p>14 days</p>	

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
<p>B. No offsite power source to one [division] of the onsite Class 1E Power Distribution System.</p> <p><u>AND</u></p> <p>One or more required support or supported features, inoperable that are associated with the other [divisions] that have offsite power or associated with opposite OPERABLE DC power sub-system(s), or both.</p>	<p>B.1 Restore all required AC electrical power sources to OPERABLE status.</p>	<p>[BX] hours</p>
	<p><u>OR</u></p> <p>B.2 Restore all required support and supported features to OPERABLE status that are associated with the other [divisions] that have offsite power and opposite OPERABLE DC power subsystem(s).</p>	<p>[BX] hours</p>

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
<p>C. -----NOTES----- 1. Other offsite SRs: See SR 3.8.1.2. 2. Other onsite SRs: See SR 3.8.1.3. 3. Must complete SRs: SR 3.8.1.3 shall be completed if this Condition is entered.</p>	<p>C.1 Perform SR 3.8.1.1 (offsite circuit check) for OPERABLE required offsite circuit. <u>AND</u></p>	<p>1 hour <u>AND</u> Once per 8 hours thereafter</p>
	<p>C.2 Declared supported features, associated with cross division failure, inoperable. <u>AND</u></p>	<p>4 hours from discovery of Condition C concurrent with cross division failure</p>
<p>----- One required diesel generator (DG) inoperable.</p>	<p>C.3.1 Determine OPERABLE DGs are not inoperable due to common cause failure. <u>OR</u></p>	<p>24 hours</p>
	<p>C.3.2 Perform SR 3.8.1.2 (DG start) for OPERABLE DGs. <u>AND</u></p>	<p>24 hours</p>
	<p>C.4.1 Restore required DG OPERABLE status. <u>OR</u></p>	<p>14 days</p>
	<p>C.4.2.1 Verify onsite combustion turbine is available and capable of being aligned to the associated essential AC bus. <u>AND</u></p>	<p>4 hours <u>AND</u> Once per 24 hours thereafter</p>

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
	C.4.2.2 Restore required offsite circuit to OPERABLE status.	14 days
<p>D. One required DG inoperable.</p> <p><u>AND</u></p> <p>One or more required support or supported features inoperable that are associated with the other divisions that have a required OPERABLE DG or associated with opposite OPERABLE DC power sub-system(s), or both.</p>	<p>D.1 Restore all required AC electrical power sources to OPERABLE status.</p> <p><u>OR</u></p> <p>D.2 Restore all required support and supported features to OPERABLE status that are associated with the other divisions that have a required OPERABLE DG or opposite OPERABLE DC power subsystem(s), or both.</p>	<p>[DX] hours</p> <p>[DX] hours</p>

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
<p>E. One required offsite circuit inoperable.</p> <p><u>AND</u></p> <p>One required DG inoperable.</p>	<p>-----NOTE----- When Condition E is entered with no AC power source to one division, LCO 3.8.7 shall be immediately entered. -----</p> <p>E.1 Restore all required offsite circuits to OPERABLE status.</p> <p><u>OR</u></p> <p>E.2 Restore all required DGs to OPERABLE status.</p>	<p>12 hours</p> <p>12 hours</p>

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
F. Two required offsite circuits inoperable.	F.1 Declare supported features, associated with cross division failure, inoperable.	12 hours from discovery of Condition F concurrent with cross division failure
	<u>AND</u> F.2 Restore at least 1 required offsite circuit to OPERABLE status.	24 hours
G. Two required DGs inoperable.	G.1 Restore at least 1 required DG[s] to OPERABLE status.	2 hours
H. Required Actions and associated Completion Times of Conditions A,B,C,D,E,F or G not met.	H.1 Be in MODE 3.	12 hours
	<u>AND</u> H.2 Be in MODE 4.	36 hours
I. Three required AC sources inoperable.	I.1 Enter LCO 3.0.3.	Immediately

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
J. One required [automatic load sequencer] inoperable.	J.1 Restore all required [automatic load sequencers] to OPERABLE status.	[2] hours
K. Required Actions and Associated Completion Times of Condition A, B, C, D, E, F, G, H or J not met.	K.1 Be in MODE 3.	12 hours
	<u>AND</u> K.2 Be in MODE 4.	36 hours

SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
<p>SR 3.8.1.1 -----NOTE----- SR 3.8.1.1 is only required when in Condition A. -----</p> <p>Perform the Surveillance of SR 3.8.1.4 for any remaining required offsite circuits that are OPERABLE.</p>	<p>Once within 1 hour of entering Condition A</p> <p><u>AND</u></p> <p>Once per 8 hours thereafter</p>
<p>SR 3.8.1.2 -----NOTE----- SR 3.8.1. is only required when in Condition C. -----</p> <p>Perform the Surveillance of SR 3.8.1.4 for any required offsite circuits that are OPERABLE.</p>	<p>Once within 1 hour of entering Condition C</p> <p><u>AND</u></p> <p>Once per 8 hours thereafter</p>

(continued)

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE	FREQUENCY
<p>SR 3.8.1.3 -----NOTE----- SR 3.8.1.3 is only required when in Condition C. -----</p> <p>A.1 Determine absence of common cause for the DG inoperability for any remaining required DGs that are OPERABLE.</p> <p><u>OR</u></p> <p>B.1 Perform the Surveillance of SR 3.8.1.5 for any remaining required DGs that are OPERABLE.</p>	<p>Once within [8] hours of entering Condition C</p> <p>Once within [8] hours of entering Condition C</p>
<p>SR 3.8.1.4 Verify correct breaker alignment and indicated power availability for each required offsite circuit and OPERABILITY of devices providing the independence and separability.</p>	<p>7 days</p>

(continued)

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE	FREQUENCY
<p>SR 3.8.1.5 -----NOTES-----</p> <ol style="list-style-type: none"> 1. Performance of SR 3.8.1.17 satisfies this SR. 2. All DG starts may be preceded by prelube procedures as recommended by the manufacturer. 3. Following DG start, warmup procedures such as idling and gradual acceleration may be used as recommended by the manufacturer. When they are not used, the time, voltage, and frequency tolerances specified in SR 3.8.1.17 must be met. 4. Following this SR, satisfy SR 3.8.1.6. (Exceptions: Do not follow with SR 3.8.1.6 under the following circumstances: <ol style="list-style-type: none"> a. If SR 3.8.1.5 was required by SR 3.8.1.3, or b. If SR 3.8.1.5 was required by SR 3.8.2.1.) <p>-----</p> <p>Demonstrate each DG starts from standby conditions and achieves steady-state voltage and frequency within the ranges:</p> <ol style="list-style-type: none"> a. $6210 \text{ V} \leq \text{voltage} \leq 7590 \text{ V}$; and b. $58.8 \text{ Hz} \leq \text{frequency} \leq 61.2 \text{ Hz}$. 	<p>As specified by Table 3.8.1-1</p>

(continued)

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE	FREQUENCY
<p>SR 3.8.1.6 -----NOTES-----</p> <ol style="list-style-type: none"> 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. <p>-----</p> <p>Demonstrate each DG is synchronized and loaded and operates for ≥ 60 minutes at a load within the range: $[\quad] \text{ kW} \leq \text{load} \leq [\quad] \text{ kW}$ for DG A, DG B, and DG C and a power factor within the range: $[\quad] \leq \text{power factor} \leq [\quad]$.</p>	<p>As specified by Table 3.8.1-1</p>
<p>SR 3.8.1.7 Verify pressure in required air-start receivers $\geq [\quad]$ psig.</p>	<p>31 days</p>
<p>SR 3.8.1.8 Verify each fuel day tank [and engine-mounted fuel tank] contains $\geq [\quad]$ gal of fuel.</p>	<p>31 days</p>

(continued)

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE	FREQUENCY
SR 3.8.1.9 Verify each fuel storage tank contains \geq [60,000] gal of fuel.	31 days
SR 3.8.1.10 Verify lubricating oil inventory is \geq [500] gal.	31 days
SR 3.8.1.11 Demonstrate the flash point, gravity, viscosity, and appearance of new fuel are within limits when tested in accordance with applicable American Society for Testing Materials (ASTM) standards.	Once within 31 days prior to addition of new fuel to storage tank(s)
SR 3.8.1.12 Demonstrate that the properties of new fuel, other than those listed in SR 3.8.1.11, are within applicable ASTM limits.	Once within 31 days following performance of SR 3.8.1.11
SR 3.8.1.13 Demonstrate that the total particulate in stored fuel is less than 10 mg/l when tested in accordance with applicable ASTM standards.	31 days

(continued)

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE	FREQUENCY
SR 3.8.1.14 Check for and remove accumulated water from each storage tank.	31 days
SR 3.8.1.15 Check for and remove accumulated water from each day tank [and engine-mounted tank].	31 days
SR 3.8.1.16 Demonstrate the fuel transfer system operates to [automatically] transfer fuel from storage tank(s) to the day tank [and engine-mounted tank].	92 days
<p>SR 3.8.1.17 -----NOTES-----</p> <ol style="list-style-type: none"> 1. All DG starts may be preceded by an engine prelube period. 2. Following this SR (except when required by SR 3.8.2.1), perform SR 3.8.1.6. <p>-----</p> <p>Demonstrate each DG starts from standby condition and achieves in ≤ 13 seconds, voltage and frequency within the ranges:</p> <ol style="list-style-type: none"> a. $[6210] \text{ V} \leq \text{voltage} \leq [7590] \text{ V}$; and b. $58.8 \text{ Hz} \leq \text{frequency} \leq 61.2 \text{ Hz}$. 	184 days

(continued)

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE	FREQUENCY
<p>SR 3.8.1.18 -----NOTES-----</p> <ol style="list-style-type: none"> 1. This Surveillance shall not be performed in MODE 1 or 2. 2. Credit may be taken for unplanned events that satisfy this SR. <p>-----</p> <p>Demonstrate [automatic/manual] transfer of [safety-related power supply] from the [normal] circuit to each required offsite circuit and between the required] offsite circuits.</p>	<p>18 months</p>

(continued)

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE	FREQUENCY
<p>SR 3.8.1.19 -----NOTES-----</p> <ol style="list-style-type: none"> 1. This Surveillance shall not be performed in MODE 1 or 2. 2. Credit may be taken for unplanned events that satisfy this SR. <p>-----</p> <p>Demonstrate each DG operating at a power factor within the range: $[0.80] \leq \text{power factor} \leq [0.90]$ rejects a load $\geq [\quad]$ kW for Division 1, 2 and 3 DGs, and:</p> <ol style="list-style-type: none"> a. Following load rejection, the frequency is $\leq [\quad]$ Hz; and b. Within $[\quad]$ seconds following load rejection, the voltage is within the range: $[\quad]$ V \leq voltage $\leq [\quad]$ V; and c. Within $[\quad]$ seconds following load rejection, the frequency is within the range: $[\quad]$ Hz \leq frequency $\leq [\quad]$ Hz. 	<p>18 months</p>

(continued)

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE	FREQUENCY
<p>SR 3.8.1.20 -----NOTES-----</p> <ol style="list-style-type: none"> 1. This Surveillance shall not be performed in MODE 1 or 2. 2. Credit may be taken for unplanned events that satisfy this SR. <p>-----</p> <p>Demonstrate each DG, operating at a power factor within the range: $[0.8] \leq \text{power factor} \leq [0.9]$ does not trip and voltage is maintained $\leq [\quad]$ V during and following a load rejection of a load within the range: $[\quad] \text{ kW} \leq \text{load} \leq [\quad] \text{ kW}$ for Division 1, 2 and 3 DGs.</p>	<p>18 months</p>

(continued)

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE	FREQUENCY
<p>SR 3.8.1.21 -----NOTES-----</p> <ol style="list-style-type: none"> 1. All DG starts may be preceded by prelube procedures as recommended by the manufacturer. 2. This Surveillance shall not be performed MODE 1, 2, or 3. 3. Credit may be taken for unplanned events that satisfy this SR. <p>-----</p> <p>Demonstrate on an actual or simulated loss of offsite power signal:</p> <ol style="list-style-type: none"> a. De-energization of emergency buses; b. Load shedding from emergency buses; and c. DG auto-starts from standby condition and: <ol style="list-style-type: none"> 1. energizes permanently connected loads in $\leq [13]$ seconds, 2. energizes auto-connected shutdown loads through [automatic load sequencer]; 3. maintains steady-state voltage in the range: $[6210] \text{ V} \leq \text{voltage} \leq [7590] \text{ V}$; 4. maintains steady-state frequency in the range: $[58.8] \text{ Hz} \leq \text{frequency} \leq [61.2] \text{ Hz}$, and 5. supplies permanently connected and auto-connected shutdown loads for $\geq [5]$ minutes. 	<p>18 months</p>

(continued)

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE	FREQUENCY
<p>SR 3.8.1.22 -----NOTES-----</p> <ol style="list-style-type: none"> 1. All DG starts may be preceded by prelube procedures as recommended by the manufacturer. 2. This Surveillance shall not be performed in MODE 1 or 2. 3. Credit may be taken for unplanned events that satisfy this SR. <p>-----</p> <p>Demonstrate on an actual or simulated Emergency Core Cooling System (ECCS) initiation signal each DG auto-starts from standby condition and:</p> <ol style="list-style-type: none"> a. In \leq [13] seconds after auto-start and during tests, achieves voltage in the range: [6210] V \leq voltage \leq [7590] V; b. In \leq [13] seconds after auto-start and during tests, achieves Frequency in the range: [58.8] Hz \leq Frequency \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 energized [or auto-connected through the automatic load sequencer] to the offsite power system. 	<p>18 months</p>

(continued)

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE	FREQUENCY
<p>SR 3.8.1.23 -----NOTES-----</p> <ol style="list-style-type: none"> 1. This Surveillance shall not be performed in MODE 1, 2, or 3. 2. Credit may be taken for unplanned events that satisfy this SR. <p>-----</p> <p>Demonstrate 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:</p> <ol style="list-style-type: none"> a. Engine overspeed; b. Generator differential current; c. Low lube oil pressure; d. [High crankcase pressure]; and e. [Start failure relay]. 	<p>18 months</p>

(continued)

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE	FREQUENCY
<p>SR 3.8.1.24 -----NOTES-----</p> <ol style="list-style-type: none"> 1. Momentary transients outside the load range do not invalidate this test. 2. This Surveillance shall not be performed in MODE 1 or 2. 3. Credit may be taken for unplanned events that satisfy this SR. <p>-----</p> <p>Demonstrate each DG operating at a power factor within the range:</p> <p>$[0.8] \leq \text{power factor} \leq [0.9]$ for Division 1, 2 and 3 DGs, operates for ≥ 24 hours:</p> <ol style="list-style-type: none"> a. During the first [2] hours loaded within the range: <p style="margin-left: 40px;">$[\quad] \text{ kW} \leq \text{load} \leq [\quad] \text{ kW}$ for [Division 1, 2 and 3] DGs;</p> b. During the remaining [22] hours of the test loaded within the range: <p style="margin-left: 40px;">$[\quad] \text{ kW} \leq \text{load} \leq [\quad] \text{ kW}$ for Division 1, 2 and 3 DGs.</p> 	<p>18 months</p>

(continued)

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE	FREQUENCY
<p>SR 3.8.1.25 -----NOTES-----</p> <ol style="list-style-type: none"> 1. This Surveillance shall be performed within 5 minutes of shutting down the DG after the DG has operated ≥ 2 hours at a power factor in the range: $[0.8] \leq \text{power factor} \leq [0.9]$ and at a load in the range: $[\quad]\text{kW} \leq \text{load} \leq [\quad]\text{kW}$ for Division 1, 2 and 3 DGs. 2. All DG starts may be preceded by prelube procedures as recommended by the manufacturer. 3. Momentary transients outside of load range do not invalidate this test. <p>-----</p> <p>Demonstrate each DG starts and achieves in $\leq [13]$ seconds, voltage and frequency within the ranges:</p> <ol style="list-style-type: none"> a. $[6210] \text{ V} \leq \text{voltage} \leq [7590] \text{ V}$; and b. $58.8 \text{ Hz} \leq \text{frequency} \leq 61.2 \text{ Hz}$. 	<p>18 months</p>

(continued)

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE	FREQUENCY
<p>SR 3.8.1.26 -----NOTES-----</p> <ol style="list-style-type: none"> 1. This Surveillance shall not be performed in MODE 1, 2, or 3. 2. Credit may be taken for unplanned events that satisfy this SR. <p>-----</p> <p>Demonstrate each DG:</p> <ol style="list-style-type: none"> 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. 	<p>18 months</p>
<p>SR 3.8.1.27 -----NOTES-----</p> <ol style="list-style-type: none"> 1. This Surveillance shall not be performed in MODE 1, 2, or 3. 2. Credit may be taken for unplanned events that satisfy this SR. <p>-----</p> <p>Demonstrate with a DG operating in test mode and connected to its bus, an actual or simulated ECCS initiation signal overrides the test mode by:</p> <ol style="list-style-type: none"> a. Returning DG to ready-to-load operation [; and] [b. Automatically energizing the emergency load with offsite power]. 	<p>18 months</p>

(continued)

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE	FREQUENCY
<p>SR 3.8.1.28 -----NOTES-----</p> <ol style="list-style-type: none"> 1. This Surveillance shall not be performed in MODE 1, 2, or 3. 2. Credit may be taken for unplanned events that satisfy this SR. <p>-----</p> <p>Demonstrate the interval between each load block is within \pm [10% of design interval] for each emergency [and shutdown] load sequencer.</p>	<p>18 months</p>
<p>SR 3.8.1.29 -----NOTES-----</p> <ol style="list-style-type: none"> 1. All DG starts may be preceded by prelube procedures as recommended by the manufacturer. 2. This Surveillance shall not be performed in (VS-BW,CE,W: MODE 1, 2, 3, or 4.) (VS-GE: MODE 1, 2, or 3.) 3. Credit may be taken for unplanned events that satisfy this SR. <p>-----</p> <p>Demonstrate on an actual or simulated ECCS initiation signal with delayed loss of offsite power:</p> <ol style="list-style-type: none"> a. Each DG auto-starts from standby conditions and: <ol style="list-style-type: none"> 1. achieves in \leq [13] seconds after auto-start and during test, voltage within the range: [6210] V \leq voltage \leq [7590] V, 	<p>36 months alternated with SR 3.8.1.30</p>

(continued)

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE	FREQUENCY
<p>SR 3.8.1.29 (continued)</p> <p>2. achieves in \leq [13] seconds after auto-start and during test, frequency within the range: [58.8] Hz \leq frequency \leq [61.2] Hz;</p> <p>b. Permanently connected loads remain energized from the offsite power system; and</p> <p>c. Emergency loads are energized [or auto-connected through the load sequencer] to the offsite power system.</p> <p>Before the last load step, simulate loss of offsite power and demonstrate:</p> <p>a. De-energization of emergency buses;</p> <p>b. Load shedding from emergency buses; and</p> <p>c. DG from ready-to-load condition:</p> <ol style="list-style-type: none"> 1. energizes permanently connected loads, 2. energizes auto-connected emergency loads through load sequencer, 3. achieves steady-state voltage within the range: [6210] V \leq voltage \leq [7590] V, 4. achieves steady-state frequency within the range: [58.8] Hz \leq frequency \leq [61.2] Hz, and 5. supplies permanently connected and auto-connected emergency loads for \geq 5 minutes. 	

(continued)

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE	FREQUENCY
<p>SR 3.8.1.30 -----NOTES-----</p> <ol style="list-style-type: none"> 1. All DG starts may be preceded by prelube procedures as recommended by the manufacturer. 2. This Surveillance shall not be performed in MODE 1, 2, or 3. 3. Credit may be taken for unplanned events that satisfy this SR. <p>-----</p> <p>Demonstrate on an actual or simulated loss of offsite power signal in conjunction with an actual or simulated ECCS initiation signal:</p> <ol style="list-style-type: none"> a. De-energization of emergency buses; b. Load shedding from emergency buses; and c. DG auto-starts from standby condition and: <ol style="list-style-type: none"> 1. energizes permanently connected loads in \leq [13] seconds, 2. energizes auto-connected emergency loads through load sequencer, 3. achieves steady-state voltage within the range: [6210] V \leq voltage \leq [7590] V, 4. achieves steady-state frequency within the range: [58.8] Hz \leq frequency \leq [61.2] Hz, and 5. supplies permanently connected and auto-connected emergency loads for \geq [5] minutes. 	<p>36 months alternated with SR 3.8.1.29</p>

(continued)

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE	FREQUENCY
<p>SR 3.8.1.31 For the fuel subsystem:</p> <ul style="list-style-type: none"> a. Drain each fuel storage tank; b. Remove the sediment from the storage tank; and c. Clean the storage tank. 	<p>10 years</p>
<p>SR 3.8.1.32 -----NOTE----- All DG starts may be preceded by prelube procedures as recommended by the manufacturer. -----</p> <p>Demonstrate that when started simultaneously from standby condition, the Division 1, 2, and 3)) DGs each achieve in \leq [13] seconds voltage and frequency within the range:</p> <ul style="list-style-type: none"> a. [6210] V \leq voltage \leq [7500] V; and b. 58.8 Hz \leq frequency \leq 61.2 Hz. 	<p>10 years</p>

Table 3.8.1-1 (Page 1 of 1)
Diesel Generator Test Schedule

NUMBER OF FAILURES IN LAST 25 VALID TESTS ^(a)	FREQUENCY
≤ 3	31 days
≥ 4	7 days ^(b) (but no less than 24 hours)

- a. Criteria for determining number of failures and valid demands shall be in accordance with Regulatory Position C.2.1 of Regulatory Guide 1.9, Revision 3, where the number of demands and failures is determined on a per DG basis.
- b. This test frequency shall be maintained until seven consecutive failure-free starts from standby conditions and load-run demands have been performed. This is consistent with Regulatory Position [], of Regulatory Guide 1.9, Revision 3. If subsequent to the seven failure-free tests one or more additional failures occur such that there are again four or more failures in the last 25 tests, the testing interval shall again be reduced as noted above and maintained until seven 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.]

3.8 ELECTRICAL POWER SYSTEMS

3.8.4 DC Sources—Operating

LCO 3.8.4 The Division 1,2,3 and 4 DC power subsystems shall be OPERABLE.

APPLICABILITY: MODES 1, 2, and 3.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. Division 4 DC electrical power subsystem inoperable.	A.1 Restore Division 4 DC electrical power subsystem to OPERABLE status.	30 days
B. Division 1, 2 or 3 electrical power subsystems inoperable.	B.1 Restore Division 1, 2 or 3 DC electrical power subsystems to OPERABLE status.	7 days
C. Two DC electrical power subsystems inoperable.	C.1 Restore one inoperable DC electrical power subsystem to OPERABLE status.	12 hours
D. Three or more DC electrical power subsystems inoperable.	D.1 Be in MODE 3.	12 hours)
	<u>AND</u>	
<u>OR</u>	D.2 Be in MODE 4.	36 hours
Required Actions and Associated Completion Times of Condition A, B or C not met.		

SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
<p>SR 3.8.4.1 A.1 Verify battery cell parameters meet Table 3.8.4-1 Category A limits.</p> <p><u>OR</u></p> <p> B.1.1 Verify pilot cells' electrolyte level and float voltage meet Table 3.8.4-1 Category C allowable values.</p> <p><u>AND</u></p> <p> B.1.2 Verify battery cell parameters meet Table 3.8.4-1 Category C allowable values.</p> <p><u>AND</u></p> <p> B.1.3 Verify battery cell parameters have been restored to Category A and B limits of Table 3.8.4-1.</p>	<p>7 days</p> <p>Once within 1 hour of Category A parameters found outside limits</p> <p>Once within 24 hours of Category A parameters found outside limits</p> <p>Once within 31 days of Category A parameters found outside limits</p>
<p>SR 3.8.4.2 Verify battery terminal voltage is \geq [129] V on float charge.</p>	<p>7 days</p>

(continued)

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE	FREQUENCY
<p>3.8.4.3 A.1 Verify battery cell parameters meet Table 3.8.4-1 Category B limits.</p> <p><u>AND</u></p> <p>Once within 24 hours after a battery discharge below [110] V</p> <p><u>AND</u></p> <p>Once within 24 hours after a battery overcharge above [150] V</p> <p><u>OR</u></p> <p>B.1.1 Verify pilot cells' electrolyte level and float voltage meet Table 3.8.4-1 Category C allowable values.</p> <p><u>AND</u></p> <p>B.1.2 Verify battery cell parameters meet Table 3.8.4-1 Category C allowable values.</p> <p><u>AND</u></p> <p>B.1.3 Verify battery cell parameters have been restored to Category A and B limits of Table 3.8.4-1.</p>	<p>92 days</p> <p><u>AND</u></p> <p>Once within 24 hours after a battery discharge below [110] V</p> <p><u>AND</u></p> <p>Once within 24 hours after a battery overcharge above [150] V</p> <p>Once within 1 hour of Category B parameters found outside limits</p> <p>Once within 24 hours of Category B parameters found outside limits</p> <p>Once within 31 days of Category B parameters found outside limits</p>

(continued)

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE	FREQUENCY
SR 3.8.4.4 Verify average electrolyte temperature of representative cells is $\geq [60]^{\circ}\text{F}$.	92 days
SR 3.8.4.5 Verify no visible corrosion at terminals and connectors. <u>QR</u> Verify connection resistance [of these items is $\leq [150 \times 10^{-6} \text{ ohms}]$ for inter-cell connections, $\leq [150 \times 10^{-6} \text{ ohms}]$ for inter-rack connections, $\leq [150 \times 10^{-6} \text{ ohms}]$ for inter-tier connections, and $\leq [150 \times 10^{-6} \text{ ohms}]$ for terminal connections].	92 days
SR 3.8.4.6 Verify cells, cell plates, and battery racks show no visual indication of physical damage or abnormal deterioration.	12 months
SR 3.8.4.7 Verify cell-to-cell and terminal connections are clean, tight, free of visible corrosion, and coated with anti-corrosion material.	12 months
SR 3.8.4.8 Verify connection resistance [of these items is $\leq [150 \times 10^{-6} \text{ ohms}]$ for inter-cell connections, $\leq [150 \times 10^{-6} \text{ ohms}]$ for inter-rack connections, $\leq [150 \times 10^{-6} \text{ ohms}]$ for inter-tier connections, and $\leq [150 \times 10^{-6} \text{ ohms}]$ for terminal connections].	12 months

(continued)

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE	FREQUENCY
<p>SR 3.8.4.9 -----NOTE----- This Surveillance shall not be performed in MODE 1, 2, or 3. ----- Demonstrate each battery charger will supply \geq [500] amps for Division 1, 2, and $>$ 200 amperes for Division 4, at $>$ 125 V for $>$ [8] hours.</p>	<p>[18 months]</p>
<p>SR 3.8.4.10 -----NOTES----- 1. SR 3.8.4.11 may be performed in lieu of SR 3.8.4.10 once per 60 months. 2. This Surveillance shall not be performed in MODE 1, 2, or 3. ----- Demonstrate 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.</p>	<p>18 months</p>

(continued)

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE	FREQUENCY
<p>SR 3.8.4.11 -----NOTES----- This Surveillance shall not be performed in MODE 1, 2, or 3). ----- Demonstrate battery capacity is \geq [80%] of the manufacturer's rating when subjected to a performance discharge test.</p>	<p>60 months AND Once within 24 months after new battery installation AND -----NOTE----- Only applicable when battery shows degradation or has reached [85%] of the expected life ----- 12 months</p>

Table 3.8.4-1 (Page 1 of 1)
Battery Cell Parameter Requirements

	CATEGORY A	CATEGORY B	CATEGORY C
Parameter	Limits for each designated pilot cell	Limits for each connected cell	Allowable Value for each connected cell
Electrolyte Level	> Minimum level indication mark, and $\leq 1/4$ " above maximum level indication mark ^(a)	> Minimum level indication mark, and $\leq 1/4$ " 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)	$\geq [1.200]^{(c)}$	$\geq [1.195]$ <u>AND</u> Average of all connected cells $> [1.205]$	Not more than 0.020 below average of all connected cells <u>AND</u> Average of all connected cells $\geq [1.195]^{(c)}$

- a. It is acceptable for the electrolyte level to temporarily increase above the specified maximum level during equalizing charges provided it is not overflowing.
- b. Corrected for electrolyte temperature and level. Level correction is not required, however, when battery charging is < [2] amps when on float charge.
- c. Or battery charging current is < [2] amps when on float charge. This is acceptable only during a maximum of [7 days] following a battery recharge.

3.8 ELECTRICAL POWER SYSTEMS

3.8.5 DC Sources—Shutdown

LCO 3.8.5 Three Divisions 1, 2, 3 and 4 electrical power subsystems shall be OPERABLE.

APPLICABILITY: MODES 4 and 5,
When handling irradiated fuel and
when moving loads over irradiated fuel
in the primary or secondary containment.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One or more required DC electrical power subsystems inoperable.	A.1 Suspend CORE ALTERATIONS. <u>AND</u>	Immediately

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. (continued)	A.2 Suspend handling of irradiated fuel (VS-GE; [and moving loads over irradiated fuel in the primary or secondary containment]).	Immediately
	<u>AND</u>	
	A.3 Suspend operations with a potential for draining the reactor vessel.	Immediately
	<u>AND</u>	
	A.4 Suspend operations involving positive reactivity additions.	Immediately
	<u>AND</u>	
A.5 Initiate action to restore required DC electrical power subsystems to OPERABLE status.	Immediately	
<u>AND</u>		
A.6 Initiate action to verify that the Required Actions for those supported systems declared inoperable by the inoperability of 1 or more DC electrical power subsystems have been initiated.	Immediately	

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.8.5.1	For all equipment required to be OPERABLE the following SRs are required to be met: SR 3.8.4.1 SR 3.8.4.5 SR 3.8.4.9 SR 3.8.4.2 SR 3.8.4.6 SR 3.8.4.10 SR 3.8.4.3 SR 3.8.4.7 SR 3.8.4.11 SR 3.8.4.4 SR 3.8.4.8	In accordance with applicable SRs

3.8 ELECTRICAL POWER SYSTEMS

3.8.7 Inverters—Operating

LCO 3.8.7 The Division 1, 2, 3 and 4
inverters shall be OPERABLE.

-----NOTES-----
[Two] inverters may be disconnected [from their associated
DC buses] for \leq 24 hours to perform an equalizing charge [on
associated battery banks] providing:

1. Associated AC vital buses are energized from their
[Class 1E] constant voltage source transformer; and
 2. AC vital buses for other battery banks are energized
from their associated inverters connected to their DC
buses.
-

APPLICABILITY: MODES 1, 2, and 3.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One required inverter inoperable.	A.1 Power AC vital bus from its [Class 1E] constant voltage source transformer.	2 hours
	<u>AND</u>	

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. (continued)	A.2 Restore required inverter to OPERABLE status.	7 days
	<u>AND</u>	
	A.3 Power AC vital bus from its associated inverter and DC bus.	7 days
	<u>AND</u>	
	A.4 Verify the Required Actions for those supported systems declared inoperable by the inoperability of 1 inverter have been initiated.	2 hours

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
B. Two required inverter inoperable.	B.1 Verify associated vital AC buses are powered from their respective Class 1E constant voltage source transformers.	2 hours
	<u>AND</u> B.2 Restore one required inverter to OPERABLE status.	12 hours
C. Required Actions and associated Completion Times not met.	C.1 Be in MODE 3.	12 hours
	<u>AND</u> C.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

3.8 ELECTRICAL POWER SYSTEMS

3.8.9 Distribution Systems—Operating

LCO 3.8.9 Divisions 1, 2 and 3 AC electrical power distribution subsystems and Division 1, 2, 3 and 4 DC [and Vital bus] electrical power distribution subsystems shall be OPERABLE.

APPLICABILITY: MODES 1, 2, and 3.

-----NOTE-----
For this LCO, all required divisions of AC and DC electrical power distribution subsystems shall be treated as an entity with a single Completion Time.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One AC electrical power distribution subsystem inoperable.	A.1 Restore all required AC electrical power distribution subsystems to OPERABLE status.	2 hours
	<u>OR</u> A.2 Declare affected equipment inoperable.	2 hours

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
B. One required DC electrical power distribution subsystem inoperable.	B.1 Restore all required DC electrical power distribution subsystems to OPERABLE status.	2 hours
	OR B.2 Declare effected equipment inoperable.	2 hours
C. More than one AC electrical power distribution subsystem inoperable.	C.1 Restore at least two AC electrical power distribution subsystems to OPERABLE status.	2 hours
D. More than one DC electrical power distribution subsystem inoperable.	D.1 Restore at least two DC electrical power distribution subsystems to OPERABLE status.	2 hours

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
E. Required Actions and associated Completion Times not met.	E.1 Be in MODE 3.	12 hours
	AND	
	E.2 MODE 4.	36 hours

SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
SR 3.8.9.1 Verify correct breaker alignments and voltage to required AC and DC electrical power distribution subsystems.	7 days
[SR 3.8.9.2 Verify correct AC vital bus frequency.	7 days]