TECHNICAL CHANGES - LESS RESTRICTIVE

L.2 (cont'd) shutdown or suspend various shutdown evolutions. The proposed change will provide consistency in ACTIONS for these various secondary containment degradations. These changes to CTS 3.7.O are acceptable due to the low probability of an event requiring the secondary containment during the short time in which continued operation is allowed and the capability to isolate a secondary containment penetration is lost. In addition, the penetrations affected by the proposed 8 hour time period are of a small diameter, thus their impact on the secondary containment is not as great as the automatic isolation dampers.

L.3 CTS 4.7.O.1 is proposed to be 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 3.6.4.2.2) to be performed to demonstrate the OPERABILITY of the affected components. Therefore, explicit post maintenance Surveillance Requirements in CTS 4.7.O.1 are not required and have been deleted from the Technical Specifications.

L.4 The phrase "actual or," in reference to the isolation test signal in CTS 4.7.O.2, has been added to proposed SR 3.6.4.2.3, which verifies that each SCIV actuates on an automatic isolation signal. This allows satisfactory automatic SCIV isolations for other than Surveillance purposes to be used to fulfill the Surveillance Requirement. Operability is adequately demonstrated in either case since the SCIV itself cannot discriminate between "actual" or "test" signals.

L.5 The requirements of CTS 4.7.N.2.b, related to verification of the position of secondary containment isolation penetrations not capable of being closed by OPERABLE secondary containment isolation valves (SCIVs), are revised in proposed SR 3.6.4.2.1 and ITS 3.6.4.2 Required Action A.2 (Note 2) to exclude verification of manual valves and blind flanges that are locked, sealed, or otherwise secured in the correct position. The purpose of CTS 4.7.N.2.b is to ensure that manual secondary containment isolation devices that may be misaligned are in correct position to help ensure that post accident leakage of radioactive fluids or gases outside the secondary containment boundary is within design and analysis limits. For manual valves or blind flanges that are locked, sealed or otherwise secured in the correct position, the potential of these devices to be inadvertently misaligned is low. In addition, manual valves and blind flanges that are locked, sealed or otherwise secured in the correct position are

TECHNICAL CHANGES - LESS RESTRICTIVE

L.5 (cont'd) verified to be in the correct position prior to locking, sealing, or securing. As a result of this control of the position of these manual secondary containment isolation devices, the periodic Surveillance of these devices in CTS 4.7.N.2.b is not required to help ensure that post accident leakage of radioactive fluids or gases outside the secondary containment boundary is maintained within the design and analysis limits. This change also provides the benefit of reduced radiation exposure to plant personnel through the elimination of the requirement to check the position of the manual valves and blind flanges, located in the radiation areas, that are locked, sealed or otherwise secured in the correct position.

RELOCATED SPECIFICATIONS

None

'⟨CTS⟩

SURVEILLANCE REQUIREMENTS

	SURVEILLANCE	FREQUENCY
⟨4.7.A.1⟩ SR 3.6.1.1.1	Perform required visual examinations and leakage rate testing except for primary containment air lock testing, in accordance with ~~10 CFR 50, Appendix J, as modified by approved exemptions~~ the Primary Containment Leakage Rate Testing Program. ~~The leakage rate acceptance criterion is ≤ 1.0 L_a. However, during the first unit startup following testing performed in accordance with 10 CFR 50, Appendix J, as modified by approved exemptions, the leakage rate acceptance criteria are < 0.6 L_a for the Type B and Type C tests, and < 0.75 L_a for the Type A test.~~	~~-----NOTE----- SR 3.0.2 is not applicable -------------~~ In ~~accordance with 10 CFR 50, Appendix J, as modified by approved exemptions~~ the Primary Containment Leakage Rate Testing Program 1
⟨4.7.K.5⟩ SR 3.6.1.1.2	~~Verify drywell to suppression chamber differential pressure does not decrease at a rate > [0.25] inch water gauge per minute tested over a [10] minute period at an initial differential pressure of [1] psid.~~ Verify drywell-to-suppression chamber bypass leakage is less than or equal to the acceptable A/√k design value of 0.18 ft². However, during the first unit startup following bypass leakage testing performed in accordance with this SR, the acceptance criterion ≤ 2% of the acceptable A/√k design value of 0.18 ft². C	~~[18]~~ 24 months ~~]~~ 3 AND -----NOTE----- Only required after two consecutive tests fail and continues until two consecutive tests pass ------------- 3 ~~[6]~~ 12 months ~~]~~ C

3

Insert SR 3.6.1.1.2

SR 3.6.1.1.2

The analyses results in Reference 4 are based on a maximum drywell-to-suppression chamber bypass leakage. This Surveillance ensures that the actual bypass leakage is less than or equal to the acceptable $A/\sqrt{k}$ design value of 0.18 ft^2 assumed in the safety analysis. For example, with a typical loss factor of 3 or greater, the maximum allowable leakage area would be approximately 0.3 ft^2, corresponding to an 8-in line size.

As left bypass leakage, prior to the first startup after performing a required bypass leakage test, is required to be $\leq$ 2% of the drywell-to-suppression chamber bypass leakage limit. At all other times between required leakage rate tests, the acceptance criteria is based on design $A/\sqrt{k}$. At the design $A/\sqrt{k}$ the containment temperature and pressurization response are bounded by the assumptions of the safety analysis. The leakage test is performed every 24 months, consistent with the difficulty of performing the test, risk of high radiation exposure, and the remote possibility of a component failure that is not identified by some other primary containment SR.

1C

BASES

SURVEILLANCE REQUIREMENTS

SR 3.6.1.1.2 (continued)

~~considering it is prudent that this Surveillance be performed during a unit outage and also in view of the fact that component failures that might have affected this test are identified by other primary containment SRs.~~ 3 Two consecutive test failures, however, would indicate unexpected primary containment degradation; in this event, as the Note indicates, increasing the Frequency to once every ~~[9]~~ 12 4 months] is required until the situation is remedied as evidenced by passing two consecutive tests.

REFERENCES

1. U 1 FSAR, Section [6.2] .1 4.
2. FSAR, Section ~~[15.1.39]~~ 15.6.5 4.
3. 10 CFR 50, Appendix J. Option B 1
4. UFSAR, Section 6.2.1.2.4.1 1

All changes are [1] unless otherwise indicated

BASES

BACKGROUND (continued)

Low spray temperatures and atmospheric conditions that yield the minimum amount of contained noncondensible gases are assumed for conservatism.

APPLICABLE SAFETY ANALYSES

Analytical methods and assumptions involving the reactor building-to-suppression chamber vacuum breakers are presented in Reference 1 as part of the accident response of the containment systems. Internal (suppression-chamber-to-drywell) and external (reactor building-to-suppression chamber) vacuum breakers are provided as part of the primary containment to limit the negative differential pressure across the drywell and suppression chamber walls, which form part of the primary containment boundary.

The safety analyses assume the external vacuum breakers to be closed initially ~~and to be fully open at [0.5] psid (Ref. 1). Additionally, of the two reactor building-to-suppression chamber vacuum breakers, one is assumed to fail in a closed position to satisfy the single active failure criterion.~~ Design Basis Accident (DBA) analyses ~~require~~ assume the vacuum breakers to be closed initially and ~~to~~ remain closed and leak tight with positive primary containment pressure. that at least one vacuum breaker on each line (5)

Insert 3.6.1.7 ASA

~~Five~~ Four cases were considered in the safety analyses to determine the adequacy of the external vacuum breakers:

a. A small break loss of coolant accident followed by actuation of ~~both~~ one ~~primary containment~~ drywell and suppression pool spray loop~~s~~;

b. ~~Inadvertent actuation of one primary containment spray loop during normal operation;~~ An intermediate steam line break loss of coolant accident followed by actuation of one drywell and suppression pool spray loop;

c. ~~Inadvertent actuation of both primary containment spray loops during normal operation;~~

d. A postulated DBA assuming Emergency Core Cooling Systems (ECCS) runout flow with a ~~condensation effectiveness~~ thermal mixing efficiency of ~~50%~~ 60; and

e. A postulated DBA ~~assuming ECCS runout flow with a condensation effectiveness of 100%~~ followed by actuation of one drywell and suppression pool spray loop.

The results of these ~~five~~ four cases show that the external vacuum breakers, with an opening setpoint of ~~[~~0.5~~]~~ psid, are [2]

△C

(continued)

BASES

1 A

APPLICABLE SAFETY ANALYSES (continued)

capable of maintaining the differential pressure within design limits.

The reactor building-to-suppression chamber vacuum breakers satisfy Criterion 3 of ~~the NRC Policy Statement.~~ 10 CFR 50.36 (c)(2)(ii) 1

LCO

mechanical

All reactor building-to-suppression chamber vacuum breakers are required to be OPERABLE to satisfy the assumptions used in the safety analyses. The requirement ensures that the two vacuum breakers (vacuum breaker and air operated butterfly valve) in each of the two lines from the reactor building to the suppression chamber airspace are closed (except during testing or when performing their intended function). Also, the requirement ensures both vacuum breakers in each line will open to relieve a negative pressure in the suppression chamber. 1

APPLICABILITY

4

~~In MODES 1, 2, and 3, a DBA could cause pressurization of primary containment. In MODES 1, 2, and 3, the Suppression Pool Spray System is required to mitigate the effects of a DBA.~~ Excessive negative pressure inside primary containment could occur due to inadvertent initiation of ~~this system. Therefore, the vacuum breakers are required to be OPERABLE in MODES 1, 2, and 3, when the Suppression Pool Spray System is required to be OPERABLE, to mitigate the effects of inadvertent actuation of the Suppression Pool Spray System.~~

1 4 ~~Also, i~~ In MODES 1, 2, and 3, a DBA could result in excessive negative differential pressure across the drywell wall caused by the rapid depressurization of the drywell. The event that results in the limiting rapid depressurization of the drywell is the primary system rupture, which purges the drywell of air and fills the drywell free airspace with steam. Subsequent condensation of the steam would result in depressurization of the drywell~~.~~ which, after the suppression chamber-to-drywell vacuum breakers open (due to differential pressure between the suppression chamber and drywell), would result in depressurization of the suppression chamber. The limiting pressure and temperature of the primary system prior to a DBA occur in MODES 1, 2, and 3. drywell sprays. 1

In MODES 4 and 5, the probability and consequences of these events are reduced due to the pressure and temperature limitations in these MODES. Therefore, maintaining reactor

(continued)

JUSTIFICATION FOR DEVIATIONS FROM NUREG-1433, REVISION 1
ITS BASES: 3.6.1.7 - REACTOR BUILDING-TO-SUPPRESSION CHAMBER VACUUM BREAKERS

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. Not used. △C

4. Inadvertent actuation of the suppression pool spray system is not the main concern for depressurizing the drywell, a LOCA inside the drywell is the main concern. Therefore, this section has been reworded to place proper emphasis on the proper reason. In addition, inadvertent actuation of suppression pool spray is not a concern at all relative to causing an excessive negative pressure event; drywell spray is the system that can cause this event. Therefore the Bases have been changed from suppression pool spray to drywell spray when discussing this event. △B

5. Changes have been made to reflect those changes made to the Specification.

6. The alternate method has been deleted since it is not valid for Quad Cities 1 and 2.

7. Editorial change made for enhanced clarity.

8. These changes have been made for consistency with similar phrases in other parts of the Bases and/or to be consistent with the Specification.

BASES

ACTIONS

A.1 (continued)

maintaining [secondary] containment during MODES 1, 2, and 3. This time period also ensures that the probability of an accident (requiring [secondary] containment OPERABILITY) occurring during periods where [secondary] containment is inoperable is minimal.

B.1 and B.2

If [secondary] containment cannot be restored to OPERABLE status within the required Completion Time, the plant 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

C.1, C.2, and C.3

Movement of irradiated fuel assemblies in the [secondary] containment, CORE ALTERATIONS, and OPDRVs can be postulated to cause fission product release to the [secondary] containment. In such cases, the [secondary] containment is the only barrier to release of fission products to the environment. CORE ALTERATIONS and movement of irradiated fuel assemblies must be immediately suspended if the [secondary] containment is inoperable.

Suspension of these activities shall not preclude completing an action that involves moving a component to a safe position. Also, action must be immediately initiated to suspend OPDRVs to minimize the probability of a vessel draindown and subsequent potential for fission product release. Actions must continue until OPDRVs are suspended.

Required Action C.1 has 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. Therefore, in either case, inability to suspend

(continued)

BASES

ACTIONS

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

movement of irradiated fuel assemblies would not be a sufficient reason to require a reactor shutdown. 6

SURVEILLANCE REQUIREMENTS

SR 3.6.4.1.1

This SR ensures that the {secondary} containment boundary is sufficiently leak tight to preclude exfiltration under expected wind conditions. The 24 hour Frequency of this SR was developed based on operating experience related to {secondary} containment vacuum variations during the applicable MODES and the low probability of a DBA occurring between surveillances. 1

Furthermore, the 24 hour Frequency is considered adequate in view of other indications available in the control room, including alarms, to alert the operator to an abnormal {secondary} containment vacuum condition.

TSTF-18 3 ~~SR 3.6.4.1.2 and~~ SR 3.6.4.1.~~3~~ ② 3

Verifying that one ~~{secondary}~~ 1 containment ~~equipment hatches and~~ 3 access door~~s~~ in each access opening ~~are~~ is 3 closed ensures that the infiltration of outside air of such a magnitude as to prevent maintaining the desired negative pressure does not occur. Verifying that all such openings are closed provides adequate assurance that exfiltration from the {secondary} containment will not occur. ~~In this application, the term "sealed" has no connotation of leak tightness.~~ 3 Maintaining {secondary} containment OPERABILITY requires verifying ~~each~~ one door in the access opening is closed~~, except when the access opening is being used for normal transient entry and exit (then at least one door must remain closed)~~. Insert B 3.6.4.1.2 The 31 day Frequency for these SRs has been shown to be adequate, based on operating experience, and is considered adequate in view of the other indications of door ~~and hatch~~ 3 status that are available to the operator.

TSTF-18

(continued)

BASES

ACTIONS

B.1 (continued)

with two isolation valves. This clarifies that only Condition A is entered if one SCIV is inoperable in each of two penetrations.

C.1 and C.2

If any Required Action and associated Completion Time cannot be met, the plant 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.

D.1, D.2, and D.3

If any Required Action and associated Completion Time are not met, the plant must be placed in a condition in which the LCO does not apply. If applicable, CORE ALTERATIONS and the movement of irradiated fuel assemblies in the secondary containment must be immediately suspended. 2 Suspension of these activities shall not preclude completion of movement of a component to a safe position. Also, if applicable, actions must be immediately initiated to suspend OPDRVs in order to minimize the probability of a vessel draindown and the subsequent potential for fission product release. Actions must continue until OPDRVs are suspended.

Required Action D.1 has 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 fuel while in MODE 1, 2, or 3, the fuel movement is independent of reactor operations. Therefore, in either case, inability to suspend movement of irradiated fuel assemblies would not be a sufficient reason to require a reactor shutdown. c

(continued)

BASES

ACTIONS

C.1, C.2.1, C.2.2, and C.2.3 (continued)

3

occurr~~ed~~, and that any other failure would be readily detected.

An alternative to Required Action C.1 is to immediately suspend activities that represent a potential for releasing radioactive material to the ~~[~~secondary~~]~~ containment, thus placing the plant in a condition that minimizes risk. If applicable, CORE ALTERATIONS and movement of irradiated fuel assemblies must immediately be suspended. Suspension of these activities must not preclude completion of movement of a component to a safe position. Also, if applicable, actions must immediately be initiated to suspend OPDRVs in order to minimize the probability of a vessel draindown and subsequent potential for fission product release. Actions must continue until OPDRVs are suspended.

2

The Required Actions of Condition C 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. Therefore, in either case, inability to suspend movement of irradiated fuel assemblies would not be a sufficient reason to require a reactor shutdown.

C

D.1

If both SGTS subsystems are inoperable in MODE 1, 2, or 3, the SGT system may not be capable of supporting the required radioactivity release control function. ~~Therefore, actions are required to enter LCO 3.0.3 immediately.~~

Insert ACTION D

Insert ACTION E

5

F

~~E~~.1, ~~E~~.2, and ~~E~~.3

When two SGT subsystems are inoperable, if applicable, CORE ALTERATIONS and movement of irradiated fuel assemblies in ~~[~~secondary~~]~~ containment must immediately be suspended. Suspension of these activities shall not preclude completion of movement of a component to a safe position. Also, if applicable, action~~s~~ must immediately be initiated to suspend OPDRVs in order to minimize the probability of a vessel

2

3

(continued)

1 △c

3

Insert ACTION D

Therefore, one SGT subsystem must be restored to OPERABLE status within 1 hour. The 1 hour Completion Time provides a period of time to correct the problem that is commensurate with the importance of supporting the required radioactivity release control function in MODES 1, 2, and 3. This time period also ensures that the probability of an accident (requiring the SGT System) occurring during periods where the required radioactivity release control function may not be maintained is minimal.

3

Insert ACTION E

E.1 and E.2

If one SGT subsystem cannot be restored to OPERABLE status within the required Completion Time in MODE 1, 2, or 3, the plant 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.

BASES

ACTIONS 5 Ⓕ **Ⓔ.1, Ⓔ.2, and Ⓔ.3** (continued)

draindown and subsequent potential for fission product release. Actions must continue until OPDRVs are suspended.

5 Ⓕ Required Action Ⓔ.1 has 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. Therefore, in either case, inability to suspend movement of irradiated fuel assemblies would not be a sufficient reason to require a reactor shutdown. △

SURVEILLANCE REQUIREMENTS

SR 3.6.4.3.1

(from the control room using the manual initiation switch) 4

2 Operating each SGT subsystem for ≥ [10] continuous hours ensures that [both] subsystems are OPERABLE and that all associated controls are functioning properly. It also ensures that blockage, fan or motor failure, or excessive vibration can be detected for corrective action. Operation [with the heaters on (automatic heater cycling to maintain temperature)] for ≥ [10] continuous hours every 31 days eliminates moisture on the adsorbers and HEPA filters. The 31 day Frequency was developed in consideration of the known reliability of fan motors and controls and the redundancy available in the system.

SR 3.6.4.3.2

This SR verifies that the required SGT filter testing is performed in accordance with the Ventilation Filter Testing Program (VFTP). The SGT System filter tests are in accordance with Regulatory Guide 1.52 (Ref. ②). The VFTP includes testing HEPA filter performance, charcoal adsorber efficiency, minimum system flow rate, and the physical properties of the activated charcoal (general use and following specific operations). Specific test frequencies and additional information are discussed in detail in the VFTP. ⑥ 1

(continued)

3.7 PLANT SYSTEMS

3.7.2 Diesel Generator Cooling Water (DGCW) System

LCO 3.7.2 The following DGCW subsystems shall be OPERABLE:

a. Two DGCW subsystems; and

b. The opposite unit DGCW subsystem capable of supporting its associated diesel generator (DG).

APPLICABILITY: MODES 1, 2, and 3.

ACTIONS

-----------------------------------NOTE-----------------------------------
Separate Condition entry is allowed for each DGCW subsystem.

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One or more DGCW subsystems inoperable and not capable of supporting its associated DG.	A.1 Declare associated DG inoperable.	Immediately
B. One or more unit DGCW subsystems inoperable and not capable of supporting the ECCS room emergency coolers.	B.1 Align a DGCW subsystem to the ECCS room emergency coolers.	1 hour
	<u>OR</u>	
	B.2 Declare associated ECCS inoperable.	1 hour

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.7.2.1	Verify each DGCW subsystem manual valve in the flow path, that is not locked, sealed, or otherwise secured in position, is in the correct position.	31 days
SR 3.7.2.2	Verify each DGCW pump starts automatically on an actual or simulated initiation signal.	24 months

---

LCO

The OPERABILITY of the DGCW System is required to provide a coolant source to ensure effective operation of the DGs and ECCS in the event of an accident or transient. The OPERABILITY of each DGCW subsystem is based on having an OPERABLE pump and an OPERABLE flow path capable of taking suction from the ultimate heat sink and transferring cooling water to the associated DG heat exchangers and ECCS room emergency coolers. The OPERABILITY of the opposite unit's DGCW subsystem is required to provide adequate cooling to ensure effective operation of the required opposite unit's DG heat exchanger in the event of an accident in order to support operation of the shared systems such as the Standby Gas Treatment System and Control Room Emergency Ventilation System.

An adequate suction source is not addressed in this LCO since the minimum net positive suction head of the DGCW pump and the maximum suction source temperature are covered by the requirements specified in LCO 3.7.3, "Ultimate Heat Sink (UHS)."

APPLICABILITY

In MODES 1, 2, and 3, the DGCW subsystems are required to be OPERABLE to support the OPERABILITY of equipment serviced by the DGCW subsystems and required to be OPERABLE in these MODES.

In MODES 4 and 5, the OPERABILITY requirements of the DGCW subsystems are determined by the systems they support; therefore, the requirements are not the same for all facets of operation in MODES 4 and 5. Thus, the LCOs of the systems supported by the DGCW subsystems will govern DGCW System OPERABILITY requirements in MODES 4 and 5.

ACTIONS

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

(continued)

ACTIONS (continued)

A.1

If one or more DGCW subsystems are inoperable and not capable of supporting its associated DG, the DG(s) cannot perform their intended function and must be immediately declared inoperable. In accordance with LCO 3.0.6, this requires entering into applicable Conditions and Required Actions for LCO 3.8.1, "AC Sources-Operating," which provide appropriate actions for inoperable DG(s).

B.1 and B.2

With one or more DGCW subsystems inoperable and not capable of supporting the ECCS room emergency coolers, the ECCS cannot perform its intended function and therefore continued operation is only allowed if the DGCW subsystem is aligned to provide cooling to the ECCS room emergency coolers within 1 hour. This is accomplished by aligning an OPERABLE DGCW subsystem to support the ECCS room emergency coolers. This manual alignment feature is acceptable since the cooling requirements for the ECCS room emergency coolers is not needed immediately after a design basis accident occurs. If the Unit 1 or Unit 2 DGCW failed to operate during a design basis accident, ECCS will remain OPERABLE as long as cooling water is supplied by the DGCW subsystem associated with DG 1/2 within a short period of time (i.e., 30 minutes). If this cannot be accomplished the supported ECCS must be declared inoperable within the same 1 hour period. In accordance with LCO 3.0.6, this requires entering into applicable Conditions and Required Actions for LCO 3.5.1, "Emergency Core Cooling System (ECCS) Operating," which provides appropriate actions for inoperable ECCS components. The 1 hour Completion Time is based on the low probability of an event requiring the DGCW subsystems to support the ECCS room emergency coolers occurring during this time period.

(continued)

BASES (continued)

SURVEILLANCE REQUIREMENTS

SR 3.7.2.1

Verifying the correct alignment for manual valves in each DGCW subsystem flow path provides assurance that the proper flow paths will exist for DGCW subsystem operation. This SR does not apply to valves that are locked, sealed, or otherwise secured in position since these valves are verified to be in the correct position prior to locking, sealing, or securing. In addition, the valves associated with the ECCS room emergency coolers are also allowed to be in the nonaccident position provided they can be realigned to the accident position. This is acceptable because the cooling capability of these coolers is not needed immediately after a design basis event.

This SR does not require any testing or valve manipulation; rather, it involves verification that those valves capable of being mispositioned are in the correct position. This SR does not apply to valves that cannot be inadvertently misaligned, such as check valves.

The 31 day Frequency is based on engineering judgment, is consistent with the procedural controls governing valve operation, and ensures correct valve positions.

SR 3.7.2.2

This SR ensures that each DGCW subsystem pump will automatically start to provide required cooling to the associated DG heat exchangers and ECCS room emergency coolers when the DG starts. These starts may be performed using actual or simulated initiation signals.

Operating experience has shown that these components usually pass the SR when performed at the 24 month Frequency, which is based at the refueling cycle. Therefore, this Frequency is concluded to be acceptable from a reliability standpoint.

REFERENCES

1. UFSAR, Section 9.5.5.
2. UFSAR, Chapter 6.
3. UFSAR, Chapter 15.

APPLICABILITY

This LCO applies during movement of irradiated fuel assemblies in the spent fuel storage pool or whenever movement of new fuel assemblies occurs in the spent fuel storage pool with irradiated fuel assemblies seated in the spent fuel storage pool, since the potential for a release of fission products exists.

ACTIONS

A.1

Required Action A.1 is modified by a Note indicating that C
LCO 3.0.3 does not apply. If moving fuel assemblies while
in MODE 1, 2, or 3, the fuel movement is independent of
reactor operations. Therefore, inability to suspend C
movement of fuel assemblies is not a sufficient reason to
require a reactor shutdown.

When the initial conditions for an accident cannot be met, action must be taken to preclude the accident from occurring. If the spent fuel storage pool level is less than required, the movement of fuel assemblies in the spent fuel storage pool is suspended immediately. Suspension of this activity shall not preclude completion of movement of a fuel assembly to a safe position. This effectively precludes a spent fuel handling accident from occurring.

SURVEILLANCE REQUIREMENTS

SR 3.7.8.1

This SR verifies that sufficient water is available in the event of a fuel handling accident. The water level in the spent fuel storage pool must be checked periodically. The 7 day Frequency is acceptable, based on operating experience, considering that the water volume in the pool is normally stable, and all water level changes are controlled by unit procedures.

(continued)

ITS 3.7.2

A.1

PLANT SYSTEMS

3.8 - LIMITING CONDITIONS FOR OPERATION

B. Diesel Generator Cooling Water System

LCO 3.7.2

A diesel generator cooling water (DGCW) subsystem shall be OPERABLE for each required diesel generator with each subsystem comprised of:

LA.1

1. One OPERABLE DGCW pump, and
2. An OPERABLE flow path capable of taking suction from the ultimate heat sink and transferring cooling water to the associated diesel generator.

APPLICABILITY:

LA.2

~~When the diesel generator is required to be OPERABLE.~~

MODES 1, 2 and 3 — M.1

ACTION:

ACTION A

With one or more DGCW subsystems inoperable, declare the associated diesel generator inoperable and take the ACTION required by Specifications 3.9.A or 3.9.B, as applicable. — A.3

add proposed ACTIONS Note — A.2

add proposed ACTION B — M.1

4.8 - SURVEILLANCE REQUIREMENTS

B. Diesel Generator Cooling Water System

Each of the required DGCW subsystems shall be demonstrated OPERABLE:

A.4

SR 3.7.2.1

1. At least once per 31 days by verifying that each valve in the flow path that is not locked, sealed or otherwise secured in position, is in its correct positon.

24 — LD.1

SR 3.7.2.2

2. At least once per 18 months by verifying that each pump starts automatically upon receipt of a start signal ~~for the associated diesel generator~~.

LA.3

actual or simulated — L.1

M.1

The following DGCW subsystem shall be OPERABLE:

a. Two DGCW subsystems, and

b. The opposite unit DGCW subsystem capable of supporting its associated DG.

Page 1 of 1

TECHNICAL CHANGES - MORE RESTRICTIVE

M.1 CTS 3.8.B requires a DGCW subsystem to be OPERABLE for each required diesel generator. ITS 3.7.2 will require two DGCW subsystems and the opposite unit DGCW subsystem capable of supporting its associated diesel generator to be OPERABLE. The opposite unit requirements are necessary since safety related systems are shared between both units (e.g., Standby Gas Treatment System and Control Room Emergency Ventilation System) and powered from the opposite unit diesel generator. The opposite unit DGCW subsystem supports the OPERABILITY of these systems by cooling the associated diesel generator heat exchanger. The proposed change requiring two unit DGCW subsystems to be OPERABLE (in MODES 1, 2, and 3) is consistent with the current requirements (CTS 3.8.B in conjunction with CTS 3.9.A) and is considered administrative. However, the proposed change requiring the opposite unit's DGCW to also be OPERABLE represents an additional restriction on plant operation.

The current Applicability is whenever a diesel generator is required to be OPERABLE. The Applicability has been revised to MODES 1, 2, and 3 consistent with the Applicability of proposed ITS 3.8.1, "AC Sources-Operating," and ITS 3.5.1, "Emergency Core Cooling System (ECCS)-Operating." (The change to the DGCW requirements in MODES or conditions other than MODES 1, 2, and 3 is addressed in Discussion of Change LA.2.) This change is necessary since the unit DGCW subsystems support the OPERABILITY of the ECCS by cooling each of the ECCS room emergency unit coolers as well as the associated diesel generator. An ACTION (ITS 3.7.2 ACTION B) has been added to cover the condition when one or more unit DGCW subsystems are inoperable and not capable of supporting the ECCS room emergency coolers. The proposed Required Actions are to align a DGCW subsystem to the ECCS room emergency coolers or to declare associated ECCS inoperable. The Completion Time of 1 hour is acceptable since there is a low probability of an event requiring the DGCW subsystems to support the ECCS room emergency coolers occurring during this time period.

TECHNICAL CHANGES - LESS RESTRICTIVE

"Generic"

LA.1 The details of CTS 3.8.B relating to system OPERABILITY (in this case that the DGCW subsystem shall have one OPERABLE DGCW pump, and an OPERABLE flow path capable of taking suction from the ultimate heat sink and transferring water to the associated diesel generator) are proposed to be relocated

TECHNICAL CHANGES - LESS RESTRICTIVE

LA.1 (cont'd) to the Bases. The details for system OPERABILITY are not necessary in the LCO. The definition of OPERABILITY suffices. In addition, the requirements of the Surveillance will also help ensure these relocated details are maintained. 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.

LA.2 CTS 3/4.8.B provides LCO requirements, Actions, and Surveillance Requirements for the DGCW System when the diesel generator is required to be OPERABLE. These requirements, when in MODES or conditions other than MODE 1, 2, or 3, are proposed to be relocated to the Technical Requirements Manual (TRM). Since this system is a support system for other equipment with their own Specifications, the definition of OPERABILITY in ITS 1.1 will provide sufficient assurance the system can perform its required support function. In addition, the Bases for the supported systems will require the necessary portions of the DGCW System to be OPERABLE. Therefore, the relocated requirements are not required to be in the ITS to provide adequate protection of the public health and safety. The TRM will be incorporated by reference in the Quad Cities 1 and 2 UFSAR at ITS implementation. Changes to the TRM will be controlled by the provisions of 10 CFR 50.59. Changes to the Bases will be controlled by the provisions of the proposed Bases Control Program described in Chapter 5 of the ITS.

LA.3 CTS 4.8.B.2 requires verification that each pump starts automatically upon receipt of a start signal for the associated diesel generator. ITS SR 3.7.2.2 simply requires the verification of the capability of each DGCW pump to start upon an initiation signal. The details regarding the specific start signal to be used during the Surveillance are relocated to the Bases. ITS SR 3.7.2.2 will continue to ensure that each of the DGCW pumps is capable of actuating on a start signal. As such, the relocated details are not required to be in the ITS to provide adequate protection of the public health and safety. The Bases will be controlled by the provisions of the proposed Bases Control Program described in Chapter 5 of the Technical Specifications.

LD.1 The Frequency for performing CTS 4.8.B.2 (proposed SR 3.7.2.2) has been extended from 18 months to 24 months. The DGCW System functional test, CTS 4.8.B.2 (proposed SR 3.7.2.2) ensures that a system start signal from the associated diesel generator will cause the system to operate as designed, by automatically starting the DGCW pump. The proposed change will allow the Surveillance to extend the 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

TECHNICAL CHANGES - LESS RESTRICTIVE

LD.1 (cont'd) 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. Extending this Surveillance is acceptable in part because this requirement is also verified on a more frequent basis every 31 days when performing SR 3.8.1.2 during diesel generator start testing. This testing will detect significant failures affecting system operation that would be detected by conducting the 24 month surveillance test. Reviews of historical maintenance and surveillance data have shown that these tests normally pass their Surveillance 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, each of the DGCW pumps (required by this Specification) are tested according to the ASME Section XI inservice testing program to ensure that each subsystem can provide the proper flow against a specified test pressure. This test will detect significant failures of the DGCW subsystems to perform their safety function. Based on historical maintenance and surveillance data, the inherent system and component reliability, and the testing performed more frequently during the operating cycle, the impact, if any, from this change on system availability is minimal. The review of historical surveillance data also demonstrated that there are no failures that would invalidate this conclusion. In addition, the proposed 24 month Surveillance Frequency, if performed at the maximum interval allowed by proposed SR 3.0.2 (30 months) does not invalidate any assumptions in the plant licensing basis.

"Specific"

L.1 The phrase "actual or simulated" in reference to CTS 4.8.B.2 requirement for a start signal, is proposed to be added to ITS SR 3.7.2.2 for verifying that the DGCW System actuates on a start signal. This allows actual or simulated automatic DGCW System actuations to be used to fulfill the Surveillance Requirement. OPERABILITY is adequately demonstrated in either case since the DGCW System cannot discriminate between "actual" or "simulated" start signals, and ensures that the required automatic start capability is demonstrated. △C

RELOCATED SPECIFICATIONS

None

c ⟨CTS⟩

DG CW [1]

~~DG [1B] SSW~~ System
3.7.~~3~~ ② [2]

3.7 PLANT SYSTEMS

⟨3.8.B⟩

3.7.② [2] Diesel Generator ~~(DG) [1B] Standby Service~~ Cooling [1] Water (~~SSW~~ DG CW [3]) System

⟨M.1⟩ LCO 3.7.~~3~~ ② ~~The DG [1B] SSW System shall be OPERABLE.~~ Insert LCO [4]

⟨Appl 3.8.B⟩ ⟨M.1⟩ APPLICABILITY: ~~When DG [1B] is required to be OPERABLE.~~ MODES 1, 2 and 3 [4]

⟨A.2⟩ ACTIONS

NOTE
Separate Condition entry is allowed for each DGCW subsystem [5]

⟨3.8.B Act⟩

CONDITION	REQUIRED ACTION	COMPLETION TIME
~~A. DG [1B] SSW System inoperable.~~	~~NOTE: LCO 3.0.4 is not applicable.~~	
	~~A.1 Align cooling water to DG [1B] from a Unit [1] plant service water (PSW) subsystem.~~	~~8 hours~~
	~~AND~~	
	~~A.2 Verify cooling water is aligned to DG [1B] from a Unit [1] PSW subsystem.~~	~~Once per 31 days~~
	~~AND~~	
	~~A.3 Restore DG [1B] SSW System to OPERABLE status.~~	~~60 days~~
~~B. Required Action and Associated Completion Time not met.~~	~~B.1 Declare DG [1B] inoperable.~~	~~Immediately~~
A. One or more DGCW subsystems inoperable and not capable of supporting its associated DG.	A.1 Declare associated DG inoperable.	Immediately

[6]

Insert ACTION B [6]

<CTS>

4 **Insert LCO**

The following DGCW subsystems shall be OPERABLE:

<DOC M.1> a. Two DGCW subsystems; and △C

b. The opposite unit DGCW subsystem capable of supporting its associated diesel generator (DG).

6

Insert B

B.	One or more unit DGCW subsystems inoperable and not capable of supporting the ECCS room emergency coolers.	B.1	Align a DGCW subsystem in the ECCS room emergency coolers.	1 hour
		OR		
		B.2	Declare associated ECCS inoperable.	1 hour

△C

⟨CTS⟩

1 DGCW

~~DG [1B]/SSW~~ System
3.7.~~3~~ ② 2

4

△

SURVEILLANCE REQUIREMENTS

DGCW subsystem

SURVEILLANCE		FREQUENCY
⟨4.8.B.1⟩ SR 3.7.~~3~~ ②.1	Verify each ~~DG [1B] SSW System~~ DGCW subsystem ~~manual, power operated, and automatic~~ 3 valve in the flow path, that is not locked, sealed, or otherwise secured in position, is in the correct position.	31 days
⟨4.8.B.2⟩ SR 3.7.~~3~~ ②.2	Verify ~~the DG [1B] SSW System~~ each DGCW pump starts automatically ~~when DG [1B] starts and~~ 3 ~~energizes the respective bus~~ 3 On an actual or simulated initiation signal 7.	~~[18]~~ 24 1 months

2

△ 4 1

△

△

BWR/4 STS

3.7-8

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6. (continued)

inoperable and the applicable Actions of Specifications 3.9.A, "A.C. Sources - Operating," or 3.9.B, "A.C. Sources - Shutdown," to be taken. Thus, since the current Technical Specification requirements do not provide for an alternative cooling water source to a DG subsystem, the ISTS 3.7.3 (ITS 3.7.2) requirements relative to the alternative cooling water source have been deleted. For Quad Cities 1 and 2, the DGCW subsystem associated with DG 1 and 2 are normally aligned to cool the ECCS room emergency coolers. The DGCW subsystem associated with DG ½ is an alternate supply for cooling these room coolers. As described in JFD 4, the opposite unit DGCW subsystem is required in the LCO for the given unit since it supports common equipment to both units. Therefore, appropriate ACTIONS have been added to cover inoperabilities associated with the Quad Cities 1 and 2 design. ITS 3.7.2 ACTION A covers the condition when one or more DGCW subsystems are inoperable and not capable of supporting its associated DG. In this condition, the associated DG is declared inoperable immediately. This is consistent with current licensing requirements, except that the opposite unit DGCW subsystem inoperabilities must also be considered. If the unit DGCW subsystems are inoperable and not capable of supporting the ECCS room emergency coolers, Required Action B.1 requires the alignment within 1 hour of a DGCW subsystem to the ECCS room emergency coolers or Required Action B.2 requires ECCS to be declared inoperable within 1 hour. These proposed requirements are more restrictive than current licensing requirements as discussed in the DOC M.1 for ITS 3.7.2. However, the proposed requirements are consistent with current plant practice to minimize risk.

7. Changes have been made to be consistent with similar requirements in other Specifications.

All changes are 3 unless otherwise indicated

B 3.7 PLANT SYSTEMS

Cooling 1 DGCW 3

B 3.7.~~3~~ 2 2 Diesel Generator ~~(DG) [1B] Standby Service~~ Water (~~SSW~~) System

BASES

BACKGROUND

The ~~DG [1B] SSW~~ DGCW System is designed to provide cooling water for the removal of heat from the ~~DG [1B]. DG [1B] is the only component served by the DG [1B] SSW System.~~ 1 3 Insert BK6D-1

The ~~DG [1B] SSW~~ DGCW 1 pump autostarts upon receipt of a DGCW 1 ~~diesel generator (DG)~~ 4 start signal when power is available to the pump's electrical bus. Cooling water is pumped from the ~~[Altamaha River]~~ suction header of Residual Heat Removal Service Water (RHRSW) system by the ~~DG [1B] SSW~~ pump to the ~~essential~~ associated DG ~~components through the SSW supply header~~ heat exchangers. After removing heat from the ~~components~~, the water is discharged to the ~~unit service water (PSW) discharge header~~ discharge flume. Insert BK6D-2 ~~The capability exists to manually cross connect the PSW System to supply cooling to the DG [1B] during times when the SSW pump is inoperable.~~ A complete description of the ~~DG [1B] SSW~~ DGCW System is presented in the u FSAR, Section ~~[~~9.5.5~~]~~ 1 1 (Ref. 1).

APPLICABLE SAFETY ANALYSES

The ability of the ~~DG [1B] SSW~~ DGCW System to provide adequate cooling to the DG ~~[1B]~~ heat exchangers and ECCS room emergency coolers is an implicit assumption for the safety analyses presented in the u FSAR, Chapters ~~[~~6~~]~~ and ~~[~~15~~]~~ 1 (Refs. 2 and 3, respectively). The ability to provide onsite emergency AC power is dependent on the ability of the ~~DG [1B] SSW~~ DGCW 1 System to cool the DG ~~[1B]~~ 3 1.

The ~~DG [1B] SSW~~ DGCW System satisfies Criterion 3 of ~~the NRC Policy Statement~~ 10 CFR 50.36(c)(2)(ii).

LCO 1

The OPERABILITY of the ~~DG [1B] SSW~~ DGCW 1 System sub 3 is required to provide a coolant source to ensure effective operation of the DG ~~[1B]~~ and ECCS in the event of an accident or transient. The OPERABILITY of ~~the DG [1B] SSW~~ each 3 System is based on having an OPERABLE pump and an OPERABLE flow path capable of taking suction from the ultimate heat sink and transferring cooling water to the associated DG heat exchangers and ECCS room emergency coolers. Insert LCO 1

An adequate suction source is not addressed in this LCO since the minimum net positive suction head of the ~~DG [1B] SSW~~ DGCW pump ~~is bounded by the PSW requirements~~ and the maximum suction source temperature are covered by the requirement specified in ~~[~~LCO 3.7.~~2~~ 3 2, "~~[Unit Service Water (PSW)] System and [~~Ultimate Heat Sink (UHS)~~]~~" 1.

All changes are [2] unless otherwise indicated

[1] DGCW

BASES (continued)

APPLICABILITY

Insert APPL

~~The requirements for OPERABILITY of the DG [1B] SSW System are governed by the required OPERABILITY of the DG [1B] (LCO 3.8.1, "AC Sources—Operating," and LCO 3.8.2, "AC Sources—Shutdown").~~

ACTIONS

Insert ACTIONS

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

~~The Required Actions are modified by a Note indicating that the LCO 3.0.4 does not apply. As a result, a MODE change is allowed when the DG [1B] SSW System is inoperable, provided the DG [1B] has an adequate cooling water supply from the Unit [1] PSW.~~

~~If the DG [1B] SSW System is inoperable, the OPERABILITY of the DG [1B] is affected due to loss of its cooling source; however, the capability exists to provide cooling to DG [1B] from the PSW System of Unit [1]. Continued operation is allowed for 60 days if the OPERABILITY of a Unit 1 PSW System, with respect to its capability to provide cooling to the DG [1B], can be verified. This is accomplished by aligning cooling water to DG [1B] from the Unit 1 PSW System within 8 hours and verifying this lineup once every 31 days. The 8 hour Completion Time is based on the time required to reasonably complete the Required Action, and the low probability of an event occurring requiring DG [1B] during this period. The 31 day verification of the Unit [1] PSW lineup to the DG [1B] is consistent with the PSW valve lineup SRs. The 60 day Completion Time to restore the DG [1B] SSW System to OPERABLE status allows sufficient time to repair the system, yet prevents indefinite operation with cooling water provided from the Unit [1] PSW System.~~

Ⓐ B.1

[2] one or more DGCW subsystems are inoperable and not capable of supporting its associated DG

[3] their

If ~~cooling water cannot be made available to the DG [1B] within the 8 hour Completion Time, or if cooling water cannot be verified to be aligned to DG [1B] from a Unit [1] PSW subsystem as required by the 31 day verification Required Action~~, the DGs [1B] cannot perform ~~its~~ intended function and must be immediately declared inoperable. In accordance with LCO 3.0.6, this also requires entering into the Applicable Conditions and Required Actions for LCO 3.8.1 ~~or LCO 3.8.2~~. ~~Additionally, if the DG [1B] SSW System is~~

[4] "AC Sources—Operating," which provide appropriate actions for inoperable DG(s)

Insert ACTION B

(continued)

C

2

Insert APPL

In MODES 1, 2, and 3, the DGCW subsystems are required to be OPERABLE to support the OPERABILITY of equipment serviced by the DGCW subsystems and required to be OPERABLE in these MODES.

In MODES 4 and 5, the OPERABILITY requirements of the DGCW subsystems are determined by the systems they support; therefore, the requirements are not the same for all facets of operation in MODES 4 and 5. Thus, the LCOs of the systems supported by the DGCW subsystems will govern DGCW System OPERABILITY requirements in MODES 4 and 5.

2

Insert ACTIONS

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

2

Insert ACTION B

B.1 and B.2

With one or more DGCW subsystems inoperable and not capable of supporting the ECCS room emergency coolers, the ECCS cannot perform its intended function and therefore continued operation is only allowed if the DGCW subsystem is aligned to provide cooling to the ECCS room emergency coolers within 1 hour. This is accomplished by aligning an OPERABLE DGCW subsystem to support the ECCS room emergency coolers. This manual alignment feature is acceptable since the cooling requirements for the ECCS room emergency coolers is not needed immediately after a design basis accident occurs. If the Unit 1 or Unit 2 DGCW failed to operate during a design basis accident, ECCS will remain OPERABLE as long as cooling water is supplied by the DGCW subsystem associated with DG 1/2 within a short period of time (i.e., 30 minutes). If this cannot be accomplished the supported ECCS components must be declared inoperable within the same 1 hour period. In accordance with LCO 3.0.6, this requires entering into applicable Conditions and Required Actions for LCO 3.5.1, "Emergency Core Cooling System (ECCS) Operating," which provides appropriate actions for inoperable ECCS components. The 1 hour Completion Time is based on the low probability of an event requiring the DGCW subsystems to support the ECCS room emergency coolers occurring during this time period.

△C

BASES

ACTIONS

~~B.1 (continued)~~

~~not restored to OPERABLE status within 60 days, DG [1B] must be immediately declared inoperable.~~ — 2

SURVEILLANCE REQUIREMENTS

SR 3.7.~~1~~2.1 — 2

Verifying the correct alignment for manual~~, power operated, and automatic~~ valves in ~~the~~ each ~~DG [1B] SSW~~ DGCW subSystem flow path provides assurance that the proper flow paths will exist for ~~DG [1B] SSW~~ DGCW subSystem operation. This SR does not apply to valves that are locked, sealed, or otherwise secured in position since these valves ~~were~~ are verified to be in the correct position prior to locking, sealing, or securing. ~~A valve is also allowed to be in the nonaccident position, and yet be considered in the correct position provided it can be automatically realigned to its accident position, within the required time.~~ This SR does not require any testing or valve manipulation; rather, it involves verification that those valves capable of being mispositioned are in the correct position. This SR does not apply to valves that cannot be inadvertently misaligned, such as check valves.

3 — Insert SR 3.7.2.1

2 △C 3 △C

The 31 day Frequency is based on engineering judgment, is consistent with the procedural controls governing valve operation, and ensures correct valve positions.

SR 3.7.~~1~~2.2 — 2 △C

This SR ensures that ~~the~~ each ~~DG [1B] SSW~~ DGCW — 1 subSystem pump will automatically start to provide required cooling to the associated ~~DG [1B]~~ DG heat exchangers and ECCS room emergency coolers (1, 3) when the DG ~~[1B]~~ (5) starts ~~and the respective bus is energized~~ (2).

Operating experience has shown that these components usually pass the SR when performed at the ~~[18]~~ 24 (1) month Frequency, which is based at the refueling cycle. Therefore, this Frequency is concluded to be acceptable from a reliability standpoint.

These starts may be performed using actual or simulated initiation signals. — 2 △C

(continued)

3

Insert SR 3.7.2.1

In addition, the valves associated with the ECCS room emergency coolers are also allowed to be in the nonaccident position provided they can be realigned to the accident position. This is acceptable because the cooling capability of these coolers is not needed immediately after a design basis event.

C

BASES (continued)

LCO

The specified water level preserves the assumptions of the fuel handling accident analysis (Ref. 2). As such, it is the minimum required for fuel movement within the spent fuel storage pool.

APPLICABILITY

This LCO applies during movement of irradiated fuel assemblies in the spent fuel storage pool since the potential for a release of fission products exists. 4

or whenever movement of new fuel assemblies occurs in the spent fuel storage pool with irradiated fuel assemblies seated in the spent fuel storage pool,

---

ACTIONS

A.1

Required Action A.1 is modified by a Note indicating that LCO 3.0.3 does not apply. If moving irradiated fuel assemblies while in MODE 1, 2, or 3, the fuel movement is independent of reactor operations. Therefore, inability to suspend movement of irradiated fuel assemblies is not a sufficient reason to require a reactor shutdown. 4 4 C

When the initial conditions for an accident cannot be met, action must be taken to preclude the accident from occurring. If the spent fuel storage pool level is less than required, the movement of irradiated fuel assemblies in the spent fuel storage pool is suspended immediately. 4 Suspension of this activity shall not preclude completion of movement of an irradiated fuel assembly to a safe position. 4 This effectively precludes a spent fuel handling accident from occurring.

SURVEILLANCE REQUIREMENTS

SR 3.7.8.1

This SR verifies that sufficient water is available in the event of a fuel handling accident. The water level in the spent fuel storage pool must be checked periodically. The 7 day Frequency is acceptable, based on operating experience, considering that the water volume in the pool is normally stable, and all water level changes are controlled by unit procedures.

(continued)

JUSTIFICATION FOR DEVIATIONS FROM NUREG-1433, REVISION 1
ITS BASES: 3.7.8 - SPENT FUEL STORAGE POOL WATER LEVEL

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. TSTF-139 changed the Applicable Safety Analyses section to also state that spent fuel pool water level meets Criterion 3 (in addition to meeting Criterion 2, which is stated in Rev. 1 of the ISTS Bases). 10 CFR 50.36(c)(2)(ii) describes Criterion 3 as a structure, system, or component that is part of the primary success path and which functions or actuates to mitigate a design basis accident or transient that either assumes the failure of or presents a challenge to the integrity of a fission product barrier. The justification for TSTF-139 states that fuel pool water level is a process variable which satisfies Criteria 2 and 3. A process variable is not a structure, system, or component. The Interim and Final Policy Statements, as well as the statement of considerations for the change to 10 CFR 50.36 (that added the four criteria to 10 CFR 50.36(c)(2)(ii)) state that Criterion 3 is for equipment only. Criterion 2 was specifically developed for process variables. The ISTS Bases currently states that spent fuel pool water level meets Criterion 2 only, which is correct. Therefore, this TSTF has not been adopted. In addition, other Technical Specification Bases for water level requirements (e.g., ISTS 3.9.6 and ISTS 3.9.7, RPV Water Level requirements, which are in Technical Specifications for the same reason as the spent fuel pool water level requirements, and ISTS 3.6.2.2, Suppression Pool Water Level) state that the water level requirements only meet Criterion 2.

4. Changes have been made to be consistent with changes made to the Specification.

| C

NO SIGNIFICANT HAZARDS CONSIDERATION
ITS: 3.7.2 - DIESEL GENERATOR COOLING WATER (DGCW) SYSTEM

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 phrase "actual or simulated," in reference to the start signal specified in CTS 4.8.B.2 has been added to the system functional test Surveillance test description. This change does not impose a requirement to create an "actual or simulated" start signal, nor does it eliminate any restriction on producing an "actual or simulated" start 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. In addition, the use of a simulated signal to initiate the DGCW System yields the desired result in demonstrating DGCW System OPERABILITY. The proposed change does not affect the procedures governing plant operations or the acceptability of creating or simulating these start signals; it simply would allow such signals 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 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?

   Use of an actual or simulated start signal will not affect the performance or acceptance criteria of the Surveillance test. Operability is adequately demonstrated in either case since the system itself cannot discriminate between "actual" or "simulated" start signals. Therefore, the change does not involve a significant reduction in a margin of safety.

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)
	<u>AND</u>	
	C.2 Restore one required offsite circuit to OPERABLE status.	24 hours
D. One required offsite circuit inoperable. <u>AND</u> 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 division. ----------------------------	
	D.1 Restore required offsite circuit to OPERABLE status.	12 hours
	<u>OR</u>	
	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

1C

(continued)

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 required 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 ≥ 3952 V and ≤ 4368 V and frequency ≥ 58.8 Hz and ≤ 61.2 Hz.	31 days

1 C

(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 ≤ 10 seconds after auto-start achieves voltage ≥ 3952 V and frequency ≥ 58.8 Hz; b. Achieves steady state voltage ≥ 3952 V and ≤ 4368 V and frequency ≥ 58.8 Hz and ≤ 61.2 Hz; and c. Operates for ≥ 5 minutes.	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

C

C

(continued)

SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
SR 3.8.1.18 Verify interval between each sequenced load block is ≥ 90% of the 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 ≤ 10 seconds, 2. energizes auto-connected emergency loads including through time delay relays, where applicable, 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)

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
B. ---------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.	B.1 Place associated OPERABLE alternate 125 VDC electrical power subsystem in service AND B.2 Restore Division 1 or 2 125 VDC battery to OPERABLE status.	72 hours Prior to exceeding 7 cumulative days per operating cycle of battery inoperability, on a per battery basis, as a result of maintenance or testing
C. ---------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.	C.1 Place associated OPERABLE alternate 125 VDC electrical power subsystem in service. AND C.2 Restore Division 1 or 2 125 VDC battery to OPERABLE status.	72 hours 7 days

|C

|C

(continued)

ACTIONS

CONDITION	REQUIRED ACTION		COMPLETION TIME	
D. Division 1 or 2 125 VDC electrical power subsystem inoperable for reasons other than Conditions B or C.	D.1	Restore Division 1 or 2 125 VDC electrical power subsystem to OPERABLE status.	72 hours	1C
	<u>OR</u>			
	D.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.	72 hours	
E. Opposite unit 125 VDC electrical power subsystem inoperable.	E.1	Restore the opposite unit 125 VDC electrical power subsystem to OPERABLE status.	7 days	
F. Required Action and associated Completion Time not met.	F.1	Be in MODE 3.	12 hours	1C
	<u>AND</u>			
	F.2	Be in MODE 4.	36 hours	

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.8.4.8	Verify battery capacity is ≥ 80% of the manufacturer's rating for the 125 VDC batteries or the minimum acceptable battery capacity from the load profile for the 250 VDC batteries when subjected to a performance discharge test or a modified performance discharge test.	60 months <u>AND</u> 12 months when battery shows degradation or has reached 85% of expected life with capacity < 100% of manufacturer's rating <u>AND</u> 24 months when battery has reached 85% of the expected life with capacity ≥ 100% of manufacturer's rating

1C

3.8 ELECTRICAL POWER SYSTEMS

3.8.5 DC Sources — Shutdown

LCO 3.8.5 One 250 VDC and one 125 VDC electrical power subsystem shall be OPERABLE.

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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.	Immediately
	<u>AND</u>	
	A.2.4 Initiate action to restore required DC electrical power subsystems to OPERABLE status.	Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.8.5.1	------------------NOTE------------------ The following SRs are not required to be performed for the 250 VDC electrical power subsystem: SR 3.8.4.6, SR 3.8.4.7, and SR 3.8.4.8. -- 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, and SR 3.8.4.8.	In accordance with applicable SRs

1C

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, for a limited time, following equalizing charges provided it is not overflowing. 1C

(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; and

C

b. The portions of the opposite unit's 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 2 only), LCO 3.7.5, "Control Room Emergency Ventilation Air Conditioning (AC) System" (Unit 2 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 <u>AND</u> 16 hours from discovery of failure to meet LCO 3.8.7.a C

(continued)

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
B. One or more DC electrical power distribution subsystems inoperable.	B.1 Restore DC electrical power distribution subsystems to OPERABLE status.	2 hours <u>AND</u> 16 hours from discovery of failure to meet LCO 3.8.7.a
C. One or more required opposite unit AC and DC electrical power distribution subsystems inoperable.	-------------NOTE------------ Enter applicable Condition and Required Actions of LCO 3.8.1 when Condition C results in the inoperability of a required offsite circuit. ----------------------------- C.1 Restore required opposite unit AC and DC electrical power distribution subsystems to OPERABLE status.	7 days
D. Required Action and associated Completion Time of Condition A, B, or C not met.	D.1 Be in MODE 3. <u>AND</u> D.2 Be in MODE 4.	12 hours 36 hours
E. Two or more electrical power distribution subsystems inoperable that, in combination, result in a loss of function.	E.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.	7 days

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BASES

LCO
(continued)

Each offsite circuit from the 345 kV switchyard 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 each unit consists of the incoming breaker and disconnect to the respective 12 and 22 RATs, RATs 12 and 22, 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 1, LCO 3.8.1.a is met if RAT 12 is capable of supplying ESS buses 13-1 and 14-1 and if RAT 22 (or UAT 21 on backfeed) can supply ESS bus 13-1 via ESS bus 23 and 23-1 and the associated bus tie or ESS bus 14-1 via ESS bus 24 and 24-1 and the associated bus tie. For Unit 2, LCO 3.8.1.a is met if RAT 22 can supply ESS buses 23-1 and 24-1 and if RAT 12 (or UAT 11 on backfeed) can supply ESS bus 23-1 via ESS bus 13 and 13-1 and the associated bus tie or ESS bus 24-1 via ESS bus 14 and 14-1 and the associated bus tie. For Unit 1, 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. For Unit 2, LCO 3.8.1.c is met if RAT 12 (or UAT 11 on backfeed) is capable of supplying ESS bus 19, to support equipment required by LCO 3.6.4.3, and supplying ESS bus 18, to support equipment required by LCO 3.7.4 and LCO 3.7.5.

The respective unit DG and common 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 10 seconds. Each respective unit DG and common 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. 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.

(continued)

LCO
(continued)

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 10 seconds and is required to be met from the same variety of initial conditions specified for the respective unit and shared DGs. For Unit 1 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. Similarly, for Unit 2 to meet LCO 3.8.1.d, DG 1 must be capable of supplying ESS bus 14-1 on a loss of power to the bus in order to supply ESS bus 19, to support equipment required by LCO 3.6.4.3, and to supply ESS bus 18, to support equipment required by LCO 3.7.4 and 3.7.5.

In addition, fuel oil storage and fuel oil transfer pump requirements must be met for each required DG.

C

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 ESS buses is required to have OPERABLE manual transfer capability to the 4160 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.

(continued)

BASES

APPLICABILITY (continued)

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

(continued)

BASES

ACTIONS (continued)

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 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

(continued)

ACTIONS

A.2 (continued)

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

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 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"

(continued)

BASES

ACTIONS

A.3 (continued)

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.

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:

(continued)

ACTIONS

B.2 (continued)

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 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

(continued)

BASES

ACTIONS

C.1 and C.2 (continued)

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. 8), 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.

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 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. 1C

According to Regulatory Guide 1.93 (Ref. 8), 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

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SURVEILLANCE REQUIREMENTS

<u>SR 3.8.1.2 and SR 3.8.1.8</u> (continued)

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 10 seconds. The 10 second start requirement supports the assumptions in the design basis LOCA analysis of UFSAR, Section 6.3 (Ref. 14). The 10 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 10 second start requirement of SR 3.8.1.8 applies.

Since SR 3.8.1.8 does require a 10 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 10 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. However, to the extent practicable, the tests should be alternated between units. 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.

C

The 31 day Frequency for SR 3.8.1.2 is consistent with Regulatory Guide 1.9 (Ref. 10). The 184 day Frequency for

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SURVEILLANCE REQUIREMENTS

SR 3.8.1.3 (continued)

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.

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. However, to the extent practicable, the test should be alternated between units. 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.

C

SR 3.8.1.4

This SR provides verification that the level of fuel oil in the day tank, at which fuel oil is automatically added, is above the Specification requirement. 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

(continued)

SURVEILLANCE REQUIREMENTS

SR 3.8.1.4 (continued)

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. 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. 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. 12). 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.

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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

(continued)

SURVEILLANCE REQUIREMENTS

SR 3.8.1.6 (continued)

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.

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. 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. 1C

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

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BASES

SURVEILLANCE REQUIREMENTS

SR 3.8.1.12 (continued)

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 oil being continuously circulated and temperature maintained consistent with manufacturer recommendations.

SR 3.8.1.13

Consistent with Regulatory Guide 1.9 (Ref. 10), paragraph C.2.2.5, this Surveillance demonstrates that the DG automatically starts and achieves the required voltage and frequency within the specified time (10 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 ≥ 5 minutes. The 5 minute period provides sufficient time to demonstrate stability. 1C

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)

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. 10) 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. 10), 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)

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 0.85. This power factor is 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 has been modified by three Notes. Note 1 states that momentary transients outside the load and power factor limit 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. During the Surveillance, the DG is normally operated paralleled to the grid, which is not the configuration when the DG is performing its safety function following a loss of offsite power (with or without a LOCA). Given the parallel configuration to the grid during the Surveillance, the grid voltage may be such that the DG field excitation level needed to obtain the specified power factor could result in a transient voltage within the DG windings higher than the recommended values if the DG output breaker were to trip during the Surveillance. Therefore, 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

(continued)

BASES

SURVEILLANCE REQUIREMENTS

SR 3.8.1.15 (continued)

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 10 seconds. The 10 second time is derived from the requirements of the accident analysis for responding to a design basis large break LOCA (Ref. 14). 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 two tests, one for each unit) to satisfy the requirements for both units. This is allowed since the main purpose of

(continued)

SURVEILLANCE REQUIREMENTS

SR 3.8.1.16 (continued)

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. 10), 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 limit ensures that a sufficient time interval exists for the DG to restore frequency. There is no upper limit for the load sequence time interval since, for a single load interval (i.e., the time between two load blocks), the capability of the DG to restore frequency and voltage prior to applying the second load is not negatively affected by a longer than designed load interval, and if there are additional load blocks (i.e., the design includes multiple load intervals),

C

C

(continued)

SURVEILLANCE REQUIREMENTS

SR 3.8.1.18 (continued)

then the lower limit requirements (-10%) will ensure that sufficient time exists for the DG to restore frequency and voltage prior to applying the remaining load blocks (i.e., all load intervals must be ≥ 90% of the design interval). Reference 14 provides a summary of the automatic loading of ESS buses.

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.

(continued)

SURVEILLANCE REQUIREMENTS (continued)

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.

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

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.

(continued)

BASES

SURVEILLANCE REQUIREMENTS

SR 3.8.1.21 (continued)

As Noted, if the opposite unit is in MODE 4 or 5, or moving irradiated fuel assemblies in the secondary containment, 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 are not required to be performed. 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).

REFERENCES

1. UFSAR, Section 3.1.7.3.
2. UFSAR, Section 8.2.
3. UFSAR, Section 8.3.1.6.4.
4. Safety Guide 9.
5. UFSAR, Chapter 6.
6. UFSAR, Chapter 15.
7. Generic Letter 84-15, July 2, 1984.
8. Regulatory Guide 1.93, Revision 0, December 1974.
9. UFSAR, Section 8.3.1.6.5.
10. Regulatory Guide 1.9, Revision 3, July 1993.
11. Regulatory Guide 1.108, Revision 1, August 1977.
12. Regulatory Guide 1.137, Revision 1, October 1979.
13. ANSI C84.1, 1982.
14. UFSAR, Section 6.3.
15. IEEE Standard 308, 1980.

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. For example, if both Division 1 and 2 ESS buses are required OPERABLE by LCO 3.8.8 and only the Division 1 ESS buses are not capable of being powered from offsite power, then only the required features powered from Division 1 ESS buses are required to be declared inoperable.

C

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

C

With the required 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.

(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)

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 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

(continued)

BASES

SURVEILLANCE REQUIREMENTS

SR 3.8.2.1 (continued)

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 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 pair has 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 Reactor Core Isolation Cooling (RCIC) 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)

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 8.3.2 (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 electrical power sources provide motive power to larger DC loads such as DC motor-driven pumps and valves. Each unit includes a 250 VDC source consisting of a 250 VDC battery and an associated 250 VDC full capacity battery charger. An additional 250 VDC full capacity (swing) charger is available for use between the units. The swing charger can only be aligned to one battery at a time. Each 250 VDC battery and charger supplies power to both Unit 1 and Unit 2 loads. Therefore, for the purposes of this Specification, each unit has two 250 VDC electrical power subsystems. One 250 VDC electrical power subsystem includes the associated unit 250 VDC battery and full capacity battery charger while the other 250 VDC electrical power subsystem includes the opposite unit 250 VDC battery and the full capacity charger. The normal supply to each 250 VDC full capacity charger is via a 480 V Division 2 power supply from the associated unit. The swing charger can be powered from a Division 1 bus for each unit.

The Division 1 and 2 125 VDC electrical power sources provide control power to selected safety related equipment as well as circuit breaker control power for 4160 V, 480 V, control relays and annunciators. Each unit includes a 125 VDC source consisting of a 125 VDC battery and two 125 VDC full capacity chargers (normal and spare). Each 125 VDC unit source (125 VDC battery and associated chargers) supplies power to the associated unit Division 1

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BASES

BACKGROUND (continued)

125 VDC electrical power distribution subsystem and the opposite unit Division 2 125 VDC electrical power distribution subsystem. The Division 1 and 2 125 VDC electrical power distribution subsystems provide power to redundant loads, therefore both unit 125 VDC sources are needed to support the operation of both units. These sources are referred to as the Division 1 and 2 125 VDC electrical power sources since they supply the associated units Division 1 and 2 125 VDC electrical power distribution subsystems, respectively. In addition, the Division 2 125 VDC electrical power distribution subsystems provide control power to safety related loads common to both units such as the Standby Gas Treatment System. Therefore, the opposite unit Division 2 125 VDC electrical power distribution subsystem is needed to support the operations of the given unit. This source is referred to as the opposite unit's 125 VDC electrical power subsystem; however it receives power from the given units battery and full capacity chargers. The design also includes an alternate battery for each 125 VDC electrical power distribution subsystem. However, the design configuration of the alternate battery is susceptible to single failure and therefore, is not reliable as a normal 125 VDC source. The loads between the redundant 125/250 VDC subsystem are not automatically transferable except for the Automatic Depressurization System and the 1/2 diesel generator, the logic circuits and valves of which are normally fed from the Division 1 125 VDC system.

C

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 battery.

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 required normal loads plus all loads required for safe shutdown on one unit and operations required to limit the consequences of a design basis event on the other unit for a period of 4 hours (Ref. 1).

(continued)

BACKGROUND
(continued)

The DC batteries associated with each unit are housed in a ventilated room apart from its charger and distribution buses. This arrangement ensures redundant subsystems are 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 buses.

The 125 VDC 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 V. For the 250 VDC batteries, the minimum allowable battery capacity is based on the capacity margin calculated for the design load profile. The minimum design voltage limit is 210 V. 1C

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 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. 1). 1C

APPLICABLE
SAFETY ANALYSES

The initial conditions of Design Basis Accident (DBA) and transient analyses in the UFSAR, 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.

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

(continued)

APPLICABLE SAFETY ANALYSES (continued)

b. A worst case single failure.

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

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 unit bus, b) the Division 1 125 VDC subsystem consisting of the unit 125 VDC battery, one full capacity battery charger, a unit bus, and the corresponding control equipment and interconnecting cabling to the associated unit 125 VDC Division 1 bus, c) the Division 2 125 VDC subsystem consisting of the opposite unit 125 VDC battery, one full capacity battery charger, opposite unit buses, and all the corresponding control equipment, interconnecting cabling, and bus ties up to the unit 125 VDC Division 2 bus, and d) the opposite unit Division 2 125 VDC subsystem consisting of the unit 125 VDC battery, one full capacity battery charger, unit buses, and the corresponding control equipment, interconnecting cabling, and bus ties up to the associated opposite unit 125 VDC Division 2 bus 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. 1).

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.

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BASES

APPLICABILITY (continued)

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 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.

If one 250 VDC electrical power subsystem is inoperable (e.g., inoperable battery, inoperable required battery charger, or inoperable 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 250 VDC electrical subsystems to mitigate a worst case accident, continued power operation should not exceed 72 hours. The Completion Time is based on the capacity and capability of the remaining 250 VDC subsystem.

B.1 and B.2

Condition B, 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 B is modified by a Note indicating that the Condition is only applicable when the opposite unit is in MODE 1, 2, or 3.

(continued)

ACTIONS

B.1 and B.2 (continued)

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 B.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 B.1 requires the associated OPERABLE alternate 125 VDC electrical power subsystem to be placed in service. An OPERABLE alternate 125 VDC electrical power subsystem consists of the alternate 125 VDC battery and one full capacity battery charger. For the alternate 125 VDC battery to be considered OPERABLE, all SR requirements associated with the alternate 125 VDC battery must be met. (The full capacity battery charger is the same battery charger (normal or spare) associated with the normal 125 VDC electrical power subsystem.) Therefore, placement of the OPERABLE alternate 125 VDC electrical power subsystem in service 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 battery. Therefore, only a limited time of operation is allowed in this condition.

The 72 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.

(continued)

ACTIONS
(continued)

C.1 and C.2

Condition C, 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 C 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 C.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 C.1 requires the associated OPERABLE alternate 125 VDC electrical power subsystem to be placed in service. An OPERABLE alternate 125 VDC electrical power subsystem consists of the alternate 125 VDC battery and one full capacity battery charger. For the alternate 125 VDC battery to be considered OPERABLE, all SR requirements associated with the alternate 125 VDC battery must be met. (The full capacity battery charger is the same battery charger (normal or spare) associated with the normal 125 VDC electrical power subsystem.) Therefore, placement of the OPERABLE alternate 125 VDC electrical power subsystem in service 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 battery. Therefore, only a limited time of operation is allowed in this condition.

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ACTIONS

C.1 and C.2 (continued)

The 72 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.

D.1 and D.2

With one Division 1 or 2 125 VDC electrical power subsystem inoperable for reasons other than Condition B or C 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 125 VDC power to the affected division.

If one 125 VDC electrical power subsystem is inoperable (e.g., inoperable battery, inoperable required battery charger, or inoperable required battery charger and associated inoperable battery), the remaining 125 VDC electrical power subsystem has 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 72 hours. The Completion Time of Required Action D.1 to restore the 125 VDC electrical power subsystem to OPERABLE status is based on the capacity, reliability and capability of the remaining 125 VDC subsystem.

Required Action D.2 is modified by a Note indicating that the action is only applicable if the opposite unit is not in MODE 1, 2, or 3. In this condition, the shutdown unit is under maintenance and a complete test of at least one 125 VDC subsystem may be necessary. Required Action D.2

(continued)

ACTIONS

D.1 and D.2 (continued)

requires the OPERABLE alternate 125 VDC electrical power subsystem to be placed in service in 72 hours. The 72 hour Completion Time to place 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. An OPERABLE alternate 125 VDC electrical power subsystem consists of the alternate 125 VDC battery and one full capacity battery charger. For the alternate 125 VDC battery to be considered OPERABLE, all SR requirements associated with the alternate 125 VDC battery must be met. (The full capacity battery charger is the same battery charger (normal or spare) associated with the normal 125 VDC electrical power subsystem.) Upon completing this Required Action continuous operation is allowed, since if the opposite unit associated OPERABLE alternate 125 VDC electrical power subsystem is placed in service supplying the unit Division 2 loads, the design configuration will not be susceptible to single failure and hence, the reliability is consistent with the normal circuit.

E.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.

(continued)

BASES

ACTIONS (continued)

F.1 and F.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. 6).

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. 7).

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).

(continued)

BASES

SURVEILLANCE REQUIREMENTS

SR 3.8.4.2 (continued)

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

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 3.8.4.4 and SR 3.8.4.5

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)

SURVEILLANCE REQUIREMENTS

SR 3.8.4.4 and SR 3.8.4.5 (continued)

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 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 3.8.4.6

Battery charger capability requirements are based on the design capacity of the chargers (Ref. 1). According to Regulatory Guide 1.32 (Ref. 8), 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 Frequency 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 3.8.4.7

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 1.

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SURVEILLANCE REQUIREMENTS

SR 3.8.4.7 (continued)

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 test represents a more severe test of battery capacity than SR 3.8.4.7.

SR 3.8.4.8

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 and continues to 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.

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SURVEILLANCE REQUIREMENTS

SR 3.8.4.8 (continued)

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 the service test. 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.

For the 125 VDC battery, the acceptance criteria for this Surveillance is consistent with IEEE-450 (Ref. 7) and IEEE-485 (Ref. 9). These references recommend that the battery be replaced if its capacity is below 80% of the manufacturer's rating, since IEEE-485 (Ref. 9) 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. However, since the 250 VDC batteries are not sized consistent with IEEE-485 (Ref. 9), they must be replaced when their actual capacity is below the minimum acceptable battery capacity based on the load profile. Ⓒ

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. 7), when the battery capacity drops by more than 10% relative to its capacity on the previous performance test or when it is

(continued)

BASES

SURVEILLANCE REQUIREMENTS

SR 3.8.4.8 (continued)

$\geq$ 10% below the manufacturer's rating. The 12 month and 60 month Frequencies are consistent with the recommendations in IEEE-450 (Ref. 7). The 24 month Frequency is derived from the recommendations of IEEE-450 (Ref. 7).

REFERENCES

1. UFSAR, Section 8.3.2.
2. Safety Guide 6, March 10, 1971.
3. IEEE Standard 308, 1978.
4. UFSAR, Chapter 6.
5. UFSAR, Chapter 15.
6. Regulatory Guide 1.93, Revision 0, December 1974.
7. IEEE Standard 450, 1987.
8. Regulatory Guide 1.32, Revision 2, February 1977.
9. 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.

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 all onsite power is not required. The rationale for this is based on the fact that Ⓒ

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BASES

APPLICABLE SAFETY ANALYSES (continued)

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 the corresponding stresses result in the probabilities of occurrence being significantly reduced or eliminated, and in minimal consequences. These deviations from DBA analysis assumptions and design requirements during shutdown conditions are allowed by the LCO for required systems.

The shutdown Technical Specification requirements are designed to ensure that the unit has the capability to mitigate the consequences of certain postulated accidents. Worst case Design Basis Accidents which are analyzed for operating MODES are generally viewed not to be a significant concern during shutdown MODES due to the lower energies involved. The Technical Specifications therefore require a lesser complement of electrical equipment to be available during shutdown than is required during operating MODES. More recent work completed on the potential risks associated with shutdown, however, have found significant risk associated with certain shutdown evolutions. As a result, in addition to the requirements established in the Technical Specifications, the industry has adopted NUMARC 91-06, "Guidelines for Industry Actions to Assess Shutdown Management," as an industry initiative to manage shutdown tasks and associated electrical support to maintain risk at an acceptable low level. This may require the availability of additional equipment beyond that required by the shutdown Technical Specifications.

C

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

C

LCO

The DC electrical power subsystems — with: a) the required 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; and b) the required 125 VDC subsystem consisting of one battery, one battery charger, and the corresponding control equipment and interconnecting cabling supplying

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LCO (continued)

power to the associated opposite unit buses — are required to be OPERABLE to support some of the required DC distribution 1C 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 125 VDC subsystem. 1C

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.

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

(continued)

BASES

ACTIONS (continued)

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>

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). 6

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

<u>SR 3.8.5.1</u>

SR 3.8.5.1 requires all Surveillances required by SR 3.8.4.1 through SR 3.8.4.8 to be applicable. Therefore, see the corresponding Bases for LCO 3.8.4 for a discussion of each SR.

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BASES

SURVEILLANCE REQUIREMENTS

SR 3.8.5.1 (continued)

This SR is modified by a Note. The reason for the Note is to preclude requiring the OPERABLE 250 VDC source 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. 1 C

REFERENCES

1. UFSAR, Chapter 6.

2. UFSAR, Chapter 15.

SURVEILLANCE REQUIREMENTS

Table 3.8.6-1 (continued)

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, for a limited time, following an equalizing charge (normally up to 3 days following the completion of an equalize charge to allow electrolyte stabilization), 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.

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

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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 divided into redundant and independent AC electrical power distribution subsystems.

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 2 4160 V loads from the unit's main generator through a unit auxiliary transformer (UAT) and from the 345 kV system through the reserve auxiliary transformer (RAT) to supply the Division 1 4160 V loads. The UAT and RAT are connected in a normal — alternate power source arrangement for each of the 4160 V divisions (i.e., the RAT provides alternate power for the Division 2 ESS buses and the UAT for the Division 1 ESS buses). 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 18 and 19 (Unit 1) and buses 28 and 29 (Unit 2), associated motor control centers, transformers and distribution panels.

The 120 VAC instrument bus is normally powered from 480 VAC bus 18-2 for Unit 1 and 480 VAC MCC 28-2 for Unit 2. The alternate power supply for the Unit 1 120 VAC instrument bus is supplied from 480 VAC MCC 15-2 and the Unit 2 120 VAC instrument bus is supplied from 480 VAC MCC 25-2. 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. However, the instrument bus ABT is only provided for reliability and is not required to be OPERABLE (i.e., only one power source to the instrument bus is required).

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(continued)

BACKGROUND (continued)

The 120 VAC essential services bus is supplied by a static uninterruptible power supply (UPS). Power to the UPS is supplied, in order of preference; for Unit 1 by 480 VAC bus 18, 250 VDC MCC 1, or 480 VAC bus 17; and for Unit 2 by 480 VAC bus 28, 250 VDC MCC 2, or VAC bus 26.

There are two independent 250 VDC station service electrical power distribution subsystems 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 large DC loads such as DC motor-driven pumps and valves. 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 for Unit 1 and Unit 2 is presented in Tables B 3.8.7-1 and B 3.8.7-2, respectively.

C

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 Reactor Core Isolation Cooling (RCIC) System; and Section 3.6, Containment Systems.

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:

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APPLICABLE SAFETY ANALYSES (continued)

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 for Unit 1 and Table B 3.8.7-2 for Unit 2 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 and Table B 3.8.7-2 (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 the portions of the opposite unit's 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 2 only), LCO 3.7.5, "Control Room Emergency Ventilation Air Conditioning (AC) System (Unit 2 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 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 for Unit 1 and Table B 3.8.7-2 for Unit 2, if one or more of the

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LCO
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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 for Unit 1 and Table B 3.8.7-2 for Unit 2. 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 for Unit 1 and Table B 3.8.7-2 for Unit 2 (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 for Unit 1 and Table B 3.8.7-2 for Unit 2 (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 between redundant safety related AC or DC power distribution subsystems are closed, the electrical power distribution subsystem that is not being powered from its normal source (i.e., it is being powered from its redundant electrical power distribution subsystem) is 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. If Condition A is entered 1C
while, for instance, a DC electrical power distribution subsystem is inoperable and subsequently returned OPERABLE, LCO 3.8.7.a may already have been not met for up to 2 hours. 1C
This situation could lead to a total duration of 10 hours, since initial failure of LCO 3.8.7.a to restore the AC 1C
electrical power distribution system. 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 was initially not met, instead of at the time 1C
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 indefinitely. 1C

(continued) 1C

ACTIONS (continued)

B.1 1 C

With one or more DC buses inoperable and a loss of safety function has not yet occurred, the remaining DC 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 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 B 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 plant, minimizing the potential for loss of power to the remaining subsystem, and restoring power to the affected subsystem. 1 C

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;

(continued)

ACTIONS

B.1 (continued)

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 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. If Condition B is entered while, for instance, an AC electrical power distribution subsystem is inoperable and subsequently restored OPERABLE, LCO 3.8.7.a 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, to restore the DC electrical power distribution subsystem. At this time, an AC electrical power distribution subsystem 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 was initially not met, instead of at the time Condition B was entered. The 16 hour Completion Time is an acceptable limitation on this potential of failing to meet LCO 3.8.7.a indefinitely.

C.1

With one or more required opposite unit AC and DC electrical power distribution subsystems 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 1 and Unit 2 share the single train Control Room Emergency Ventilation (CREV) and the associated Air Conditioning (AC) System. Since these

(continued)

ACTIONS

C.1 (continued) 1C

systems are powered only from Unit 1, an inoperable Unit 1 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 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.

The Required Action is modified by a Note indicating that the applicable Conditions of LCO 3.8.1 be entered and Required Actions taken if the inoperable opposite unit AC electrical power distribution subsystem results in an inoperable required offsite circuit. This is an exception to LCO 3.0.6 and ensures the proper actions are taken for these components. C

D.1 and D.2 1C

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.

(continued)

ACTIONS (continued)

E.1

Condition E corresponds to a level of degradation in the electrical power distribution system that causes a required safety function to be lost. When the inoperability of two or more AC or DC electrical power distribution subsystems, in combination, 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. The term "in combination" means that the loss of function must result from the inoperability of two or more AC and DC electrical power distribution subsystems; a loss of function solely due to a single AC or DC electrical power distribution subsystem inoperability even with another AC or DC electrical power distribution subsystem concurrently inoperable, does not require entry into Condition E.

SURVEILLANCE REQUIREMENTS

SR 3.8.7.1

This Surveillance verifies that the AC and DC electrical power distribution subsystems 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.

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)
Unit 1 AC and DC Electrical Power Distribution Systems

1C

TYPE	VOLTAGE	DIVISION 1(a)	DIVISION 2(a)(b)
AC safety bus	4160 V	ESS buses 13, 13-1	ESS buses 14, 14-1
	480 V	ESS bus 18	ESS bus 19
	120 V	Unit essential services bus, unit instrument bus	NA
250 VDC buses	250 V	NA	TB MCC 1, RB MCC 1A, RB MCC 1B
125 VDC buses	125 V	TB main buses 1A, 1A-1; RB distribution panel 1	TB main bus 2A; TB reserve buses 1B and 1B-1

C

(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 1 and Division 2 AC and DC electrical power distribution systems require OPERABILITY of the 4160 VAC bus 24-1, 480 VAC bus 29, essential services 120 VAC bus (must be powered from 480 VAC bus 28, 250 VDC TB MCC 1, or 480 VAC MCC 28-2), and 125 VDC bus 2B.

1C

Table B 3.8.7-2 (page 1 of 1)
Unit 2 AC and DC Electrical Power Distribution Systems

TYPE	VOLTAGE	DIVISION 1(a)	DIVISION 2(a)(b)
AC safety bus	4160 V	ESS buses 23, 23-1	ESS bus 24, 24-1
	480 V	ESS bus 28	ESS bus 29
	120 V	Unit essential services bus, unit instrument bus	NA
250 VDC buses	250 V	NA	TB MCC 2, RB MCC 2A, RB MCC 2B
125 VDC buses	125 V	TB main bus 2A, 2A-1; RB distribution panel 2	TB main bus 1A; TB reserve buses 2B, 2B-1

C

(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 1 and Division 2 AC and DC electrical power distribution systems require OPERABILITY of the 4160 VAC bus 14-1, 480 VAC bus 19, essential services 120 VAC bus (must be powered from 480 VAC bus 18, 250 VDC TB MCC 2, or 480 VAC MCC 18-2), and 125 VDC bus 1B.

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, including the opposite unit electrical distribution systems, 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.

△L

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)

L

A.1

ITS 3.8.1

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.

ACTION F

add proposed Required Action A3 2nd Completion Time

L.1

ACTION B

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

L.2

L.3

4.9 - SURVEILLANCE REQUIREMENTS

add proposed Note 3 to SR 3.8.1.2 — A.4

A.3 — add proposed Note 2 to SR 3.8.1.2

A.5

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.

M.5 — 208

C

Add proposed Note 4 to SR 3.8.1.3

M.3

add proposed Note 5 to SR 3.8.1.3 — A.4

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.

2340

L.12

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

L.4

A.6 moved to ITS 3.8.3

f. Verifying the pressure in required starting air receiver tanks to be ≥230 psig.

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.

L.2

[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.~~ — 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.

ITS 3.8.1

A.1

A.13

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

ACTION F

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

ACTION F

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 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.

4 L.6

b. Otherwise, take the applicable ACTIONs for both systems, subsystems, trains, components or devices inoperable, or be in at least HOT SHUTDOWN within the next 12 hours and in COLD SHUTDOWN within the following 24 hours.

ACTION F

add proposed Note 2 to SR 3.8.1.8 A.4

≥ 58.8 Hz and ≥ 3952 L.7

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 in ≤10 seconds. The generator voltage and frequency shall be verified to reach 4160 ± 420 volts and 60 ± 1.2 Hz, respectively, in ≤10 seconds after the start signal.

A.9

A.5

steady state L.7

208 M.5

L.7

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

24 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 3.8.1.13 Note
SR 3.8.1.12 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

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3.9 - LIMITING CONDITIONS FOR OPERATION

ACTION C

5. With two of the above required offsite circuit power sources inoperable: M.2 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.

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:

   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.

Required Action B.1

4.9 - SURVEILLANCE REQUIREMENTS

SR 3.8.1.10

b. Verify the diesel generator rejects a load greater than or equal to its largest single emergency load, and:

add proposed Note to SR 3.8.1.10 A.4

   1) Following load rejection, the frequency is ≤ 66.73 Hz.

   2) Within 3 seconds following load rejection, the voltage is 4160 ± ~~420~~ 208 volts. M.5

   3) Within 4 seconds following load rejection, the frequency is 60 ± 1.2 Hz.

A.4 add proposed Note 1 to SR 3.8.1.11

L.12

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.8

SR 3.8.1.12

d. actual or Simulating a loss of offsite power by itself, 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 ≤10 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 M.5

A.10 A.9

[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. L.13

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

Required Action E.1

b. Within 2 hours, restore at least one of the above required diesel generators to OPERABLE(e) status A.8 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.

Required Action B.2

add 4 hour Completion Time L.6

ACTION F

Required Actions B.3.1 and B.3.2

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

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 SHUTDOWN within the next 12 hours and in COLD SHUTDOWN within the following 24 hours. L.1

ACTION F

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.

A.6 moved to ITS 3.8.3

add ACTION G A.12

4.9 - SURVEILLANCE REQUIREMENTS

actual or L.8

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 ≤10 seconds after the auto-start signal; the steady state generator voltage and frequency shall be maintained within these limits during this test.

L.7 208 M.5 C

C

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

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 ≤10 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.

time delay relays A.13 C

208 M.5 C

A.8

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.

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3.9 - LIMITING CONDITIONS FOR OPERATION

4.9 - SURVEILLANCE REQUIREMENTS

SR 3.8.1.17

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.

SR 3.8.1.18

k. Verifying that the automatic load sequence logic is OPERABLE with the interval between each load block within ±10% of its design interval. L.14 △

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 ≤10 seconds. A.9 L.10

SR 3.8.1.20

58.8 Hz L.11

add proposed minimum voltage in ≤ 10sec 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

SR 3.8.1.20 Note

M.1 add proposed SR 3.8.1.21

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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.9

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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 Quad Cities 1 and 2 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 The requirement of CTS 4.9.A.8.f.2) that the auto-connected loads be energized "through the load sequencer" is changed to "including through time delay relays, where applicable" (SR 3.8.1.19). The Quad Cities 1 and 2 design does not include "load sequencers" but includes "time delay relays" for some individual components (e.g., Low Pressure Coolant Injection pumps). The term "load sequencer" as used in CTS 4.9.A.8.f.2) is taken to mean "time delay relays, where applicable" installed for the associated components, therefore this change is 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 3.1.7.3. 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 onsite Class 1E AC electrical power distribution subsystem(s) 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 2 only), and LCO 3.7.5, "Control Room Emergency Ventilation Air Conditioning (AC) System" (Unit 2 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 2 only), and LCO 3.7.5, "Control Room Emergency Ventilation Air Conditioning (AC) System" (Unit 2 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 3.1.7.3 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 (for Unit 2 only), and Control Room Emergency Ventilation AC System (for Unit 2 only)) is inoperable. This is an exception that is intended to allow declaring the opposite unit's supported equipment inoperable either in lieu of declaring the opposite unit's power source inoperable, or at any time subsequent to entering ACTIONS for an inoperable opposite unit's power source. This exception is acceptable since, with some or all of the opposite unit equipment inoperable and the associated ACTIONS entered, the opposite unit 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.

TECHNICAL CHANGES - MORE RESTRICTIVE

M.1 (cont'd) 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.

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 Quad Cities 1 and 2 CTS and will ensure that the necessary equipment remains powered to meet the UFSAR, Section 3.1.7.3 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 (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 Quad Cities 1 and 2 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 CTS 4.9.A.2.c, 4.9.A.7, 4.9.A.8.b.2), 4.9.A.8.d.2), 4.9.A.8.e, and 4.9.8.f.2) provide a voltage limit of 4160 +/- 420 V for the DGs. The ITS provides an upper steady state voltage limit of 4368 V and a lower voltage limit (both steady

TECHNICAL CHANGES - MORE RESTRICTIVE

M.5 (cont'd) state and initial startup) of 3952 V in proposed SR 3.8.1.2, SR 3.8.1.8, SR 3.8.1.10, SR 3.8.1.12, SR 3.8.1.13, and SR 3.8.1.19. The proposed change conservatively reduces the DG allowable voltage limits from +/- 10% to +/- 5%. The current tolerances could, in theory, allow DG operation at the lower end of the voltage limits, which may not support Emergency Core Cooling system loads. Reducing the DG allowable voltage limits to +/- 5% resolves this issue and also complies with the performance standards in National Electrical Manufacturers Association Standards, Part 22, Large Apparatus — Synchronous Generators. This standard was in effect when the DG was purchased, therefore this change aligns the DG Technical Specification Surveillance Requirements with the original performance requirements specified in the standard and resolves the potential issues related to the use of a DG voltage tolerance of +/- 10%. C

M.6 Not used.

M.7 Not used. C

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 verification that each DG starts and achieves in ≤ 10 seconds, voltage ≥ 3952 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.

TECHNICAL CHANGES - MORE RESTRICTIVE (continued)

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 10 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 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 Not used.

LA.3 Not used.

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 Quad Cities 1 and 2 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

TECHNICAL CHANGES - LESS RESTRICTIVE

LD.1 (cont'd) 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.

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

TECHNICAL CHANGES - LESS RESTRICTIVE

LD.1 (cont'd)

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 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."

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.

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

TECHNICAL CHANGES - LESS RESTRICTIVE

L.1 (cont'd) 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.

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

TECHNICAL CHANGES - LESS RETRICTIVE

L.3 (cont'd) (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.

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.

TECHNICAL CHANGES - LESS RESTRICTIVE (continued)

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 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 ≤ 10 seconds. The CTS requirement further states that the generator frequency and voltage must be 60 ± 1.2 Hz and 4160 ± 208 V, respectively, in ≤ 10 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 ≤ 10 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 ≤ 10 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.

TECHNICAL CHANGES - LESS RESTRICTIVE (continued)

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.

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 ≤ 10 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 3.8.1.20. The accident analysis requires the DG to be capable of being loaded within 10 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

TECHNICAL CHANGES - LESS RESTRICTIVE

L.11 (cont'd) 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 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.

TECHNICAL CHANGES - LESS RESTRICTIVE (continued)

L.14 CTS 4.9.A.8.k requires verification that the interval between each load block is within ± 10% of its design interval. The SR is proposed to be changed in ITS SR 3.8.1.18 to delete the upper 10% limit, such that the interval between each load block is only required to be ≥ 90% of the design load interval.

As stated in the ISTS Bases, the purposes of the 10% load sequence time interval tolerance are to ensure 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. The first purpose is met solely by applying a lower limit. If the interval between two load blocks is greater than 110% of the design interval, the capability of the DG to perform its function is not necessarily impacted. For the first load interval, sufficient time after energizing the first load block to allow the DG to restore frequency and voltage prior to energizing the second load block is still provided, since the minimum time needed is the design interval minus 10%; allowing more time than the design interval plus 10% does not negatively affect the ability of the DG to perform its intended function, with respect to the first load interval. In addition, it is recognized that if there is an additional load block following the first two described above, then allowing the load interval between the first two load blocks to be longer than the design interval plus 10% could impact the capability of the DG to restore frequency and voltage prior to the start of the third load block. However, the requirement that "each" load block be within the design load interval minus 10% will ensure that the time between the second and third load blocks is sufficient to ensure that the DG can restore frequency and voltage prior to energizing the third load block. The "each" requirement also ensures that all subsequent load intervals (e.g., the third, fourth, etc.) do not impact the capability of the DG to perform its intended function.

The second purpose described in the Bases for the ISTS SR is not related to the DG; it relates to the ability of the individual loads to perform their assumed functions. Thus, if a time delay was too long, while the individual load may be inoperable, the DG is not inoperable; the DG can still perform its intended function. Thus, the upper limit should not be considered as an operability requirement for the DG. If an individual load timer is too long, only the associated load should be considered inoperable. In addition, many of the load timers (the ones that affect the ECCS pumps) are required by ISTS 3.3.5.1, ECCS Instrumentation; thus the upper limits for these timers will be maintained in the ISTS.

RELOCATED SPECIFICATIONS

None

A.1

ITS 3.8.2

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:

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

LCO 3.8.2.b 2. One diesel generator with: M.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

A.2

c. A fuel oil transfer pump. LA.1

APPLICABILITY:

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

ACTION: add proposed ACTION A Note A.3

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

add proposed Required Action A.1 L.3

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

add proposed SR 3.8.2.1 Note 2 L.2

add proposed SR 3.8.2.1 Note 1

SR 3.8.2.1 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

Note 1

except SR 3.8.1.9, SR 3.8.1.20 and SR 3.8.1.21

A.4

Page 1 of 2

TECHNICAL CHANGES - LESS RESTRICTIVE (continued)

L.3 An alternative is proposed in the Quad Cities 1 and 2 ITS to suspending the movement of irradiated fuel assemblies, CORE ALTERATIONS, or OPDRVS, if being conducted, when less than the required AC sources are OPERABLE. The alternative, ITS 3.8.2 Required Action A.1, is to declare the affected required feature(s) inoperable, and continue to conduct operations (e.g., OPDRVs), if the affected required feature(s) ACTIONS allow. Conservative actions can be assured if the affected required feature(s) without the necessary AC source is declared inoperable and the associated ACTIONS of the individual feature(s) taken. These conservative actions are currently approved (or will be approved by the ITS amendment) by the NRC. Therefore, this change is considered acceptable.

C

RELOCATED SPECIFICATIONS

None

ITS 3.8.3

A.1

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 ≤10 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.~~

LA.1

C

---

[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.

Page 5 of 6

TECHNICAL CHANGES - LESS RESTRICTIVE

"Generic"

LA.1 The 10 year Surveillance of CTS 4.9.A.10 to drain, remove sediment, and clean each fuel oil tank is proposed to be relocated to the TRM. This Surveillance is a preventive maintenance type requirement. Sediment in the tank, or failure to perform this Surveillance, does 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 Quad Cities 1 and 2 procedures. Therefore, the relocated requirement is not required to be in the ITS to provide adequate protection of the public health and safety. The TRM will be incorporated by reference into the Quad Cities UFSAR at ITS implementation. Changes to the TRM will be controlled by the provisions of 10 CFR 50.59. C

"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

TECHNICAL CHANGES - LESS RESTRICTIVE

L.1 (cont'd) 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 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.

1 C

RELOCATED SPECIFICATIONS

None

TECHNICAL CHANGES - MORE RESTRICTIVE (continued)

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 $\leq$ 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 $\leq$ 150 X 10^{-6} ohms, and is not needed to ensure battery OPERABILITY. The $\leq$ 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. This requirement is not necessary to ensure the OPERABILITY of the alternate batteries since the proposed Required Action B.1 and C.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.

C

A.1

ITS 3.8.5

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:

One 250 VDC and One 125 VDC LA.1

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

APPLICABILITY:

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

ACTION:

add proposed ACTIONS Note M.2

ACTION A 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.

add proposed Required Action A.1 L.2

add proposed Required Actions A.2.4 M.3

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

C

C

LA.2

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

Page 1 of 1

DISCUSSION OF CHANGES
ITS: 3.8.5 - DC SOURCES — SHUTDOWN

ADMINISTRATIVE

A.1 In the conversion of the Quad Cities 1 and 2 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 Not used. |△C

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

TECHNICAL CHANGES - MORE RESTRICTIVE

M.3 (cont'd) 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 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 OPERABILITY are not necessary in the LCO. The definition of OPERABILITY suffices. ITS LCO 3.8.5 will still require one 250 VDC and one 125 VDC electrical power subsystem to be OPERABLE. 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

TECHNICAL CHANGES - LESS RESTRICTIVE

L.1 (cont'd) condition presents a significant risk if an event were to occur during the test. The NRC has previously provided Surveillance exceptions in the Quad Cities 1 and 2 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 to be rendered inoperable. This allowance does not take exception C 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.

L.2 An alternative is proposed in the Quad Cities 1 and 2 ITS to suspending operations if a DC Source is inoperable, and movement of irradiated fuel assemblies, CORE ALTERATIONS, or OPDRVs are being conducted. The alternative, ITS 3.8.5 Required Action A.1, is to declare the affected feature(s) inoperable, and continue to conduct operations (e.g., OPDRVs), if the affected C feature(s) ACTIONS allow. Conservative actions can be assured if the affected feature(s) without the necessary DC power is declared inoperable and the associated ACTIONS of the individual feature(s) taken. These conservative actions are current approved (or will be approved by the ITS amendment) by the NRC. Therefore, this change is considered acceptable.

RELOCATED SPECIFICATIONS

None

L

A1

3.9 - LIMITING CONDITIONS FOR OPERATION

E. Distribution - Operating

A.2 The following power distribution systems shall be ~~energized~~ OPERABLE:

SR 3.8.7.1

LCO 3.8.7 a. 1. Division 1 and Division 2 A.C. power distribution ~~consisting of:~~

~~a. Both Unit engineered safety features 4160 volt buses:~~

~~1) For Unit 1, Nos. 13-1 and 14-1,~~

~~2) For Unit 2, Nos. 23-1 and 24-1.~~

~~b. Both Unit engineered safety features 480 volt buses:~~

~~1) For Unit 1, Nos. 18 and 19,~~

~~2) For Unit 2, Nos. 28 and 29, and~~

~~c. The Unit 120 volt Essential Service Bus and Instrument Bus.~~

LA.1

LCO 3.8.7.a 2. 250 volt D.C. power distribution ~~consisting of:~~

~~a. 1) For Unit 1, TB MCC No. 1,~~

~~2) For Unit 2, TB MCC No. 2.~~

~~b. 1) For Unit 1, RB MCC Nos. 1A and 1B,~~

~~2) For Unit 2, RB MCC Nos. 2A and 2B.~~

~~3. For Unit 1, 125 volt D.C. power distribution, consisting of:~~

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

~~b. TB Reserve Bus Nos. 1B and 1B-1, and~~

~~c. RB Distribution Panel No. 1.~~

LA.1

M.3

; and
The portions of the opposite unit's 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 2 only), LCO 3.7.5, "Control Room Emergency Ventilation Air Conditioning (AC) System" (Unit 2 only), and LCO 3.8.1, "AC Sources – Operating."

4.9 - SURVEILLANCE REQUIREMENTS

E. Distribution - Operating

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

B

L

L

Page 1 of 2

3.9 - LIMITING CONDITIONS FOR OPERATION

4.9 - SURVEILLANCE REQUIREMENTS

~~4. For Unit 2, 125 volt D.C. power distribution, consisting of:~~

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

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

~~c. RB Distribution Panel No. 2.~~

LA.1

APPLICABILITY:

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

ACTIONS:

or more — L.1

ACTION A 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 Action A.1 second Completion Times — M.1

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

inoperable — LA.1

or more — L.1

ACTION B 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 B.1 second Completion Time — M.1

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

B

C

Add proposed ACTION C — M.3

Add proposed ACTION E — M.2

DISCUSSION OF CHANGES
ITS: 3.8.7 - DISTRIBUTION SYSTEMS — OPERATING

ADMINISTRATIVE

A.1 In the conversion of the Quad Cities 1 and 2 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, Quad Cities 1 and 2 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.

1B

TECHNICAL CHANGES - MORE RESTRICTIVE

1C

1C

M.1 The Completion Times of ITS 3.8.7 ACTIONS A and B 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 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" 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 E, which requires entry into ITS 3.0.3 if the loss of two or more electrical power distribution subsystems, in combination, results in a loss of safety function. ITS 3.8.7 Required Action E.1 preserves the intent of ITS 3.0.3 and reflects an additional restriction on plant operation.

M.3 ITS LCO 3.8.7.b 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 2 only), LCO 3.7.5, "Control Room Emergency Ventilation Air Conditioning (AC) System" (Unit 2 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 C) 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 C 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.

In addition, ITS 3.8.7 ACTION C includes a Note to enter the applicable Conditions and Required Actions of LCO 3.8.1 when Condition C results in the inoperability of a required offsite circuit. The opposite unit distribution subsystem can be part of the circuit path for the alternate offsite circuit. Due to the addition of ITS LCO 3.0.6, the Note is needed to ensure the ACTIONS of LCO 3.8.1 are entered when an offsite circuit is also rendered inoperable. As such, this change is considered administrative.

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 and B allow one "or more" AC and DC electrical power distribution subsystems to be concurrently inoperable, without

TECHNICAL CHANGES - LESS RESTRICTIVE

L.1 (cont'd) 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 E is also added to require that if two or more electrical power distribution subsystems are inoperable that, in combination, 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, ITS 3.8.7 ACTION E 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). 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

ITS 3.8.8

A.1

3.9 - LIMITING CONDITIONS FOR OPERATION

4.9 - SURVEILLANCE REQUIREMENTS

Add proposed ACTIONS Note M.2

ACTIONS:

ACTION A

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

one or more M.1 △C

inoperable LA.1 △B

Add proposed Required Action A.1 L.1 △C

Add proposed Required Actions A.2.4 and A.2.5 M.3

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"

L.1 An alternative is proposed in the Quad Cities 1 and 2 ITS to suspending the movement of irradiated fuel assemblies, CORE ALTERATIONS, or OPDRVS, if being conducted, when a AC or DC distribution system is inoperable (de-energized). The alternative, ITS 3.8.8 Required Action A.1, is to declare the supported required feature(s) inoperable, and continue to conduct operations (e.g., OPDRVs), if the supported required feature(s) ACTIONS allow. Conservative actions can be assured if the supported required feature(s) without the necessary AC or DC distribution system is declared inoperable and the associated ACTIONS of the individual feature(s) taken. These conservative actions are currently approved (or will be approved by the ITS amendment) by the NRC. Therefore, this change is considered acceptable.

△C

RELOCATED SPECIFICATIONS

None

<CTS>

ACTIONS (continued)

<3.9.A Action 3>
<Doc A.7>
<3.9.A Action 3.c>
<3.9.A Action 3.c>
<3.9.A Action 6>
<3.9.A Action 6.b>

CONDITION	REQUIRED ACTION	COMPLETION TIME
D. One ~~{required}~~ [1] offsite circuit inoperable. **AND** One ~~{required}~~ [1] DG inoperable.	------------NOTE------------ Enter applicable Conditions and Required Actions of LCO 3.8.~~9~~ ⑦ [5], "Distribution Systems—Operating," when Condition D is entered with no AC power source to any division. ---------------------------------	
	D.1 Restore ~~{required}~~ [1] offsite circuit to OPERABLE status.	12 hours
	OR	
	D.2 Restore ~~{required}~~ [1] DG to OPERABLE status.	12 hours
E. Two ~~{or three}~~ [2] ~~{required}~~ [1] DGs inoperable.	E.1 Restore one ~~{required}~~ [1] DG to OPERABLE status.	2 hours

△C

(continued)

⟨CTS⟩

3

Insert SR Notes

SURVEILLANCE REQUIREMENTS

	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. 1	7 days
SR 3.8.1.2 TSTF-253 ⟨3.9.A footnote a⟩ ⟨DOC A.3⟩ ⟨4.9.A.2.c⟩ ⟨DOC A4⟩	----------NOTES---------- ~~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	31 days 6 ~~As specified in Table 3.8.1-1~~

(continued)

⚠C

⟨CTS⟩

SURVEILLANCE REQUIREMENTS (continued)

8 — 13 SURVEILLANCE	FREQUENCY
⟨3.9.A footnote a⟩ SR 3.8.1.~~12~~ 13 -----------------NOTES----------------- ~~1.~~ All DG starts may be preceded by an engine prelube period. — 10 ~~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 --	
⟨4.9.A.8.e⟩ Verify on an actual or simulated Emergency Core Cooling System (ECCS) initiation signal each DG auto-starts from standby condition and: a. In ≤ ~~[12]~~ 10 (1) seconds after auto-start ~~and during tests~~ achieves voltage ≥ ~~[3740]~~ 3952 (1) V and ~~≤ [4580]~~ V; frequency ≥ ~~[58.8]~~ Hz (1) (TSTF-163) (TSTF-163) (1) b. ~~In ≤ [12] seconds after auto-start and during tests,~~ achieves ~~frequency ≥ [58.8] Hz and~~ steady state voltage ≥ ~~[3740]~~ 3952 (1) V and ≤ ~~[4580]~~ 4368 (1) V and frequency ≥ ~~[58.8]~~ Hz and ≤ ~~[61.2]~~ Hz; and (1) 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 the offsite power system.~~ — 18	~~[18 months]~~ 24 (1)

(continued)

<CTS>

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE		FREQUENCY
SR 3.8.1.18 <4.9.A.8.k>	~~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 interval between each sequenced load block is ~~within ± 10%~~ ≥ 90% 14 of the design interval ~~[for each load sequence~~ time delay relay ~~timer]~~.	[~~18~~ 24 months] 1
SR 3.8.1.19 <3.9.A footnote a> <4.9.A.8.f>	NOTE~~S~~ 10 ~~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 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~~] 10 1 seconds, 2. energizes auto-connected including 2 emergency loads through ~~[load sequencer]~~ time delay relays, where applicable 2,	[~~18~~ 24 months] 1 △ (continued)

12. (continued)

state current output and maximum generator internal voltages. A load rejection with 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. 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.

14. ISTS SR 3.8.1.18 requires verification that the interval between each sequenced load block is within ± 10% of design interval for each load sequence timer. The SR is proposed to be changed to delete the upper 10% limit, such that the interval between each load block is only required to be ≥ 90% of the design load interval. C

As stated in the ISTS Bases, the purposes of the 10% load sequence time interval tolerance are to ensure that sufficient time exists for the DG to restore frequency and voltage prior to applying the next load and that safety analysis assumptions regarding

14. (continued)

ESF equipment time delays are not violated. The first purpose is met solely by applying a lower limit. If the interval between two load blocks is greater than 110% of the design interval, the capability of the DG to perform its function is not necessarily impacted. For the first load interval, sufficient time after energizing the first load block to allow the DG to restore frequency and voltage prior to energizing the second load block is still provided, since the minimum time needed is the design interval minus 10%; allowing more time than the design interval plus 10% does not negatively affect the ability of the DG to perform its intended function, with respect to the first load interval. In addition, it is recognized that if there is an additional load block following the first two described above, then allowing the load interval between the first two load blocks to be longer than the design interval plus 10% could impact the capability of the DG to restore frequency and voltage prior to the start of the third load block. However, the requirement that "each" load block be within the design load interval minus 10% will ensure that the time between the second and third load blocks is sufficient to ensure that the DG can restore frequency and voltage prior to energizing the third load block. The "each" requirement also ensures that all subsequent load intervals (e.g., the third, fourth, etc.) do not impact the capability of the DG to perform its intended function.

The second purpose described in the Bases for the SR is not related to the DG; it relates to the ability of the individual loads to perform their assumed functions. Thus, if a time delay was too long, while the individual load may be inoperable, the DG is not inoperable; the DG can still perform its intended function. Thus, the upper limit should not be considered as an operability requirement for the DG. If an individual load timer is too long, only the associated load should be considered inoperable. In addition, many of the load timers (the ones that affect the ECCS pumps) are required by ISTS 3.3.5.1, ECCS Instrumentation; thus the upper limits for these timers will be maintained in the ISTS.

15. 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 Quad Cities 1 and 2 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.

16. 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.

17. 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 Quad Cities 1 and 2 Licensing Basis. Since the steady state limit is not being added into the Quad Cities 1 and 2 ITS, TSTF-163 changes are not necessary and also have not been adopted.

18. ISTS SR 3.8.1.12, the DG start on an ECCS signal test, requires a verification that the permanently connected and auto-connected loads are energized from the offsite power system (parts d and e). These verifications have not been included in ITS SR 3.8.1.13. The Quad Cities design does not include any time delay relays that delay start of the ECCS pumps when offsite power is available. The buses are also not load shed when offsite power is still available. The loss of offsite power test (ITS SR 3.8.1.12), the LSFT for the loss of voltage instrumentation in ITS 3.3.8.1, and the ECCS system functional tests in ITS 3.5.1 provide proper testing of the components to ensure they function following an ECCS actuation signal. In addition, these two verifications are not required in the Current Technical Specifications. Appropriate changes to parts b and c have also been made due to these deletions.

C

<CTS>

3.8 ELECTRICAL POWER SYSTEMS

3.8.4 DC Sources—Operating

<LCO 3.9.C> LCO 3.8.4 The following ~~[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

<3.9.C Action 1>

<3.9.2 Action 3>

C

CONDITION	REQUIRED ACTION		COMPLETION TIME
A. One 250 V DC electrical power subsystem inoperable.	A.1	Restore the 250 V DC electrical power subsystem to OPERABLE status.	~~2~~ 72 hours [2] Insert Actions
~~B.~~ F. Required Action and Associated Completion Time ~~of Condition A not met for station service DC subsystem~~. [6]	~~B~~ F.1	Be in MODE 3.	12 hours [2]
	AND		
	~~B~~ F.2	Be in MODE 4.	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

⟨LCO 3.9.C.1⟩ a. Two 250 VDC electrical power subsystems; and

⟨LCO 3.9.C.2⟩ b. Division 1 and Division 2 125 VDC electrical power subsystems; and

⟨DOC M.2⟩ c. 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 2 only), LCO 3.7.5, "Control Room Emergency Ventilation Air Conditioning (AC) System" (Unit 2 only), and LCO 3.8.1, "AC Sources – Operating."

Insert ACTIONS

⟨3.9.2 Footnote 6⟩

⟨3.9.2 Action 2⟩

B.	--------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.	B.1 Place associated OPERABLE alternate 125 VDC electrical power subsystem in service	72 hours
		AND	
		B.2 Restore Division 1 or 2 125 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

1C

<CTS>

2 <u>Insert ACTIONS (continued)</u>

<3.9.2 footnote 6> C. --------NOTE-------- Only applicable if opposite unit is in MODE 1, 2, or 3. -------------------- <3.9.2 Action 2> Division 1 or 2 125 VDC battery inoperable, due to the need to replace the battery, as determined by maintenance or testing.	C.1 Place associated OPERABLE alternate 125 VDC electrical power subsystem in service.	72 hours
	<u>AND</u>	
	C.2 Restore Division 1 or 2 125 VDC battery to OPERABLE status.	7 days 1C
<3.9.2 Action 2> D. Division 1 or 2 125 VDC electrical power subsystem inoperable for reasons other than Conditions B or C.	D.1 Restore Division 1 or 2 125 VDC electrical power subsystem to OPERABLE status.	72 hours 1C
	<u>OR</u>	
<3.9.2 footnote 6>	D.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.	72 hours
<DOC M.2> E. Opposite unit 125 VDC electrical power subsystem inoperable.	E.1 Restore the opposite unit 125 VDC electrical power subsystem to OPERABLE status.	7 days

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 Quad Cities 1 and 2.

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 Quad Cities 1 and 2. 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. ISTS SR 3.8.4.7 Note 1, permitting limited use of the modified performance discharge test in lieu of the service test, has been deleted and ISTS SR 3.8.4.7 revised. The CTS (as approved in Amendments 171 and 167) 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. Typographical error corrected. C

SURVEILLANCE REQUIREMENTS (continued)

<4.9.C.5>
<4.9.C.6>

SURVEILLANCE		FREQUENCY
SR 3.8.4.8	~~-----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]% 1 of the manufacturer's rating for the 125 VDC batteries or the minimum acceptable battery capacity from the load profile for the 250 VDC batteries 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]% 1 of expected life with capacity < 100% of manufacturer's rating AND 24 months when battery has reached [85]% 1 of the expected life with capacity ≥ 100% of manufacturer's rating

C

⟨CTS⟩

3.8 ELECTRICAL POWER SYSTEMS

3.8.5 DC Sources—Shutdown

⟨LCO 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, "Distribution Systems—Shutdown."]~~ 2 TSTF-204

2 {One 250 VDC and one 125 VDC electrical power subsystem shall be OPERABLE.}

⟨Appl 3.9.D⟩

APPLICABILITY: MODES 4 and 5,
During movement of irradiated fuel assemblies in the ~~[secondary]~~ containment. 2

⟨DOC M.2⟩

ACTIONS

---- NOTE ----
LCO 3.0.3 is not applicable. 3

CONDITION	REQUIRED ACTION	COMPLETION TIME
⟨3.9.D Action⟩ A. One ~~[or more]~~ required DC electrical power subsystem~~[s]~~ inoperable. 2 TSTF-204	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. 2	Immediately
	AND	
		(continued)

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<CTS>

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
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

<3.9.D Action>

<Doc M.3>

Δ C

SURVEILLANCE REQUIREMENTS

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

<Doc L.1>
<4.9.D>

5

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 Quad Cities 1 and 2 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 subsystem when the unit is shutdown (per the Note to SR 3.8.5.1). | 6

5. Editorial change made to match the words in the LCO and ACTION requirements.

6. Change made to be consistent with the Writers Guide.

L <CTS>

<Table 4.9.C-1>

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

4 2

<DOC L.4>
<DOC M.2>
<DOC M.4>

PARAMETER	CATEGORY A: LIMITS FOR EACH DESIGNATED PILOT CELL	CATEGORY B: LIMITS FOR EACH CONNECTED CELL	CATEGORY C: ~~ALLOWABLE~~ 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)]	≥ ~~[1.195]~~ 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

<DOC L.4> (a) It is acceptable for the electrolyte level to temporarily increase above the specified maximum level during and, for a limited time, following equalizing charges provided it is not overflowing. 5 | △c

<Table 4.9.C-1 footnote a> (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

<Table 4.9.C-1 footnote b> <DOC M.3> (c) A battery charging current of < ~~[2]~~ ② amp ③ ~~for station service batteries and < 0.5 amp for DG batteries~~ 4 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 Quad Cities 1 and 2 CTS is being maintained (i.e., this time is consistent with current licensing basis).

4. Typographical/grammatical error corrected.

5. The words "and, for a limited time, 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. | C

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.

TSTF-204 changes not shown

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)

<CTS>

3.8 ELECTRICAL POWER SYSTEMS

3.8.~~9~~ 7 Distribution Systems—Operating

Insert LCO 3.8.7 [2]

<LCO 3.9.E.1>
<LCO 3.9.E.2>
<DOC M.3>

LCO 3.8.~~9~~ 7 ~~[Division 1] and [Division 2] AC, DC, [and AC vital bus] electrical power distribution subsystems shall be OPERABLE.~~

<Appl 3.9.E> APPLICABILITY: MODES 1, 2, and 3.

ACTIONS

	CONDITION	REQUIRED ACTION	COMPLETION TIME
<3.9.E Action 1> <DOC L.1> <DOC M.2>	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 [3] △c
[7] △	~~B. One or more AC vital buses inoperable.~~	~~B.1 Restore AC vital bus distribution subsystems to OPERABLE status.~~	[2 hours **AND** 16 hours from discovery of failure to meet LCO]
[7] [B <3.9.E Action 2> <DOC L.1> <DOC M.1> [6] Insert 3.8.7 ACTION C	~~C~~ B. One or more ~~[station service]~~ [2] DC electrical power distribution subsystems inoperable.	~~C~~ B.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 [3] △

(continued)

<CTS> 2

Insert LCO 3.8.7

The following electrical power distribution subsystems shall be OPERABLE:

<LCO 3.9.E.1> <LCO 3.9.E.2> a. Division 1 and Division 2 AC and DC electrical power distribution subsystems; and C

<DOC M.3> b. The portions of the opposite unit's 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 2 only), LCO 3.7.5, "Control Room Emergency Ventilation Air Conditioning (AC) System" (Unit 2 only), and LCO 3.8.1, "AC Sources — Operating."

C

6

Insert 3.8.7 ACTION C

<DOC M.3> C.	One or more required opposite unit AC and DC electrical power distribution subsystems inoperable.	------------NOTE------------ Enter applicable Conditions and Required Actions of LCO 3.8.1 when Condition C results in the inoperability of a required offsite circuit. ----------------------------------- C.1 Restore required opposite unit AC and DC electrical power distribution subsystems to OPERABLE status.	7 days

C

C

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
⟨3.9.E Action 2⟩ D. Required Action and associated Completion Time of Condition A, B, or C not met.	D.1 Be in MODE 3. **AND** D.2 Be in MODE 4.	12 hours 36 hours △C
~~E. One or more DG DC electrical power distribution subsystems inoperable.~~	~~E.1 Declare associated DG(s) inoperable.~~	~~Immediately~~ 7
7—Ⓔ ~~F~~. ⟨DOC M.2⟩ Two or more electrical power distribution subsystems inoperable that, in combination, result in a loss of function. 4	Ⓔ~~F~~.1 Enter LCO 3.0.3.	Immediately △C △C

SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
1 ⟨4.9.E⟩ SR 3.8.~~8~~⑦.1 Verify correct breaker alignments and voltage to {required} AC, and DC ~~, and AC vital bus~~ electrical power distribution subsystems.	7 days △C

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 and B.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 Quad Cities 1 and 2 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 2 only)). When an opposite unit's AC or DC electrical distribution subsystem that is required to support equipment required to be OPERABLE becomes inoperable, ITS 3.8.7 ACTION C 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 C occur subsequent to a failure to meet the LCO due to Condition A or B 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 and B.1 has been modified to only start upon discovery of failure to meet LCO 3.8.7.a, 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.

4. The phrase "in combination" has been added to ISTS 3.8.9 Condition F (ITS 3.8.7 Condition E) to clarify that the combination of two or more subsystems must result in the loss of function in order to enter this condition. This has been added since some functions (e.g., control room emergency ventilation) are lost with the inoperability of one single division. Therefore, if for Unit 2 the opposite unit's Division 1 is lost such that the Control Room Emergency Ventilation (CREV) System is inoperable and a bus in Division 2 is inoperable that does not provide power to the CREV System, entry into Condition E is not required. Proposed Condition C is considered acceptable to cover the inoperabilities associated with the opposite unit's distribution system while Condition A is considered acceptable to cover the inoperabilities associated with the loss of Division 2.

5. Not used. | △C

6. Action C has been added to reflect existing requirements for the AC and DC electrical | △C
power distribution subsystems necessary to support opposite unit powered equipment
OPERABILITY requirements. | △C

7. This bracketed requirement has been deleted because it is not applicable to Quad Cities 1 and 2. The following requirement has been renumbered to reflect the deletion.

L

All changes are II unless otherwise identified

BASES

6

LCO (continued)

~~[In addition, [one required automatic load sequencer per ESF bus] shall be OPERABLE.]~~

from the 345 kV switchyard

R

4160 V ESS

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~~ SATs, ~~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.~~

An

to each unit

the

12

12

22

22

RATs

4160

ESS

Insert LCO-2

and common DG

~~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~~.

A

The respective

10

unit

and common DG

4160 V ESS

Proper sequencing of loads, including tripping of nonessential loads, is a required function for DG OPERABILITY.

3

Insert LCO-3

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

qualified

the 4160 ESS

ES

manual

capability

(continued)

1

Insert LCO-2

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 1, LCO 3.8.1.a is met if RAT 12 is capable of supplying ESS buses 13-1 and 14-1 and if RAT 22 (or UAT 21 on backfeed) can supply ESS buses 13-1 via ESS bus 23 and 23-1 and the associated bus tie or ESS bus 14-1 via ESS bus 24 and 24-1 and the associated bus tie. For Unit 2, LCO 3.8.1.a is met if RAT 22 can supply ESS buses 23-1 and 24-1 and if RAT 12 (or UAT 11 on backfeed) can supply ESS bus 23-1 via ESS bus 13 and 13-1 and the associated bus tie or ESS bus 24-1 via ESS bus 14 and 14-1 and the associated bus tie. For Unit 1, 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. For Unit 2, LCO 3.8.1.c is met if RAT 12 (or UAT 11 on backfeed) is capable of supplying ESS bus 19, to support equipment required by LCO 3.6.4.3, and supplying ESS bus 18, to support equipment required by LCO 3.7.4 and LCO 3.7.5.

1

Insert LCO-3

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 10 seconds and is required to be met from the same variety of initial conditions specified for the respective unit and shared DGs. For Unit 1 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. Similarly, for Unit 2 to meet LCO 3.8.1.d, DG 1 must be capable of supplying ESS bus 14-1 on a loss of power to the bus in order to supply ESS bus 19, to support equipment required by LCO 3.6.4.3, and to supply ESS bus 18, in order to support equipment required by LCO 3.7.4 and 3.7.5.

In addition, fuel oil storage and fuel oil transfer pump requirements must be met for each required DG.

BASES

ACTIONS

D.1 and D.2 (continued)

1

4160V ESS

(i.e., the bus is de-energized)

3 required

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.~~9~~, "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.~~9~~ provides the appropriate restrictions for a de-energized division. ⑦ 10 △

⑧ 1

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

required 11

no more than one 2

3

With two DGs inoperable, there is ~~one~~ remaining standby AC source. Thus, with an assumed loss of offsite electrical power, ~~in~~sufficient 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)

TSTF-163

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 10 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.

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. However, to the extent practicable, the tests should be alternated between units. 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. △c

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).

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. However, to the extent practicable, the test should be alternated between units. 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. △C

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

SURVEILLANCE REQUIREMENTS 1

SR 3.8.1.5 (continued) 6

fuel oil and cause fouling, but all must have a water environment in order to survive. Removal of water from the fuel oil day [and engine mounted] tanks once every [31] days eliminates the necessary environment for bacterial survival. 2 1

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.

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 12). 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. 1

△

SR 3.8.1.6 5

This Surveillance demonstrates automatically that each required fuel oil transfer pump operates and 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 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. 1 1

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 by transferring oil from the storage tank.

~~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

(continued)

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

SR ~~3.8.1.8~~ 3.8.1.9 5

Transfer of each ~~4.16 kV ESF~~ 4160 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}~~ 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 ~~18~~ 24 month Frequency. Therefore, the Frequency was concluded to be acceptable from a reliability standpoint. 2 24 △c

~~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.~~ 5

SR ~~3.8.1.9~~ 3.8.1.10 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~~ 722 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: 1

(continued)

L

BASES

(13) [5] [1]

SURVEILLANCE REQUIREMENTS (continued)

SR 3.8.1.~~12~~ (13)

Consistent with Regulatory Guide 1.9 (Ref. 10), paragraph c.2.2.5,

[2] (10)

This Surveillance demonstrates that the DG automatically starts and achieves the required voltage and frequency within the specified time (~~{12}~~ (10) seconds) from the design basis actuation signal (LOCA signal) ~~and~~ operate~~s~~ 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.~~ [2]

Insert SR 3.8.1.13-1 [5]

[2]

~~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.~~ [5] [2]

(24) [2] (5) [3]

The Frequency of ~~{18~~ (24) 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.~~ [1]

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 during operation with the reactor critical,~~

TSTF-8 not adopted [12]

(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. During the Surveillance, the DG is normally operated paralleled to the grid, which is not the configuration when the DG is performing its safety function following a loss of offsite power (with or without a LOCA). Given the parallel configuration to the grid during the Surveillance, the grid voltage may be such that the DG field excitation level needed to obtain the specified power factor could result in a transient voltage within the DG windings higher than the recommended values if the DG output breaker were to trip during the Surveillance. Therefore, 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.

C

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 3.8.1.17 (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.~~

~~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.~~

SR 3.8.1.18

with [2] [5] – interval [2] [3]

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~~ ESS buses.

[5] limit

time delay relays [1] (14)

[5] [1] △c

(24) [2] [1]

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.

Insert SR 3.8.1.18 [5]

TSTF-8 not adopted [12]

(9) [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.

[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:~~

(continued)

15

Insert SR 3.8.1.18

There is no upper limit for the load sequence time interval since, for a single load interval (i.e., the time between two load blocks), the capability of the DG to restore frequency and voltage prior to applying the second load is not negatively affected by a longer than designed load interval, and if there are additional load blocks (i.e., the design includes multiple load intervals), then the lower limit requirements (-10%) will ensure that sufficient time exists for the DG to restore frequency and voltage prior to applying the remaining load blocks (i.e., all load intervals must be $\geq$ 90% of the design interval).

C

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

Insert ACTIONS NOTE
7

A.1

4160 ESS bus
2

8
4

An offsite circuit is considered inoperable if it is not available to one required ~~ESF division~~. If two or more ~~ESF~~ 2 ~~4.16 kV~~ buses are required per LCO 3.8.10, 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~~ offsite power ~~available~~, appropriate restrictions can be implemented in accordance with the ~~affected~~ required feature(s) LCOs' ACTIONS.

4160V ESS
2

that are not powered from
8

8
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.

required
9

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. Since this option may involve undesired administrative efforts, the allowance for

per Required Action A.1
8

For example, if both Division 1 and 2 ESS buses are required OPERABLE by LCO 388, and only the Division 1 ESS buses are not capable of being powered from offsite power, then only the required features powered from Division 1 ESS buses are required to be declared inoperable.

(continued)

B 3.8 ELECTRICAL POWER SYSTEMS

B 3.8.3 Diesel Fuel Oil~~, Lube Oil,~~ and Starting Air [1]

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.~~ [1]

~~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.~~

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 flash point and 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]

Each DG has ~~an air start~~ a starting air system ~~with~~ that includes two pair of air receivers. Each pair has adequate capacity for ~~five~~ three successive start ~~attempts~~ ~~on the DG~~ without recharging the air start receiver~~(~~s~~)~~. ⑤ [2] △C

(continued)

1

Insert BKGD-1

The 250 VDC electrical power sources provide motive power to larger DC loads such as DC motor-driven pumps and valves. Each unit includes a 250 VDC source consisting of a 250 VDC battery and an associated 250 VDC full capacity battery charger. An additional 250 VDC full capacity (swing) charger is available for use between the units. The swing charger can only be aligned to one battery at a time. Each 250 VDC battery and charger supplies power to both Unit 1 and Unit 2 loads. Therefore, for the purposes of this Specification, each unit has two 250 VDC electrical power subsystems. One 250 VDC electrical power subsystem includes the associated unit 250 VDC battery and full capacity battery charger while the other 250 VDC electrical power subsystem includes the opposite unit 250 VDC battery and the full capacity charger. The normal supply to each 250 VDC full capacity charger is via a 480 V Division 2 power supply from the associated unit. The swing charger can be powered from a Division 1 bus for each unit.

The Division 1 and 2 125 VDC electrical power sources provide control power to selected safety related equipment as well as circuit breaker control power for 4160 V, 480 V, control relays and annunciators. Each unit includes a 125 VDC source consisting of a 125 VDC battery and two 125 VDC full capacity chargers (normal and spare). Each 125 VDC unit source (125 VDC battery and associated chargers) supplies power to the associated unit Division 1 125 VDC electrical power distribution subsystem and the opposite unit Division 2 125 VDC electrical power distribution subsystem. The Division 1 and 2 125 VDC electrical power distribution subsystems provide power to redundant loads, therefore both unit 125 VDC sources are needed to support the operation of both units. These sources are referred to as the Division 1 and 2 125 VDC electrical power sources since they supply the associated units Division 1 and 2 125 VDC electrical power distribution subsystems, respectively. In addition, the Division 2 125 VDC electrical power distribution subsystems provide control power to safety related loads common to both units such as the Standby Gas Treatment System. Therefore, the opposite unit Division 2 125 VDC electrical power distribution subsystem is needed to support the operations of the given unit. This source is referred to as the opposite unit's 125 VDC electrical power subsystem; however it receives power from the given units battery and full capacity chargers. The design includes an alternate battery for each 125 VDC electrical power distribution subsystem. However, the design configuration of the alternate battery is susceptible to single failure and therefore, is not reliable as a normal 125 VDC source.

All changes are 1 unless otherwise indicated

BACKGROUND (continued)

In case of loss of normal power to the battery charger, the DC loads are automatically powered from the ~~station~~ associated batteries. 9 — 2

7 — 3

The DC power distribution system is described in more detail in Bases for LCO 3.8.9, "Distribution System—Operating," and LCO 3.8.10, "Distribution System—Shutdown."

3 — 8

Each battery has adequate storage capacity to carry the required ~~load continuously for approximately 2 hours~~ (Ref. [illegible]). 1

normal loads plus all loads required for safe shutdown on one unit and operations required to limit the consequences of a design basis event on the other unit for a period of 4 hours

the ies associated with each unit are buses

~~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~~ buses.

This arrangement ensures redundant subsystems are

125 VDC

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. △c

For the 250 VDC batteries, the minimum allowable battery capacity is based on the capacity margin calculated from the design load profile. The minimum design voltage limit is 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. [illegible]). △c

1

4

APPLICABLE SAFETY ANALYSES

11

The initial conditions of Design Basis Accident (DBA) 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. The OPERABILITY of the DC subsystems is consistent with the initial assumptions of the

4

2

(continued)

All changes are [1] unless otherwise indicated

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.

10 CFR 50.36(c)(2)(ii)

The DC sources satisfy Criterion 3 of ~~the NRC Policy Statement~~. [5]

one 250 a) 250 VDC DC

LCO

the unit 125 VDC

the Division 1 125 VDC

one

unit

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 equipment and interconnecting cabling supplying power to the associated bus, b) ~~and 2) each DG DC~~ subsystem consisting of ~~one~~ battery ~~bank~~, one battery charger, and the corresponding control equipment 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~~). ①

y)

a unit bus,

full capacity

to the associated unit 125 VDC Division 1 bus, c) the Division 2 125 VDC subsystem consisting of the opposite unit 125 VDC battery, one full capacity battery charger, opposite unit buses, and all the corresponding control equipment, interconnecting cabling, and bus ties up to the unit 125 VDC Division 2 bus,

[5]

△C

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.

△C

The DC electrical power requirements for MODES 4 and 5 are addressed in ~~the Bases for~~ LCO 3.8.5, "DC Sources—Shutdown." [2]

and other conditions in which the DC electrical power sources are required [6]

(continued)

and d) the opposite unit Division 2 125 VDC subsystem consisting of the unit 125 VDC battery, one full capacity battery charger, unit buses, and the corresponding control equipment, interconnecting cabling, and bus ties up to the associated opposite unit 125 VDC Division 2 bus

△C

5

Insert ACTIONS

B.1 and B.2

Condition B, 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 B 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 B.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 B.1 requires the associated OPERABLE alternate 125 VDC electrical power subsystem to be placed in service. An OPERABLE alternate 125 VDC electrical power subsystem consists of the alternate 125 VDC battery and one full capacity battery charger. For the alternate 125 VDC battery to be considered OPERABLE, all SR requirements associated with the alternate 125 VDC battery must be met. (The full capacity battery charger is the same battery charger (normal or spare) associated with the normal 125 VDC electrical power subsystem.) Therefore, placement of the OPERABLE alternate 125 VDC electrical power subsystem in service 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 battery. Therefore, only a limited time of operation is allowed in this condition.

The 72 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 (continued)

C.1 and C.2

Condition C, 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 C 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 C.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 C.1 requires the associated OPERABLE alternate 125 VDC electrical power subsystem to be placed in service. An OPERABLE alternate 125 VDC electrical power subsystem consists of the alternate 125 VDC battery and one full capacity battery charger. For the alternate 125 VDC battery to be considered OPERABLE, all SR requirements associated with the alternate 125 VDC battery must be met. (The full capacity battery charger is the same battery charger (normal or spare) associated with the normal 125 VDC electrical subsystem.) Therefore, placement of the OPERABLE alternate 125 VDC electrical power subsystem in service 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 battery. Therefore, only a limited time of operation is allowed in this condition.

The 72 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 (continued)

D.1 and D.2

With one Division 1 or 2 125 VDC electrical power subsystem inoperable for reasons other than Condition B or C 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 125 VDC power to the affected division.

If one 125 VDC electrical power subsystem is inoperable (e.g., inoperable battery, inoperable required battery charger, or inoperable required battery charger and associated inoperable battery), the remaining 125 VDC electrical power subsystem has 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 72 hours. The Completion Time of Required Action D.1 to restore the 125 VDC electrical power subsystem to OPERABLE status is based on the capacity, reliability and capability of the remaining 125 VDC subsystem.

Required Action D.2 is modified by a Note indicating that the action is only applicable if the opposite unit is not in MODE 1, 2, or 3. In this condition, the shutdown unit is under maintenance and a complete test of at least one 125 VDC subsystem may be necessary. Required Action D.2 requires the OPERABLE alternate 125 VDC electrical power subsystem to be placed in service in 72 hours. The 72 hour Completion Time to place 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. An OPERABLE alternate 125 VDC electrical power subsystem consists of the alternate 125 VDC battery and one full capacity battery charger. For the alternate 125 VDC battery to be considered OPERABLE all SR requirements associated with the alternate 125 VDC battery must be met. (The full capacity battery charger is the same battery charger (normal or spare) associated with the normal 125 VDC electrical power subsystem.) Upon completing this Required Action continuous operation is allowed, since if the opposite unit associated OPERABLE alternate 125 VDC electrical power subsystem is placed in service supplying the unit Division 2 loads, the design configuration will not be susceptible to single failure and hence, the reliability is consistent with the normal circuit.

5

Insert ACTIONS (continued)

E.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.

The test can be performed using simulated or actual loads. [1]

BASES

SURVEILLANCE REQUIREMENTS (continued)

SR 3.8.4.7

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 6. ① [1]

Insert SR 3.8.47 [5] [4]

The Frequency of ~~[18~~ 24 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]~~.

This SR is modified by ~~two~~ a Note~~s~~. ~~Note 1~~ The Note allows the performance of a modified performance discharge test in lieu of a service test ~~once per 60 months~~. [5]

move to SR 3.8.4.8 as indicated [10]

~~The 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. [1] 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.

(The test can consist of a single rate rate if the test rate employed for the performance discharge test exceeds the 1 minute rate and continues to envelope the duty cycle of the service test.)

when the modified performance discharge test is performed in lieu of the service test

A modified performance [1] 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.

provided the modified discharge performance 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 3.8.4.7. [10]

~~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)

△

BASES

SURVEILLANCE REQUIREMENTS

~~SR 3.8.4.7 (continued)~~

~~challenge safety systems. Credit may be taken for unplanned events that satisfy the Surveillance.~~ 5 9

TSTF-8 not adopted

SR 3.8.4.8

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.

10 Insert from SR 3.8.4.7

10 A battery modified performance discharge test is ~~described in the Bases for SR 3.8.4.7.~~ 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.

For the 125 VDC battery, 1 The acceptance criteria for this Surveillance is consistent with IEEE-450 (Ref. 7) and IEEE-485 (Ref. ~~10~~ 9). 9 1 These references recommend that the battery be replaced if its capacity is below 80% of the manufacturer's rating, since IEEE-485 (Ref. 9) recommends using an aging factor of 125% in the battery size calculation 1. A capacity of 80% shows that the battery rate of deterioration is increasing, even if there is ample capacity to meet the load requirements. However, since the 250 VDC batteries are not sized consistent with IEEE-485 (Ref. 9), they must be replaced when their actual capacity is below the minimum acceptable battery capacity based on the load profile. 5 1

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~~ consistent with 2 IEEE-450 (Ref. 7), 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~~ The 12 month and 60 month 1 Frequencies are consistent with the recommendations in IEEE-450 (Ref. 7). The 24 month Frequency is derived from the recommendations of IEEE-450 (Ref. 7) 1 1

(continued)

C

L

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

1 ⓤ

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

1

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.

TSTF-204 and 2

Insert ASA

1

10 CFR 50.36(c)(2)(ii)

The DC sources satisfy Criterion 3 of ~~the NRC Policy Statement~~.

TSTF-204

3 2

~~required~~ [the required] 2

6

LCO

one ⓐ 250 VDC

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 ⓨ 1

one 250 DC

(continued)

TSTF-204

Insert ASA

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 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, 3, and 4 {for PWRs}] [~~1, 2, and 3 ~~{for BWRs}]~~ have no specific analyses in MODES ~~[5 and 6 {for PWRs}] [~~4 and 5 ~~{for BWRs}]~~. Worst case bounding events are deemed not credible in MODES ~~[5 and 6 {for PWRs}] [~~4 and 5 ~~{for BWRs}]~~ because the energy contained within the reactor pressure boundary, reactor coolant temperature and pressure, and the corresponding stresses result in the probabilities of occurrence being significantly reduced or eliminated, and in minimal consequences. These deviations from DBA analysis assumptions and design requirements during shutdown conditions are allowed by the LCO for required systems.

2

C

The shutdown Technical Specification requirements are designed to ensure that the unit has the capability to mitigate the consequences of certain postulated accidents. Worst case Design Basis Accidents which are analyzed for operating MODES are generally viewed not to be a significant concern during shutdown MODES due to the lower energies involved. The Technical Specifications therefore require a lesser complement of electrical equipment to be available during shutdown than is required during operating MODES. More recent work completed on the potential risks associated with shutdown, however, have found significant risk associated with certain shutdown evolutions. As a result, in addition to the requirements established in the Technical Specifications, the industry has adopted NUMARC 91-06, "Guidelines for Industry Actions to Assess Shutdown Management," as an industry initiative to manage shutdown tasks and associated electrical support to maintain risk at an acceptable low level. This may require the availability of additional equipment beyond that required by the shutdown Technical Specifications.

TSTF-204 2 required the required 2

3 supplying power to the associated buses

3 b

some of the 2

2

BASES

LCO (continued)

equipment and interconnecting cabling; and 2) each [OG DC] 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 subsystem[s] 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).

125 VDC 1

is TSTF-204 and 2

4 8

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.

ACTIONS

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

~~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~~

Insert ACTIONS NOTE 5

TSTF-204 2

(continued)

1 Insert LCO

The associated alternate 125 VDC electrical power subsystem may be used to satisfy the requirements of the 125 VDC subsystem. 1 C

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)

TSTF-204 and 2

C

~~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).

3

electrical power subsystem(s)

3

However,

in the secondary containment

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 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.

TSTF-204 and 2

C

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.

250V

5

5

C

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 3.8.6.2 (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.

4
The 7day 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.

4
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
1

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. 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 a to Table 3.8.6-1 permits the electrolyte level to be above the specified maximum level during equalizing charge, provided it is not overflowing. These limits ensure that the plates suffer no physical damage, and that adequate electron

5
temporarily

5
and, for a limited time, following an

(normally up to 3 days following the completion of an equalize charge to allow electrolyte stabilization)

C
7
4
C

(continued)

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 consistent with a generic change being reviewed by the NRC. | C

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.

TSTF-204 changes not shown

c

1

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)

TSTF - 204 changes not shown

1

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)

TSTF-204 changes not shown

c

1

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)

1

B 3.8 ELECTRICAL POWER SYSTEMS

B 3.8.~~9~~ 7 Distribution Systems—Operating ⑦

BASES

2

BACKGROUND

The onsite Class 1E AC ~~and DC~~ electrical power distribution system for each unit is divided into redundant and independent AC~~, DC, and~~ ~~AC vital bus~~ electrical power distribution subsystems.

~~The primary~~ Each AC distribution subsystem consists of ~~three 4.16 kV~~ two 4160V ~~Engineered Safety Feature (ESF)~~ Essential Service System (ESS) buses ~~each~~ having an offsite source of power as well as ~~a dedicated~~ an onsite diesel generator (DG) source. ~~Each 4.16 kV ESF bus is normally connected to a normal source startup auxiliary transformer (SAT) (2D).~~ Insert BK6D-1 During a loss of the normal offsite power source to the ~~4.16 kV~~ 4160V ~~ESF~~ ESS buses, the alternate supply breaker ~~from SAT 2D~~ attempts to close. If all offsite sources are unavailable, the onsite emergency unit DGs supply power to the ~~4.16 kV~~ 4160V ~~ESF~~ ESS buses.

~~The secondary plant~~ Each AC distribution subsystem also includes ~~600~~ 480 VAC ~~emergency~~ ESS buses ~~2C and 2D and associated load~~ 18 and 19 (Unit 1) and buses 28 and 29 (Unit 2) associated motor control 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.~~ Insert BK6D-2

There are two independent ~~125/~~250 VDC station service electrical power distribution subsystems and ~~three~~ two independent 125 VDC ~~DG~~ electrical power distribution subsystems that support the necessary power for ESF functions. Insert BK6D-3

The list of ~~all~~ required distribution buses for Unit 1 and 2 is presented in Table ⑤ B 3.8.~~9~~ 7-1 ⑦ and B 3.8.7-2, respectively.

2

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 ESF systems are OPERABLE. The 3

(continued)

2

Insert BKGD-1

During normal operation, each subsystem's ESS buses are connected such that power is supplied to the Division 2 4160 V loads from the unit's main generator through a unit auxiliary transformer (UAT) and from the 345 kV system through the reserve auxiliary transformer (RAT) to supply the Division 1 4160 V loads. The UAT and RAT are connected in a normal – alternate power source arrangement for each of the 4160 V divisions (i.e., the RAT provides alternate power for the Division 2 ESS buses and the UAT for the Division 1 ESS buses).

2

Insert BKGD-2

The 120 VAC instrument bus is normally powered from 480 VAC bus 18-2 for Unit 1 and 480 VAC MCC 28-2 for Unit 2. The alternate power supply for the Unit 1 120 VAC instrument bus is supplied from 480 VAC MCC 15-2 and the Unit 2 120 VAC instrument bus is supplied from 480 VAC MCC 25-2. 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. However, the instrument bus ABT is only provided for reliability and is not required to be OPERABLE (i.e., only one power source to the instrument bus is required).

C

C

The 120 VAC essential services bus is supplied by a static uninterruptible power supply (UPS). Power to the UPS is supplied, in order of preference; for Unit 1 by 480 VAC bus 18, 250 VDC MCC 1, or 480 VAC bus 17; and for Unit 2 by 480 VAC bus 28, 250 VDC MCC 2, or VAC bus 26.

2

Insert BKGD-3

The 250 VDC electrical power distribution subsystem provides motive power to large DC loads such as DC motor-driven pumps and valves. 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.~~5~~, ~~Reactor Coolant System (RCS)~~; and Section 3.6, Containment Systems. ⑤ [4]

Emergency Core Cooling Systems (ECCS) and Reactor Core Isolation Cooling (RCIC) System

[7] ⑨

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

[8] As noted in Table B 3.8.7-1 and Table B 3.8.7-2 (Footnote a), each division of the AC and DC electrical power distribution systems is a subsystem. [3]

[1] ⑦ The required electrical power distribution subsystems listed in Table B 3.8.~~9~~-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]

for Unit 1 and Table B 3.8.7-2 for Unit 2

Δ

Maintaining the ~~[~~Division 1 and 2~~]~~ AC, DC, ~~and~~ ~~AC vital bus~~ electrical power distribution subsystems OPERABLE 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]

, as well as the portions of the opposite units AC and DC electrical power distribution subsystems necessary to support equiped 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 2 only), LCO 3.7.5, "Control Room Emergency Ventilation Air Conditioning (AC) System (Unit 2 only), and LCO 3.8.1, "AC Sources—Operating,"

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)

Insert B3.8.7 LCO
[2]

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]

In addition, tie breakers between redundant safety related AC~~,~~ ~~DC,~~ ~~and~~ ~~AC vital bus~~ power distribution subsystems, ~~if they exist,~~ must be open. —[1] 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 subsystem~~s~~ ~~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~~ buses from being powered from the same offsite circuit.

[10] (15) that is not being powered from its normal source (i.e., it is being powered from its redundant electrical power distribution subsystem)

[7]—(1E)

between redundant safety related AC or DC power distribution subsystems [8]

[10]

4160 V ESS —[2]

△

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 are covered in the Bases for LCO 3.8.1~~0~~, "Distribution Systems—Shutdown." —(8)—[6]

[5]
and other conditions in which AC and DC electrical power distribution subsystems are required

ACTIONS

A.1

With one or more required AC buses, ~~load centers,~~ motor control centers, or distribution panels ~~in one division~~ inoperable, 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]

and a loss of function has not yet occurred

(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 for Unit 1 and Table B 3.8.7-2 for Unit 2, 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 for Unit 1 and Table B 3.8.7-2 for Unit 2. 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 for Unit 1 and Table B 3.8.7-2 for Unit 2 (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 for Unit 1 and Table B 3.8.7-2 for Unit 2 (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)

electrical 3

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, ~~load centers,~~ motor control centers, and distribution panels must be restored to OPERABLE status within 8 hours. 1

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. 7 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.

8 low

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.~~12~~ 11, "Safety Function Determination Program (SFDP).") 1

1 3.8.7.a

7 electrical power distribution subsystem

9 electrical power distribution subsystem

C

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. If Condition A is entered while, for instance, a DC ~~bus~~ electrical power distribution subsystem is inoperable and subsequently returned OPERABLE, ~~this~~ LCO 3.8.7.a 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, to restore the AC electrical power distribution system. At this time a DC ~~circuit~~ electrical power distribution subsystem could again become inoperable, and the 7 ~~AC~~ electrical power distribution subsystem 9

(continued)

BASES

ACTIONS

A.1 (continued)

could be restored OPERABLE. This could continue indefinitely.

3.8.7.a

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 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 indefinitely. 1

1

~~B.1~~

~~With one AC vital bus inoperable, the remaining 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].~~

~~Condition B represents one AC vital 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 buses.~~

~~This 2 hour limit is more conservative than Completion Times allow for the majority of components that are without adequate vital AC power. Taking exception to LCO 3.0.2 for components without adequate vital AC power, that would have Required Action Completion Times shorter than 2 hours if declared inoperable, is acceptable because of:~~

(continued)

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;~~ 1

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

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

~~The 2 hour Completion Time takes into account the importance to safety of restoring the AC vital bus to OPERABLE status, the redundant capability afforded by the other OPERABLE vital buses, 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 the LCO. 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 bus distribution system. At this time an AC division could again become inoperable, and vital 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 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 indefinitely.~~

(continued)

BASES

ACTIONS (continued)

1 B

D.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 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)

8 worst scenario is

Condition D ~~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~~.

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

ACTIONS [1] Ⓑ ~~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].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 [1]. If Condition ~~C~~ Ⓑ is entered while, for instance, an AC ~~bus~~ electrical power distribution subsystem [9] is inoperable and subsequently restored OPERABLE, ~~the~~ LCO 3.8.7.a 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, to restore the DC electrical power distribution subsystem. At this time, an AC electrical power distribution subsystem ~~division~~ could again become inoperable, and DC electrical power distribution sub [9] [8] 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 ~~the~~ LCO 3.8.7.a [1] was initially not met, instead of at the time Condition ~~C~~ Ⓑ [1] was entered. The 16 hour Completion Time is an acceptable limitation on this potential of failing to meet ~~the~~ LCO 3.8.7.a indefinitely.

Insert B 3.8.7 Action C [1]

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.

~~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~~ [1]

~~(continued)~~

11

Insert B 3.8.7 ACTION C

C

C.1

With one or more required opposite unit AC and DC electrical power distribution subsystems 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 1 and Unit 2 share the single train Control Room Emergency Ventilation (CREV) and the associated Air Conditioning (AC) System. Since these systems are powered only from Unit 1, an inoperable Unit 1 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 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.

The Required Action is modified by a Note indicating that the applicable Conditions of LCO 3.8.1 be entered and Required Actions taken if the inoperable opposite unit AC electrical power distribution subsystem results in an inoperable required offsite circuit. This is an exception to LCO 3.0.6 and ensures the proper actions are taken for these components.

C

BASES

ACTIONS

~~E.1 (continued)~~

~~declared inoperable. This action also requires entry into applicable Conditions and Required Actions of LCO 3.8.1, "AC Sources—Operating."~~ [1]

[1] E ~~F~~.1

Condition ~~F~~ E corresponds to the inoperability of ~~a level of degradation in the~~ [8] electrical power distribution system that causes a required safety function to be lost. When ~~more than one~~ two or more [9] AC or DC electrical power distribution subsystem ~~is lost, and this~~ , in combination 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. [5] [8] △

SURVEILLANCE REQUIREMENTS

SR 3.8.~~8~~ 7.1 [1]

This Surveillance verifies that the AC and DC~~,~~ electrical power distribution sub systems [8] [7] are functioning properly, with the correct circuit breaker alignment. The correct breaker alignment ensures the appropriate separation and independence of the electrical ~~buses~~ 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~~,~~ ~~DC,~~ ~~and~~ ~~AC vital bus~~ [1] electrical power distribution subsystems, redundant power supplies available to the essential service and instrument 120 VAC buses, [9] and other indications available in the control room that alert the operator to bus and subsystem malfunctions. △

REFERENCES [1]

1. U~~[~~FSAR, Chapter ~~[~~6~~]~~. [3]
2. UFSAR, Chapter ~~[~~15~~]~~.
3. Regulatory Guide 1.93, December 1974.

The term "in combination" means that the loss of function must result from the inoperability of two or more AC and DC electrical power distribution subsystems; a loss of function solely due to a single AC or DC electrical power distribution subsystem inoperability even with another AC or DC electrical power distribution subsystem concurrently inoperable does not require entry into Condition E. △

Δ

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 [NK02]
		Bus [NK03]	Bus [NK04]
		Distribution Panels [NK41, NK43, NK51]	Distribution Panels [NK42, NK44, NK52]
AC vital buses	[120 V]	Bus [NN01]	Bus [NN02]
		Bus [NN03]	Bus [NN04]

* Each [division] of the AC and DC electrical power distribution systems is a subsystem.

Insert B 3.8-88

9

9

Insert B 3.8-88

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

TYPE	VOLTAGE	DIVISION 1(a)	DIVISION 2(a)(b)
AC safety bus	4160 V	ESS buses 13, 13-1	ESS buses 14, 14-1
	480 V	ESS bus 18	ESS bus 19
	120 V	Unit essential services bus, unit instrument bus	NA
250 VDC buses	250 V	NA	TB MCC 1, RB MCC 1A, RB MCC 1B
125 VDC buses	125 V	TB main buses 1A, 1A-1; RB distribution panel 1	TB main bus 2A; TB reserve buses 1B and 1B-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 1 and Division 2 AC and DC electrical power distribution systems require OPERABILITY of the 4160 VAC bus 24-1, 480 VAC bus 29, essential services 120 VAC bus (must be powered from 480 VAC bus 28, 250 VDC TB MCC 1, or 480 VAC MCC 28-2), and 125 VDC bus 2B.

Insert B 3.8-88 (continued)

Table B 3.8.7-2 (page 1 of 1)
Unit 2 AC and DC Electrical Power Distribution Systems

TYPE	VOLTAGE	DIVISION 1(a)	DIVISION 2(a)(b)
AC safety bus	4160 V	ESS buses 23, 23-1	ESS bus 24, 24-1
	480 V	ESS bus 28	ESS bus 29
	120 V	Unit essential services bus, unit instrument bus	NA
250 VDC buses	250 V	NA	TB MCC 2, RB MCC 2A, RB MCC 2B
125 VDC buses	125 V	TB main bus 2A, 2A-1; RB distribution panel 2	TB main bus 1A; TB reserve buses 2B, 2B-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 1 and Division 2 AC and DC electrical power distribution systems require OPERABILITY of the 4160 VAC bus 14-1, 480 VAC bus 19, essential services 120 VAC bus (must be powered from 480 VAC bus 18, 250 VDC TB MCC 2, or 480 VAC MCC 18-2), and 125 VDC bus 1B.

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 RCIC 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.

10. The LCO Bases implies that both the electrical power distribution subsystem powering the redundant subsystem and the redundant subsystem must be declared inoperable if the associated tie breakers are closed. This action would require entry in LCO 3.0.3. In this situation, the single failure criteria may not be met since independence is not maintained, however the safety function is maintained since both subsystems are being powered. The Bases have been revised such that, when a tie breaker between redundant buses is closed, only the electrical power distribution subsystem not being powered from its normal source is declared inoperable. This adequately limits the time the plant may operate with redundant subsystems connected to each other to the time currently allowed for one inoperable subsystem. Since these two conditions are essentially equivalent, this change is acceptable.

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. [4] This LCO explicitly requires energization of the portions of the electrical distribution system, including the opposite unit electrical distribution systems, 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. △C

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 [3] 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~~ ⑦. [1]

(continued)

L.14 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 deletion of the upper limit will not increase the probability of any accident previously evaluated. If the interval between two load blocks is greater than 110% of the design interval, the capability of the DG to perform its function is not necessarily impacted. For the first load interval, sufficient time after energizing the first load block to allow the DG to restore frequency and voltage prior to energizing the second load block is still provided, since the minimum time needed is the design interval minus 10%; allowing more time than the design interval plus 10% does not negatively affect the ability of the DG to perform its intended function, with respect to the first load interval. In addition, it is recognized that if there is an additional load block following the first two described above, then allowing the load interval between the first two load blocks to be longer than the design interval plus 10% could impact the capability of the DG to restore frequency and voltage prior to the start of the third load block. However, the requirement that "each" load block be within the design load interval minus 10% will ensure that the time between the second and third load blocks is sufficient to ensure that the DG can restore frequency and voltage prior to energizing the third load block. The "each" requirement also ensures that all subsequent load intervals (e.g., the third, fourth, etc.) do not impact the capability of the DG to perform its intended function. Therefore, the change does not involve any increase to the consequences of any accident previously evaluated.

   C

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.

NO SIGNIFICANT HAZARDS CONSIDERATION
ITS: 3.8.2 - AC SOURCES — SHUTDOWN

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?

   An alternative is proposed to suspending operations if an AC source is inoperable that may allow continued movement of irradiated fuel assemblies, core alterations, or operations with the potential for draining the reactor vessel. The alternative is to declare the affected required feature(s) inoperable and continue to conduct operations (e.g., OPDRVs) if the affected required feature(s) ACTIONS allow. Declaring the affected required feature(s) inoperable is not considered as an initiator of a previously analyzed accident. Therefore, the declaration does not significantly increase the probability of an accident previously identified. Since the NRC has previously approved (or will approve by other discussed changes) the affected feature(s) ACTIONS to be taken when the affected feature(s) are inoperable, the consequences of any previously evaluated accidents are not significantly increased.

   C

2. Does the change create the possibility of a new or different kind of accident from any accident previously evaluated?

   This change provides for continued performance of previously evaluated operations. Since these operations have been previously considered, their continued performance 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 margin of safety considered in performance of these operations is maintained by declaring the affected feature(s) inoperable and taking the affected required feature(s) ACTIONS. Since the NRC has previously approved (or will approve by other discussed changes) the affected feature(s) ACTIONS to be taken when the affected feature(s) are inoperable, the change does not involve a significant reduction in the margin of safety.

NO SIGNIFICANT HAZARDS CONSIDERATION
ITS: 3.8.5 - DC SOURCES — SHUTDOWN

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?

   An alternative is proposed to suspending operations if an AC source is inoperable that may allow continued movement of irradiated fuel assemblies, core alterations, or operations with the potential for draining the reactor vessel. The alternative is to declare the affected feature(s) inoperable and continue to conduct operations (e.g., OPDRVs) if the affected feature(s) ACTIONS allow. Declaring the affected feature(s) inoperable is not considered as an initiator of a previously analyzed accident. Therefore, the declaration does not significantly increase the probability of an accident previously identified. Since the NRC has previously approved (or will approve by other discussed changes) the affected feature(s) ACTIONS to be taken when the affected feature(s) are inoperable, the consequences of any previously evaluated accident are not significantly increased.

C

2. Does the change create the possibility of a new or different kind of accident from any accident previously evaluated?

   This change provides for continued performance of previously evaluated operations. Since these operations have been previously considered, their continued performance 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 margin of safety considered in performance of these operations is maintained by declaring the affected feature(s) inoperable and taking the affected required feature(s) ACTIONS. Since the NRC has previously approved (or will approve by other discussed changes) the affected feature(s) ACTIONS to be taken when the affected feature(s) are inoperable, the change does not involve a significant reduction in the margin of safety.

NO SIGNIFICANT HAZARDS CONSIDERATION
ITS: 3.8.8 - DISTRIBUTION SYSTEMS — 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 alternative is proposed to suspending operations if an AC or DC distribution system is inoperable that may allow continued movement of irradiated fuel assemblies, core alterations, or operations with the potential for draining the reactor vessel. The alternative is to declare the associated supported required feature(s) inoperable and continue to conduct operations (e.g., OPDRVs) if the associated supported required feature(s) ACTIONS allow. Declaring the associated supported required feature(s) inoperable is not considered as an initiator of a previously analyzed accident. Therefore, the declaration does not significantly increase the probability of an accident previously identified. Since the NRC has previously approved (or will approve by other discussed changes) the associated supported feature(s) ACTIONS to be taken when the associated supported feature(s) are inoperable, the consequences of any previously evaluated accidents are not significantly increased.

   C

2. Does the change create the possibility of a new or different kind of accident from any accident previously evaluated?

   This change provides for continued performance of previously evaluated operations. Since these operations have been previously considered, their continued performance 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 margin of safety considered in performance of these operations is maintained by declaring the affected feature(s) inoperable and taking the associated supported required feature(s) ACTIONS. Since the NRC has previously approved (or will approve by other discussed changes) the associated supported feature(s) ACTIONS to be taken when the associated supported feature(s) are inoperable, the change does not involve a significant reduction in the margin of safety.

3.9 REFUELING OPERATIONS

3.9.1 Refueling Equipment Interlocks

LCO 3.9.1 The refueling equipment interlocks associated with the reactor mode switch refuel position shall be OPERABLE.

APPLICABILITY: During in-vessel fuel movement with equipment associated with the interlocks when the reactor mode switch is in the refuel position.

ACTIONS

CONDITION	REQUIRED ACTION		COMPLETION TIME
A. One or more required refueling equipment interlocks inoperable.	A.1	Suspend in-vessel fuel movement with equipment associated with the inoperable interlock(s).	Immediately
	<u>OR</u>		
	A.2.1	Insert a control rod withdrawal block.	Immediately
	<u>AND</u>		
	A.2.2	Verify all control rods are fully inserted.	Immediately

BASES (continued)

ACTIONS

A.1, A.2.1, and A.2.2

With one or more of the required refueling equipment interlocks inoperable (does not include the one-rod-out interlock addressed in LCO 3.9.2), the unit must be placed in a condition in which the LCO does not apply or is not necessary. This can be performed by ensuring fuel assemblies are not moved in the reactor vessel or by ensuring that the control rods are inserted and cannot be withdrawn. Therefore, Required Action A.1 requires that in-vessel fuel movement with the affected refueling equipment must be immediately suspended. This action ensures that operations are not performed with equipment that would potentially not be blocked from unacceptable operations (e.g., loading fuel into a cell with a control rod withdrawn). Suspension of in-vessel fuel movement shall not preclude completion of movement of a component to a safe position. Alternately, Required Actions A.2.1 and A.2.2 require that a control rod withdrawal block be inserted and that all control rods are subsequently verified to be fully inserted. Required Action A.2.1 ensures that no control rods can be withdrawn. This action ensures that control rods cannot be inappropriately withdrawn since an electrical or hydraulic block to control rod withdrawal is in place. Required Action A.2.2 is normally performed after placing the rod withdrawal block in effect and provides a verification that all control rods are fully inserted. Like Required Action A.1, Required Actions A.2.1 and A.2.2 ensure that unacceptable operations are prohibited (e.g., loading fuel into a core cell with the control rod withdrawn).

SURVEILLANCE REQUIREMENTS

SR 3.9.1.1

Performance of a CHANNEL FUNCTIONAL TEST demonstrates each required refueling equipment interlock will function properly when a simulated or actual signal indicative of a required condition is injected into the logic. A successful test of the required contact(s) of a channel relay may be performed by the verification of the change of state of a

(continued)

SURVEILLANCE REQUIREMENTS

SR 3.9.1.1 (continued)

single contact of the relay. This clarifies what is an acceptable CHANNEL FUNCTIONAL TEST of a relay. This is acceptable because all of the other required contacts of the relay are verified by other Technical Specifications and non-Technical Specifications tests at least once per refueling interval with applicable extensions.

The 7 day Frequency is based on engineering judgment and is considered adequate in view of other indications of refueling interlocks and their associated input status that are available to unit operations personnel.

REFERENCES

1. UFSAR, Sections 3.1.5.3 and 3.1.5.4.
2. UFSAR, Section 7.7.1.2.2.
3. UFSAR, Section 15.4.1.

ACTIONS

A.1 and A.2 (continued)

control rods are fully inserted. Control rods in core cells containing no fuel assemblies do not affect the reactivity of the core and, therefore, do not have to be inserted.

SURVEILLANCE REQUIREMENTS

SR 3.9.2.1

Proper functioning of the refueling position one-rod-out interlock requires the reactor mode switch to be in Refuel. During control rod withdrawal in MODE 5, improper positioning of the reactor mode switch could, in some instances, allow improper bypassing of required interlocks. Therefore, this Surveillance imposes an additional level of assurance that the refueling position one-rod-out interlock will be OPERABLE when required. By "locking" the reactor mode switch in the proper position (i.e., removing the reactor mode switch key from the console while the reactor mode switch is positioned in refuel), an additional administrative control is in place to preclude operator errors from resulting in unanalyzed operation.

The Frequency of 12 hours is sufficient in view of other administrative controls utilized during refueling operations to ensure safe operation.

SR 3.9.2.2

Performance of a CHANNEL FUNCTIONAL TEST on each channel demonstrates the associated refuel position one-rod-out interlock will function properly when a simulated or actual signal indicative of a required condition is injected into the logic. A successful test of the required contact(s) of a channel relay may be performed by the verification of the change of state of a single contact of the relay. This clarifies what is an acceptable CHANNEL FUNCTIONAL TEST of a relay. This is acceptable because all of the other required contacts of the relay are verified by other Technical Specifications and non-Technical Specifications tests at least once per refueling interval with applicable extensions. The 7 day Frequency is considered adequate because of demonstrated circuit reliability, procedural

(continued)

BASES

SURVEILLANCE REQUIREMENTS

SR 3.9.2.2 (continued)

controls on control rod withdrawals, and visual indications available in the control room to alert the operator to control rods not fully inserted. To perform the required testing, the applicable condition must be entered (i.e., a control rod must be withdrawn from its full-in position). Therefore, SR 3.9.2.2 has been modified by a Note that states the CHANNEL FUNCTIONAL TEST is not required to be performed until 1 hour after any control rod is withdrawn.

REFERENCES

1. UFSAR, Sections 3.1.5.3 and 3.1.5.4.
2. UFSAR, Section 7.7.1.2.1.
3. UFSAR, Section 15.4.1.

TECHNICAL CHANGES - LESS RESTRICTIVE

L.2 (cont'd) Requirements of CTS 4.10.A.3 are not required and have been deleted from the ITS. Entry into the applicable specified condition without performing this post maintenance testing also continues to be precluded except where allowed, as discussed in the Bases for proposed SR 3.0.1.

L.3 CTS 3.10.A Action 3 requires that when a required Refuel position equipment interlock is inoperable, CORE ALTERATION(s) (changed to in-vessel fuel movement by Discussion of Change A.3 above) be suspended with equipment associated with the inoperable Refuel position equipment interlock. New actions have been added, ITS 3.9.1 Required Actions A.2.1 and A.2.2, to allow a control rod block to be inserted and to verify all control rods are fully inserted in lieu of suspending in-vessel fuel movement. The purpose of the current requirement is to ensure that operations are not performed with equipment that would potentially not be blocked from unacceptable operations (e.g., loading fuel into a cell with a control rod withdrawn or withdrawing a control rod while fuel is being moved in the reactor pressure vessel). The methods that the refueling interlocks use to prevent these occurrences are to block control rod withdrawal when fuel is being moved and to block movement of the refueling platform and hoist when a control rod is withdrawn. The proposed Required Actions will ensure both these occurrences are prevented. ITS 3.9.1 Required Action A.2.1 will ensure a control rod block is inserted. This will prevent a control rod from being withdrawn when fuel is being moved in the reactor pressure vessel. ITS 3.9.1 Required Action A.2.2 will ensure that all control rods are fully inserted. This will prevent loading fuel into a core cell with the control rod withdrawn. Therefore, since the proposed Required Actions provide equivalent methods for precluding the assumed occurrences, this change is considered acceptable.

RELOCATED SPECIFICATIONS

None

<CTS>

3.9 REFUELING OPERATIONS

3.9.1 Refueling Equipment Interlocks

associated with the reactor mode switch refuel position [1]

LCO 3.10.A.2
<LCO 3.10.A>
<LCO 3.10.A.2>

LCO 3.9.1 The refueling equipment interlocks shall be OPERABLE.

<Appl 3.10.A>
<footnote a>

APPLICABILITY: During in-vessel fuel movement with equipment associated with the interlocks.

when the reactor mode switch is in the refuel position

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One or more required refueling equipment interlocks inoperable.	A.1 Suspend in-vessel fuel movement with equipment associated with the inoperable interlock(s).	Immediately

<3.10.A Action 3>

<DOC L.3>

Insert ACTION A [TSTF-225] [4]

△

<CTS>

4 TSTF -225 INSERT ACTION A

< 3.10.A Action 3>

OR	
A.2.1 Insert a control rod withdrawal block.	Immediately
AND	
A.2.2 Verify all control rods are fully inserted.	Immediately

C

JUSTIFICATION FOR DEVIATIONS FROM NUREG-1433, REVISION 1
ITS: 3.9.1 - REFUELING EQUIPMENT INTERLOCKS

1. The current wording of ISTS 3.9.1 and the associated Applicability could imply that all the refueling equipment interlocks are required at all times during in-vessel fuel movement. The Current Licensing Basis only requires the interlocks associated with the refuel position, not those associated with other positions of the reactor mode switch, and only when the reactor mode switch is in the refuel position, not when it is in the shutdown position. Therefore, to avoid confusion, the LCO and Applicability have been modified to specifically state that the refueling interlocks are those associated with the refuel position, and that it is applicable when the reactor mode switch is in the refuel position. This change is also consistent with TSTF-232.

2. The brackets have been removed and the proper plant specific information/value has been provided.

3. The bracketed requirement has been deleted because it is not applicable to Quad Cities 1 and 2.

4. The wording in TSTF-225 has been revised consistent with a request by the NRC.

BASES

LCO (continued)

To prevent these conditions from developing, the all-rods-in, the refueling platform position, the refueling platform fuel grapple fuel loaded, the refueling platform trolley frame mounted hoist fuel loaded, the refueling platform monorail mounted hoist fuel loaded, the refueling platform fuel grapple fully retracted position, and ~~the service platform hoist fuel loaded inputs~~ are required to be OPERABLE. These inputs are combined in logic circuits, which provide refueling equipment or control rod blocks to prevent operations that could result in criticality during refueling operations.

1

when the associated equipment is in use for in-vessel fuel movement

2

APPLICABILITY

In MODE 5, a prompt reactivity excursion could cause fuel damage and subsequent release of radioactive material to the environment. The refueling equipment interlocks protect against prompt reactivity excursions during MODE 5. The interlocks are required to be OPERABLE during in-vessel fuel movement with refueling equipment associated with the interlocks.

3

Insert APP

In MODES 1, 2, 3, and 4, the reactor pressure vessel head is on, and CORE ALTERATIONS are not possible. Therefore, the refueling interlocks are not required to be OPERABLE in these MODES.

ACTIONS

A.1 , A.2.1, A.2.2 TSTF-225

Insert ACTION A.1c 2 TSTF-225

With one or more of the required refueling equipment interlocks inoperable (does not include the one-rod-out interlock addressed in LCO 3.9.2), the unit must be placed in a condition in which the LCO does not apply. In-vessel fuel movement with the affected refueling equipment must be immediately suspended. This action ensures that operations are not performed with equipment that would potentially not be blocked from unacceptable operations (e.g., loading fuel into a cell with a control rod withdrawn).

TSTF-225 Suspension of in-vessel fuel movement shall not preclude completion of movement of a component to a safe position.

Insert ACTION A.1b 2 3

(continued)

3

INSERT APP

when the reactor mode switch is in the refuel position. The interlocks are not required when the reactor mode switch is in the shutdown position since a control rod block (LCO 3.3.2.1, "Control Rod Block Instrumentation") ensures control rod withdrawals can not occur simultaneously with in-vessel fuel movements

TSTF-225

INSERT ACTION A.1.a

or is not necessary. This can be performed by ensuring fuel assemblies are not moved in the reactor vessel or by ensuring that the control rods are inserted and cannot be withdrawn. Therefore, Required Action A.1 requires that

2

TSTF-225

INSERT ACTION A.1.b

Alternately, Required Actions A.2.1 and A.2.2 require that a control rod withdrawal block be inserted and that all control rods are subsequently verified to be fully inserted. Required Action A.2.1 ensures that no control rods can be withdrawn. This action ensures that control rods cannot be inappropriately withdrawn since an electrical or hydraulic block to control rod withdrawal is in place. Required Action A.2.2 is normally performed after placing the rod withdrawal block in effect and provides a verification that all control rods are fully inserted. Like Required Action A.1, Required Actions A.2.1 and A.2.2 ensure that unacceptable operations are prohibited (e.g., loading fuel into a core cell with the control rod withdrawn).

2 C

3 C

BASES (continued)

TSTF-205

SURVEILLANCE REQUIREMENTS

SR 3.9.1.1

Insert SR3.9.1.1

Performance of a CHANNEL FUNCTIONAL TEST demonstrates each required refueling equipment interlock will function properly when a simulated or actual signal indicative of a required condition is injected into the logic. The CHANNEL FUNCTIONAL TEST may be performed by any series of sequential, overlapping, or total channel steps so that the entire channel is tested. 2

The 7 day Frequency is based on engineering judgment and is considered adequate in view of other indications of refueling interlocks and their associated input status that are available to unit operations personnel.

REFERENCES

1 UFSAR, Sections 3.1.5.3 and 3.1.5.4

1. 10 CFR 50, Appendix A, GDC 26.
2. FSAR, Section [7.6.1]. 7.7.1.2.2
3. FSAR, Section [15.1.13]. 4.1
4. FSAR, Section [15.1.14]. 1

1 u 4

TSTF
-205

INSERT SR 3.9.1.1

A successful test of the required contact(s) of a channel relay may be performed by the verification of the change of state of a single contact of the relay. This clarifies what is an acceptable CHANNEL FUNCTIONAL TEST of a relay. This is acceptable because all of the other required contacts of the relay are verified by other Technical Specifications and non-Technical Specifications tests at least once per refueling interval with applicable extensions.

C

BASES

ACTIONS

A.1 and A.2 (continued)

fuel assemblies. Action must continue until all such control rods are fully inserted. Control rods in core cells containing no fuel assemblies do not affect the reactivity of the core and, therefore, do not have to be inserted.

SURVEILLANCE REQUIREMENTS

SR 3.9.2.1

Proper functioning of the refueling position one-rod-out interlock requires the reactor mode switch to be in Refuel. During control rod withdrawal in MODE 5, improper positioning of the reactor mode switch could, in some instances, allow improper bypassing of required interlocks. Therefore, this Surveillance imposes an additional level of assurance that the refueling position one-rod-out interlock will be OPERABLE when required. By "locking" the reactor mode switch in the proper position (i.e., removing the reactor mode switch key from the console while the reactor mode switch is positioned in refuel), an additional administrative control is in place to preclude operator errors from resulting in unanalyzed operation.

The Frequency of 12 hours is sufficient in view of other administrative controls utilized during refueling operations to ensure safe operation.

SR 3.9.2.2

TSTF-205

Insert SR 3.9.2.2

Performance of a CHANNEL FUNCTIONAL TEST on each channel demonstrates the associated refuel position one-rod-out interlock will function properly when a simulated or actual signal indicative of a required condition is injected into the logic. The CHANNEL FUNCTIONAL TEST may be performed by any series of sequential, overlapping, or total channel steps so that the entire channel is tested. 2 △ The 7 day Frequency is considered adequate because of demonstrated circuit reliability, procedural controls on control rod withdrawals, and visual and audible indications available in 1 the control room to alert the operator to control rods not fully inserted. To perform the required testing, the applicable condition must be entered (i.e., a control rod

(continued)

TSTF
-205

INSERT SR 3.9.2.2

A successful test of the required contact(s) of a channel relay may be performed by the verification of the change of state of a single contact of the relay. This clarifies what is an acceptable CHANNEL FUNCTIONAL TEST of a relay. This is acceptable because all of the other required contacts of the relay are verified by other Technical Specifications and non-Technical Specifications tests at least once per refueling interval with applicable extensions. C

JUSTIFICATION FOR DEVIATIONS FROM NUREG-1433, REVISION 1
ITS BASES: 3.9.2 - REFUEL POSITION ONE-ROD-OUT INTERLOCK

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 the Writer's Guide or similar statements in other places in the Bases.

3. Typographical/grammatical error corrected.

4. The brackets have been removed and the proper plant specific information/value has been provided.

5. Changes have been made to be consistent with the requirements in the Specification.

NO SIGNIFICANT HAZARDS CONSIDERATION
ITS: 3.9.1 - REFUELING EQUIPMENT INTERLOCKS

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 proposed change provides alternative methods for ensuring operations are not performed with equipment that would potentially not be blocked from unacceptable operations (e.g., loading fuel into a cell with a control rod withdrawn or withdrawing a control rod while fuel is being moved in the reactor pressure vessel). The methods that the refueling interlocks use to prevent these occurrences are to block control rod withdrawal when fuel is being moved and to block movement of the refueling platform and hoist when a control rod is withdrawn. The proposed Required Actions will ensure both these occurrences are prevented. ITS 3.9.1 Required Action A.2.1 will ensure a control rod block is inserted. This will prevent a control rod from being withdrawn when fuel is being moved in the reactor pressure vessel. ITS 3.9.1 Required Action A.2.2 will ensure that all control rods are fully inserted. This will prevent loading fuel into a core cell with the control rod withdrawn. Thus, the proposed Required Actions provide equivalent methods for precluding the assumed occurrences. 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 create the possibility of a new or different kind of accident from any accident previously evaluated because the proposed change does not introduce a new mode of plant operation (since the new actions provide an equivalent level of protection) and does not require physical modification to the plant.

3. Does this change involve a significant reduction in a margin of safety?

   The proposed change provides alternative methods for ensuring operations are not performed with equipment that would potentially not be blocked from unacceptable operations (e.g., loading fuel into a cell with a control rod withdrawn or withdrawing a control rod while fuel is being moved in the reactor pressure vessel). The proposed Required Actions will ensure both these occurrences are prevented. ITS 3.9.1 Required Action A.2.1 will ensure a control rod block is inserted. This will prevent a control rod from being withdrawn when fuel is being moved in the reactor pressure vessel. ITS 3.9.1 Required Action A.2.2 will ensure that all control rods are fully

L.3 CHANGE

3. (continued)

inserted. This will prevent loading fuel into a core cell with the control rod withdrawn. | C Thus, the proposed Required Actions provide equivalent methods for precluding the assumed occurrences. Therefore, the proposed change does not involve a significant reduction in a margin of safety.

5.2 Organization

5.2.2 Unit Staff (continued)

a. A total of three non-licensed operators for the two units is required in all conditions. At least one of the required non-licensed operators shall be assigned to each unit.

b. Shift crew composition may be less than the minimum requirement of 10 CFR 50.54(m)(2)(i) and Specifications 5.2.2.a and 5.2.2.g for a period of time not to exceed 2 hours in order to accommodate unexpected absence of on-duty shift crew members provided immediate action is taken to restore the shift crew composition to within the minimum requirements.

c. A radiation protection technician shall be on site when fuel is in the reactor. The position may be vacant for not more than 2 hours, in order to provide for unexpected absence, provided immediate action is taken to fill the required position.

d. The amount of overtime worked by unit staff members performing safety related functions shall be limited and controlled in accordance with the NRC Policy Statement on working hours (Generic Letter 82-12).

e. The operations manager or shift operations supervisor shall hold an SRO license.

f. The Shift Technical Advisor (STA) shall provide advisory technical support to the shift manager in the areas of thermal hydraulics, reactor engineering, and plant analysis with regard to the safe operation of the unit. In addition, the STA shall meet the qualifications specified by the Commission Policy Statement on Engineering Expertise on Shift.

5.0 ADMINISTRATIVE CONTROLS

5.5 Programs and Manuals

The following programs shall be established, implemented and maintained.

5.5.1 Offsite Dose Calculation Manual (ODCM)

a. The ODCM shall contain the methodology and parameters used in the calculation of offsite doses resulting from radioactive gaseous and liquid effluents, in the calculation of gaseous and liquid effluent monitoring alarm and trip setpoints, and in the conduct of the radiological environmental monitoring program; and

b. The ODCM shall also contain the radioactive effluent controls and radiological environmental monitoring activities, and descriptions of the information that should be included in the Annual Radiological Environmental Operating, and Radioactive Effluent Release Reports required by Specification 5.6.2 and Specification 5.6.3.

c. Licensee initiated changes to the ODCM: | △c

1. Shall be documented and records of reviews performed shall be retained. This documentation shall contain:

    (a) Sufficient information to support the change(s) together with the appropriate analyses or evaluations justifying the change(s), and

    (b) A determination that the change(s) maintain the levels of radioactive effluent control required by 10 CFR 20.1302, 40 CFR 190, 10 CFR 50.36a, and 10 CFR 50, Appendix I, and do not adversely impact the accuracy or reliability of effluent, dose, or setpoint calculations;

2. Shall become effective after the approval of the station manager; and

3. Shall be submitted to the NRC in the form of a complete, legible copy of the entire ODCM as a part of or concurrent with the Radioactive Effluent Release Report for the period of the report in which any change in the ODCM was made. Each change shall be identified by markings in the margin of the affected pages, clearly indicating the area of the page that was changed, and

(continued)

5.5 Programs and Manuals

5.5.6 Inservice Testing Program (continued)

ASME Boiler and Pressure Vessel Code and applicable Addenda terminology for inservice testing activities	Required Frequencies for performing inservice testing activities
Weekly	At least once per 7 days
Monthly	At least once per 31 days
Quarterly or every 3 months	At least once per 92 days
Semiannually or every 6 months	At least once per 184 days
Every 9 months	At least once per 276 days
Yearly or annually	At least once per 366 days
Biennially or every 2 years	At least once per 731 days
Every 48 months	At least once per 1461 days

b. The provisions of SR 3.0.2 are applicable to the above required Frequencies for performing inservice testing activities;

c. The provisions of SR 3.0.3 are applicable to inservice testing activities; and

d. Nothing in the ASME Boiler and Pressure Vessel Code shall be construed to supersede the requirements of any TS.

5.5.7 Ventilation Filter Testing Program (VFTP)

The VFTP shall establish the required testing of Engineered Safety Feature (ESF) filter ventilation systems. Tests described in Specification 5.5.7.a and 5.5.7.b shall be performed once per 24 months; after each complete or partial replacement of the HEPA filter bank or charcoal adsorber bank; after any structural maintenance on the HEPA filter bank or charcoal adsorber bank housing; and, following painting, fire, or chemical release in any ventilation zone communicating with the subsystem while it is in operation that could adversely affect the filter bank or charcoal adsorber capability.

(continued)

5.5.7 Ventilation Filter Testing Program (VFTP) (continued)

Tests described in Specification 5.5.7.c shall be performed once per 24 months; after 1440 hours of adsorber operation for the Standby Gas Treatment System; after 720 hours of adsorber operation for the Control Room Emergency Ventilation System; after any structural maintenance on the charcoal adsorber bank housing; and, following painting, fire, or chemical release in any ventilation zone communicating with the subsystem while it is in operation that could adversely affect the charcoal adsorber capability.

Tests described in Specification 5.5.7.d and 5.5.7.e shall be performed once per 24 months.

The provisions of SR 3.0.2 and SR 3.0.3 are applicable to the VFTP test frequencies.

a. Demonstrate for each of the ESF systems that an inplace test of the HEPA filters shows a penetration and system bypass specified below when tested in accordance with Regulatory Guide 1.52, Revision 2, and ANSI/ASME N510-1980 at the system flowrate specified below:

ESF Ventilation System	Penetration	Flowrate
Standby Gas Treatment (SGT) System	< 1.0%	$\geq$ 3600 cfm and $\leq$ 4400 cfm
Control Room Emergency Ventilation (CREV) System	< 0.05%	$\geq$ 1800 scfm and $\leq$ 2200 scfm

b. Demonstrate for each of the ESF systems that an inplace test of the charcoal adsorber shows a penetration and system bypass specified below when tested in accordance with Regulatory Guide 1.52, Revision 2, and ANSI/ASME N510-1980 at the system flowrate specified below:

(continued)

5.5.8 Explosive Gas and Storage Tank Radioactivity Monitoring Program (continued)

a. The limits for concentrations of hydrogen in the Off-Gas System and a surveillance program to ensure the limits are maintained. Such limits shall be appropriate to the system's design criteria (i.e., whether or not the system is designed to withstand a hydrogen explosion); and

b. A surveillance program to ensure that the quantity of radioactivity contained in all outdoor liquid radwaste tanks that are not surrounded by liners, dikes, or walls, capable of holding the tanks' contents and that do not have tank overflows and surrounding area drains connected to the Liquid Radwaste Treatment System is less than the amount that would result in concentrations less than the limits of 10 CFR 20, Appendix B, Table 2, Column 2, at the nearest potable water supply and the nearest surface water supply in an unrestricted area, in the event of an uncontrolled release of the tanks' contents.

The provisions of SR 3.0.2 and SR 3.0.3 are applicable to the Explosive Gas and Storage Tank Radioactivity Monitoring Program Surveillance Frequencies.

5.5.9 Diesel Fuel Oil Testing Program

A diesel fuel oil testing program shall establish required testing of both new fuel oil and stored fuel oil. The program shall include sampling and testing requirements, and acceptance criteria, all in accordance with applicable ASTM Standards. The purpose of the program is to establish the following:

a. Acceptability of new fuel oil for use prior to addition to storage tanks by determining that the fuel oil has:

1. An API gravity or an absolute specific gravity within limits,

2. A flash point and kinematic viscosity within limits, and

3. A clear and bright appearance with proper color or water and sediment within limits;

(continued)

5.5 Programs and Manuals

5.5.9 Diesel Fuel Oil Testing Program (continued)

b. Within 31 days following addition of the new fuel oil to storage tanks verify that the properties of the new fuel oil, other than those addressed in a., above, are within limits; and

c. Total particulate concentration of the fuel oil in the storage tanks is ≤ 10 mg/l when tested every 31 days in accordance with the applicable ASTM Standard.

The provisions of SR 3.0.2 and SR 3.0.3 are applicable to the Diesel Fuel Oil Testing Program test frequencies.

5.5.10 Technical Specifications (TS) Bases Control Program

This program provides a means for processing changes to the Bases of these Technical Specifications.

a. Changes to the Bases of the TS shall be made under appropriate administrative controls and reviews.

b. Licensees may make changes to Bases without prior NRC approval provided the changes do not require either of the following:

    1. A change in the TS incorporated in the license; or

    2. A change to the UFSAR or Bases that requires NRC approval pursuant to 10 CFR 50.59.

c. The Bases Control Program shall contain provisions to ensure that the Bases are maintained consistent with the UFSAR.

d. Proposed changes that meet the criterion of Specification 5.5.10.b.1 or 5.5.10.b.2 above shall be reviewed and approved by the NRC prior to implementation. Changes to the Bases implemented without prior NRC approval shall be provided to the NRC on a frequency consistent with 10 CFR 50.71(e).

(continued)

5.6.5 CORE OPERATING LIMITS REPORT (COLR) (continued)

3. The LHGR for Specification 3.2.3.

4. The LHGR and transient linear heat generation rate limit for Specification 3.2.4.

5. Control Rod Block Instrumentation Setpoint for the Rod Block Monitor—Upscale Function Allowable Value for Specification 3.3.2.1.

b. The analytical methods used to determine the core operating limits shall be those previously reviewed and approved by the NRC, specifically those described in the following documents:

1. NEDE-24011-P-A, "General Electric Standard Application for Reactor Fuel."

2. Commonwealth Edison Topical Report NFSR-0085, "Benchmark of BWR Nuclear Design Methods."

3. Advanced Nuclear Fuels Methodology for Boiling Water Reactors, XN-NF-80-19(P)(A).

4. Generic Mechanical Design for Exxon Nuclear Jet Pump BWR Reload Fuel, XN-NF-85-67(P)(A).

5. Qualification of Exxon Nuclear Fuel for Extended Burnup, XN-NF-82-06(P)(A).

6. Advanced Nuclear Fuels Corporation Generic Mechanical Design for Advanced Nuclear Fuels 9x9-IX and 9x9-9X BWR Reload Fuel, ANF-89-014(P)(A).

7. Generic Mechanical Design Criteria for BWR Fuel Designs, ANF-89-98(P)(A).

8. Exxon Nuclear Plant Transient Methodology for Boiling Water Reactors, XN-NF-79-71(P)(A).

9. ANFB Critical Power Correlation, ANF-1125(P)(A).

(continued)

5.6 Reporting Requirements

5.6.5 <u>CORE OPERATING LIMITS REPORT (COLR)</u> (continued)

10. Advanced Nuclear Fuels Corporation Critical Power Methodology for Boiling Water Reactors/Advanced Nuclear Fuels Corporation Critical Power Methodology for Boiling Water Reactors: Methodology for Analysis of Assembly Channel Bowing Effects/NRC Correspondence, ANF-524(P)(A).
11. COTRANSA 2: A Computer Program for Boiling Water Reactor Transient Analyses, ANF-913(P)(A).
12. Advanced Nuclear Fuels Corporation Methodology for Boiling Water Reactors EXEM BWR Evaluation Model, ANF-91-048(P)(A).
13. Commonwealth Edison Topical Report NFSR-0091, “Benchmark of CASMO/MICROBURN BWR Nuclear Design Methods.”
14. ANFB Critical Power Correlation Application for Coresident Fuel, EMF-1125(P)(A).

The COLR will contain the complete identification for each of the TS referenced topical reports used to prepare the COLR (i.e., report number, title, revision, date, and any supplements).

c. The core operating limits shall be determined such that all applicable limits (e.g., fuel thermal mechanical limits, core thermal hydraulic limits, Emergency Core Cooling Systems (ECCS) limits, nuclear limits such as SDM, transient analysis limits, and accident analysis limits) of the safety analysis are met.

d. The COLR, including any midcycle revisions or supplements, shall be provided upon issuance for each reload cycle to the NRC.

5.6.6 <u>Post Accident Monitoring (PAM) Instrumentation Report</u>

When a report is required by Condition B or F of LCO 3.3.3.1, "Post Accident Monitoring (PAM) Instrumentation," a report shall be submitted within the following 14 days. The report shall outline the preplanned alternate method of monitoring, the cause of the inoperability, and the plans and schedule for restoring the instrumentation channels of the Function to OPERABLE status.

5.6 Reporting Requirements

5.6.6 Post Accident Monitoring (PAM) Instrumentation Report

When a report is required by Condition B or F of LCO 3.3.3.1, "Post Accident Monitoring (PAM) Instrumentation," a report shall be submitted within the following 14 days. The report shall outline the preplanned alternate method of monitoring, the cause of the inoperability, and the plans and schedule for restoring the instrumentation channels of the Function to OPERABLE status.

A.1

ITS 5.1

5.0 ADMINISTRATIVE CONTROLS

5.1 6.1 RESPONSIBILITY

5.1.1 6.1.A The Station Manager shall be responsible for overall facility operation and shall delegate in writing the succession to this responsibility during his absence.

6.1.B The Shift Engineer shall be responsible for directing and commanding the safe overall operation of the facility under all conditions. L.A.2

C

add proposed ITS 5.1.2 M.1

Page 1 of 1

DISCUSSION OF CHANGES
ITS: 5.1 - RESPONSIBILITY

ADMINISTRATIVE

A.1 In the conversion of the Quad Cities 1 and 2 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)).

TECHNICAL CHANGES - MORE RESTRICTIVE

M.1 A new requirement has been added, ITS 5.1.2, which requires a Senior Reactor Operator (SRO) to be responsible for the control room command function while either unit is in MODE 1, 2, or 3 and an individual with an active SRO or Reactor Operator license to be responsible for the control room command function while both units are in MODE 4 or 5 or defueled. This requirement ensures that an individual is designated to be in command of the control room at all times. This change is a more restrictive change on plant operations.

TECHNICAL CHANGES - LESS RESTRICTIVE

"Generic"

LA.1 CTS 6.1.A uses the title "Station Manager." In ITS 5.1.1, this specific title is replaced with the generic title "station manager." The specific title is proposed to be relocated to the Quality Assurance (QA) Manual, which is where the description of this specific title is currently located. The allowance to relocate the specific title out of the Technical Specifications is consistent with the NRC letter from C. Grimes to the Owners Groups Technical Specification Committee Chairmen, dated November 10, 1994. The various requirements of the station manager are still retained in the ITS. In addition, the ITS also requires the plant specific titles to be in the QA Manual. Therefore, the relocated specific title is not required to be in the ITS to provide adequate protection of the public health and safety. Changes to the QA Manual are controlled by the provisions of 10 CFR 50.54.

LA.2 CTS 6.1.B delineates the responsibility of the Shift Engineer for directing and commanding the overall operation of the facility on his shift. This requirement is relocated to the UFSAR. ITS 5.1.2 contains the requirement that a Senior Reactor Operator shall be responsible for the control room command function

TECHNICAL CHANGES - LESS RESTRICTIVE

LA.2 (cont'd) while either unit is in MODE 1, 2, or 3. While both units are in MODE 4 or 5 or defueled, an individual with an active SRO license or Reactor Operator (RO) license shall be designated to assume the control room command function. Since ITS 5.1.2 provides requirements for the control room command function, as a result inclusion of the detailed responsibilities of the Shift Engineer in the ITS is not required to provide adequate protection of the public health and safety. Changes to the UFSAR are controlled by the provisions of 10 CFR 50.59.

"Specific"

None

RELOCATED SPECIFICATIONS

None

A.1

ITS 5.2

6.2.B Unit Staff

The unit staff shall include the following:

5.2.2.a 1. Three non-licensed operators shall be on site at all times.

At least one required non-licensed operator assigned to each unit. M.1

2. At least one licensed Reactor Operator shall be present in the control room when fuel is in the reactor. In addition, while the unit is in MODE(s) 1, 2, 3 or 4, at least one licensed Senior Reactor Operator shall be present in the control room. LA.3 L.1

5.2.2.b 3. Shift crew composition may be less than the minimum requirement of 10 CFR 50.54(m)(2)(i) and 6.2.B.1 and 6.2.C for a period of time not to exceed two hours in order to accommodate unexpected absence of on-duty shift crew members provided immediate action is taken to restore the shift crew composition to within the minimum requirements.

5.2.2.c 4. A Radiation Protection Technician shall be on site when fuel is in the reactor. The position may be vacant for not more than two hours, in order to provide for unexpected absence, provided immediate action is taken to fill the required position. A.2

5. Administrative procedures shall be developed and implemented to limit the working hours of unit staff who perform safety-related functions; e.g. senior reactor operators, reactor operators, health physicists, auxiliary operators, and key maintenance personnel. LA.2

5.2.2.d The amount of overtime worked by unit staff members performing safety-related functions shall be limited in accordance with the NRC Policy Statement on working hours (Generic Letter 82-12).

5.2.2.e 6. The Operations Manager or Shift Operations Supervisor shall hold a Senior Reactor Operator License. LA.1

6.2.C Shift Technical Advisor

5.2.2.f The Shift Technical Advisor (STA) shall provide technical advisory support to the Unit Supervisor in the areas of thermal hydraulics, reactor engineering and plant analysis with regard to the safe operation of the facility. In addition, the STA shall meet the qualifications specified by the Commission Policy Statement on Engineering Expertise on Shift. A single STA may fulfill this function for both units.

shift manager LA1

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ADMINISTRATIVE

A.1 In the conversion of the Quad Cities 1 and 2 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 title of the individual qualified to implement radiation protection procedures in CTS 6.2.B.4 has been changed from the specific title "Radiation Protection Technician" to just describe the generic function; radiation protection technician. Since the only individuals currently qualified are radiation protection technicians, this change is considered administrative. If other individuals are qualified in the future, they will meet the same qualifications. In addition, the term "health physics" in CTS 6.2.A.4 has been changed to radiation protection to be consistent. Therefore, these changes are considered administrative.

TECHNICAL CHANGES - MORE RESTRICTIVE

M.1 CTS 6.2.B.1 non-licensed operator requirements have been revised. Proposed ITS 5.2.2.a specifies non-licensed operator staffing requirements, and requires at least one required non-licensed operator be assigned to each unit. This change does not reduce or eliminate non-licensed personnel required in the current licensing basis. This ensures both units have at least one non-licensed operator to perform required tasks. This change is consistent with the BWR ISTS, NUREG-1433, Rev. 1, and is considered more restrictive on plant operations.

TECHNICAL CHANGES - LESS RESTRICTIVE

"Generic"

LA.1 CTS 6.2.A.3 uses the title "Chief Nuclear Officer." In ITS 5.2.1.c this specific title is replaced with the generic term "a corporate officer." CTS 6.2.A.2 uses the title "Station Manager." In ITS 5.2.1.b, this specific title is replaced with the generic title "station manager." CTS 6.2.B.6 uses the titles "Operations Manager" and "Shift Operations Supervisor." In ITS 5.2.2.e, these specific titles are replaced with the generic titles "operations manager and shift operations

TECHNICAL CHANGES - LESS RESTRICTIVE

LA.1 (cont'd) supervisor." CTS 6.2.C uses the title "Unit Supervisor." In ITS 5.2.2.f, this specific title is replaced with the generic title "shift manager." The specific titles are proposed to be relocated to the Quality Assurance (QA) Manual, which is where the description of these specific titles is currently located. The allowance to relocate the specific titles out of the Technical Specifications is consistent with the NRC letter from C. Grimes to the Owners Groups Technical Specification Committee Chairmen, dated November 10, 1994. The various requirements of the individuals are still retained in the ITS. In addition, the ITS also requires the plant specific titles to be in the QA Manual. Therefore, the relocated specific titles are not required to be in the ITS to provide adequate protection of the public health and safety. Changes to the QA Manual are controlled by the provisions of 10 CFR 50.54. In addition, the person to whom the STA provides advisory technical support will be changed to the Shift Manager when the specific title is relocated to the QA Manual. Currently, the STA is required to provide advisory technical support to the Unit Supervisor. However, the STA may provide direct technical support to the entire operating shift, but has a direct responsibility to the Shift Manager who is responsible for the operation of the plant. This portion of the change is considered administrative and has no adverse impact on safety.

LA.2 CTS Specification 6.2.B.5 provides details with respect to the development and implementation of procedures to limit the working hours of facility staff who perform safety-related functions. These details are to be relocated the UFSAR. The relocation of the requirement to have procedures developed and implemented will have no effect on ensuring that an individual is not fatigued while performing safety-related functions. ITS 5.2.2.d includes reference to the NRC Overtime Policy Statement, which provides the programmatic requirements for the overtime policy. As such, these details are not required to be in the ITS to provide adequate protection of the public health and safety. Changes to the UFSAR are controlled by the provisions of 10 CFR 50.59.

LA.3 Details contained in CTS 6.2.B.2 concerning the location of operators and a senior operator are proposed to be relocated to the UFSAR. This current TS requirement is contained in 10 CFR 50.54(m)(2)(iii) and does not need to be repeated in the ITS to provide adequate protection of the public health and safety. Once in the UFSAR, this requirement will be under the change control provisions of 10 CFR 50.59.

TECHNICAL CHANGES - LESS RESTRICTIVE (continued)

"Specific"

L.1 CTS 6.2.B.2 requires at least one licensed Senior Reactor Operator (SRO) to be present in the control room while the unit is in MODE(s) 1, 2, 3, or 4. The licensed operator staffing requirements of 10 CFR 50.54(m)(2)(iii) only require an SRO to be present in the control room while in an operational mode (i.e., a mode other than cold shutdown and refueling). Thus, for a Boiling Water Reactor, an SRO is only required to be present in the control room while the unit is in MODE 1, 2, or 3. It is, therefore, proposed to delete the CTS 6.2.B.2 requirement for an SRO to be present in the control room while the unit is in MODE 4 such that the resulting requirement conforms to 10 CFR 50.54(m)(2)(iii). This change is considered acceptable since the non-operational modes (MODES 4 and 5) are the safest conditions covered by the Technical Specifications. In MODE 4, all control rods are normally fully inserted and the probability and consequences of a Design Basis Accident are significantly reduced due to the limitations on pressure and temperature. In addition, pursuant to 10 CFR 50.54(m)(2), a Reactor Operator (RO) will still be required to be present at the controls (in the control room) at all times and at least one SRO, who is assigned supervisory responsibility, will be required to be on-site and readily available to the RO for consultation while the unit is in MODE 4.

RELOCATED SPECIFICATIONS

None

L

ITS 5.5

A.1

3.7 - LIMITING CONDITIONS FOR OPERATION

P. Standby Gas Treatment System

Two independent standby gas treatment subsystems shall be OPERABLE.

APPLICABILITY:

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

ACTION:

1. With one standby gas treatment subsystem inoperable, restore the inoperable subsystem to OPERABLE status within 7 days, or:
    a. In OPERATIONAL MODE(s) 1,2 or 3, be in at least HOT SHUTDOWN within the next 12 hours and in COLD SHUTDOWN within the following 24 hours.
    b. In OPERATIONAL MODE *, suspend handling of irradiated fuel in the secondary containment, CORE ALTERATION(s), and operations with a potential for draining the reactor vessel. The provisions of Specification 3.0.C are not applicable.
2. With both standby gas treatment subsystems inoperable in OPERATIONAL MODE(s) 1,2 or 3, restore at least one subsystem to OPERABLE status within one hour, or be in at least HOT SHUTDOWN within the next 12 hours and in COLD SHUTDOWN within the following 24 hours.

4.7 - SURVEILLANCE REQUIREMENTS

P. Standby Gas Treatment System

Each standby gas treatment subsystem shall be demonstrated OPERABLE:

1. At least once per 31 days by initiating, from the control room, flow through the HEPA filters and charcoal adsorbers and verifying that the subsystem operates for at least 10 hours with the heaters operating.

5.5.7 2. At least once per 18 months 24 LD.2 or (1) after any structural maintenance on the HEPA filter or charcoal adsorber housings, or (2) following painting, fire or chemical release in any ventilation zone communicating with the subsystem A.11 C A.6 by: Add proposed ITS 5.5.7

5.5.7.a 5.5.7.b a. Verifying that the subsystem satisfies the in-place penetration and bypass leakage testing acceptance criteria of <1% and uses the test procedure guidance in Regulatory Positions C.5.a, C.5.c and C.5.d of Regulatory Guide 1.52, Revision 2, March 1978, and ANSI/ASME N510-1980 A.7 and the system flow rate is 4000 cfm ± 10%.

5.5.7.c b. Verifying within 31 days after removal LA.4 that a laboratory analysis of a representative carbon sample obtained in accordance with Regulatory Position C.6.b of Regulatory Guide 1.52, Revision 2, March 1978, meets the laboratory testing criteria of ASTM-D-3803-89, for a methyl iodide penetration of <2.5%, when tested at 30°C and 70% relative humidity; and

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* When handling irradiated fuel in the secondary containment, during CORE ALTERATION(s), and operations with a potential for draining the reactor vessel.

<See ITS 3.6.4.3>

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3.8 - LIMITING CONDITIONS FOR OPERATION

D. Control Room Emergency Ventilation System

The control room emergency ventilation system shall be OPERABLE, with the system comprised of an OPERABLE control room emergency filtration system and an OPERABLE refrigeration control unit (RCU).

APPLICABILITY:

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

ACTION:

1. In OPERATIONAL MODE(s) 1, 2 or 3:
   a. With the control room emergency filtration system inoperable, restore the inoperable system 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.
   b. With the refrigeration control unit (RCU) inoperable, restore the inoperable RCU to OPERABLE status within 30 days or be in at least HOT SHUTDOWN within the next 12 hours and in COLD SHUTDOWN within the following 24 hours.

4.8 - SURVEILLANCE REQUIREMENTS

D. Control Room Emergency Ventilation System

The control room emergency ventilation system shall be demonstrated OPERABLE:

1. At least once per 18 months by verifying that the RCU has the capability to remove the required heat load.
2. At least once per 31 days by initiating, from the control room, flow through the HEPA filters and charcoal adsorbers and verifying that the system operates for at least 10 hours with the heaters operating.

LD.3

5.5.7 3. At least once per ~~18~~ 24 months or (1) after any structural maintenance on the HEPA filter or charcoal adsorber housings, or (2) following painting, fire or chemical release in any ventilation zone communicating with the system by:

A.11

Add proposed ITS 5.5.7

A.6

5.5.7.a 5.5.7.b a. Verifying that the system satisfies the in-place penetration and bypass leakage testing acceptance criteria of <0.05% and uses the test procedure guidance in Regulatory Positions C.5.a, C.5.c and C.5.d of Regulatory Guide 1.52, Revision 2, March 1978, and ANSI/ASME N510-1980 and the system flow rate is 2000 scfm ±10%.

A.7

C

(see ITS 3.7.4)

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* When handling irradiated fuel in the secondary containment, during CORE ALTERATION(s), and operations with a potential for draining the reactor vessel.

ADMINISTRATIVE (continued)

A.10 An additional definition of a frequency "Every 48 months" is identified for the Inservice Testing Program requirements of CTS 4.0.E.2. This change includes no new requirements, but only provides a clarification of a term. Therefore, this change is considered to be administrative.

A.11 CTS 4.7.P.2 and 4.8.D.3 requires certain SGT and CREV System filter testing following painting, fire, or chemical release in any ventilation zone communicating with the subsystems. ITS 5.5.7 only requires testing if the painting, fire, or chemical release is significant. Current Quad Cities 1 and 2 practice is that not all painting, fire, or chemical release results in the need to perform certain ventilation filter tests. Only painting, fire, or chemical release that could affect the ventilation filter subsystems would require performance of the tests. The words "that could adversely affect the filter bank or charcoal adsorber capability" were added for clarity and consistency with current practice to avoid a misinterpretation that any painting, fire, or chemical release (such as using a small can of paint to do touch-up work in the reactor building) would result in the need to perform the tests. This clarification is administrative, and is consistent with the most recently approved BWR/5 ITS Amendment, WNP-2. In addition, the NRC, in a letter to Entergy Operations dated September 11, 1997, supported the clarification that not all painting, fires, or chemical releases required the ventilation filter subsystems to be tested.

TECHNICAL CHANGES - MORE RESTRICTIVE

M.1 CTS 6.8.D.1 (proposed ITS 5.5.2) is revised to include RWCU in the systems addressed by the Reactor Coolant Sources Outside Primary Containment Program. This will ensure the RWCU System leakage is controlled. This change is considered more restrictive on plant operations since the requirement is now controlled by the Technical Specifications.

M.2 Four new programs are included in the proposed Technical Specifications. These programs are:

ITS 5.5.5	Component Cyclic or Transient Limit
ITS 5.5.8	Storage Tank Radioactive Monitoring Program
ITS 5.5.10	Technical Specification (TS) Bases Control
ITS 5.5.11	Safety Function Determination Program (SFDP)

L ⟨CTS⟩

ITS 5.6

A.4

Add proposed ITS 5.6.3 Note

A.7

in accordance with 10 CFR 50.36a

5.6.3 4. **Radioactive Effluent Release Report**

The Radioactive Effluent Release Report covering the operation of the facility during the previous calendar year shall be submitted ~~prior to April 1 of each year~~. The report shall include a summary of the quantities of radioactive liquid and gaseous effluents and solid waste released from the facility. The material provided shall be (1) consistent with the objectives outlined in the ODCM and PCP and (2) in conformance with 10 CFR 50.36a and Section IV.B.1 of Appendix I to 10 CFR Part 50.

Prior to May 1 of each year — L.1

5. **Monthly Operating Report**

Routine reports of operating statistics and shutdown experience, including documentation of all challenges to safety valves or safety/relief valves, shall be submitted on a monthly basis to the Director, Office of Resource Management, U.S. Nuclear Regulatory Commission, Washington, D.C. 20555, with a copy to the Regional Administrator of the NRC Regional Office, no later than the 15th of each month following the calendar month covered by the report. — A.2

5.6.5 6. **CORE OPERATING LIMITS REPORT**

5.6.5.a a. Core operating limits shall be established and documented in the CORE OPERATING LIMITS REPORT before each reload cycle or any remaining part of a reload cycle for the following:

5.6.5.a.5 (1) The Control Rod Withdrawal Block Instrumentation for Table 3.2.E-1 of Specification 3.2.E.

5.6.5.a.1 (2) The Average Planar Linear Heat Generation Rate (APLHGR) Limit for Specification 3.11.A.

5.6.5.a.3 (3) The Linear Heat Generation Rate (LHGR) for Specification 3.11.D.

5.6.5.a.2 (4) The Minimum Critical Power Operating Limit (including scram insertion time) for Specification 3.11.C. This includes rated and off-rated flow conditions. — LA.1

5.6.5.b b. The analytical methods used to determine the operating limits shall be those previously reviewed and approved by the NRC in the latest approved revision or supplement of topical reports:

5.6.5.b.1 (1) NEDE-24011-P-A, "General Electric Standard Application for Reactor Fuel," (latest approved revision). — LA.2

5.6.5.b.2 (2) Commonwealth Edison Topical Report NFSR-0085, "Benchmark of BWR Nuclear Design Methods," (latest approved revision).

△

5.6.5.a.4 The LHGR and transient linear heat generation rate limit for 3.2.4, — A.9

Page 3 of 6

A.1

5.6.5.b.2 (3) Commonwealth Edison Topical Report NFSR-0085, Supplement 1, "Benchmark of BWR Nuclear Design Methods - Quad Cities Gamma Scan Comparisons," (latest approved revision).

5.6.5.b.2 (4) Commonwealth Edison Topical Report NFSR-0085, Supplement 2, "Benchmark of BWR Nuclear Design Methods - Neutronic Licensing Analyses," (latest approved revision). LA.2

5.6.5.b.3 (5) Advanced Nuclear Fuels Methodology for Boiling Water Reactors, XN-NF-80-19(P)(A), Volume 1, Supplement 3, Supplement 3 Appendix F, and Supplement 4, Advanced Nuclear Fuels Corporation, November 1990.

5.6.5.b.3 (6) Exxon Nuclear Methodology for Boiling Water Reactors: Application of the ENC Methodology to BWR Reloads, XN-NF-80-19(P)(A), Volume 4, Revision 1, Exxon Nuclear Company, June 1986.

5.6.5.b.3 (7) Exxon Nuclear Methodology for Boiling Water Reactors THERMEX: Thermal Limits Methodology Summary Description, XN-NF-80-19(P)(A), Volume 3, Revision 2, Exxon Nuclear Company, January 1987.

5.6.5.b.3 (8) Exxon Nuclear Methodology for Boiling Water Reactors - Neutronic Methods for Design and Analysis, XN-NF-80-19(P)(A), Volume 1 and Supplements 1 and 2, Exxon Nuclear Company, March 1983. LA.2

5.6.5.b.4 (9) Generic Mechanical Design for Exxon Nuclear Jet Pump BWR Reload Fuel, XN-NF-85-67(P)(A) Revision 1, Exxon Nuclear Company, September 1986.

5.6.5.b.5 (10) Qualification of Exxon Nuclear Fuel for Extended Burnup Supplement 1: Extended Burnup Qualification of ENC 9x9 BWR Fuel, XN-NF-82-06(P)(A) Supplement 1, Revision 2, Advanced Nuclear Fuels Corporation, May 1988.

5.6.5.b.6 (11) Advanced Nuclear Fuels Corporation Generic Mechanical Design for Advanced Nuclear Fuels 9x9-IX and 9x9-9X BWR Reload Fuel, ANF-89-014(P)(A), Revision 1 and Supplements 1 and 2, Advanced Nuclear Fuels Corporation, October 1991.

5.6.5.b.7 (12) Generic Mechanical Design Criteria for BWR Fuel Designs, ANF-89-98(P)(A) Revision 1, and Revision 1 Supplement 1, Advanced Nuclear Fuels Corporation, May 1995. LA.2

5.6.5.b.8 (13) Exxon Nuclear Plant Transient Methodology for Boiling Water Reactors, XN-NF-79-71(P)(A), Revision 2 Supplements 1, 2, and 3, Exxon Nuclear Company, March 1986.

ITS 5.6

A.1

5.6.5.b.9 (14) ANFB Critical Power Correlation, ANF-1125(P)(A) and Supplements 1 and 2, Advanced Nuclear Fuels Corporation, April 1990.

5.6.5.b.10 (15) Advanced Nuclear Fuels Corporation Critical Power Methodology for Boiling Water Reactors/Advanced Nuclear Fuels Corporation Critical Power Methodology for Boiling Water Reactors: Methodology for Analysis of Assembly Channel Bowing Effects/NRC Correspondence, ANF-524(P)(A), Revision 2, Supplement 1 Revision 2, Supplement 2, Advanced Nuclear Fuels Corporation, November 1990. LA.2

5.6.5.b.11 (16) COTRANSA 2: A Computer Program for Boiling Water Reactor Transient Analyses, ANF-913(P)(A) Volume 1 Revision 1 and Volume 1 Supplements 2, 3, and 4, Advanced Nuclear Fuels Corporation, August 1990. c

5.6.5.b.12 (17) Advanced Nuclear Fuels Corporation Methodology for Boiling Water Reactors EXEM BWR Evaluation Model, ANF-91-048(P)(A), Advanced Nuclear Fuels Corporation, January 1993.

5.6.5.b.13 (18) Commonwealth Edison Topical Report NFSR-0091, "Benchmark of CASMO/MICROBURN BWR Nuclear Design Methods," Revision 0, Supplements 1 and 2, December 1991, March 1992, and May 1992, respectively; SER letter dated March 22, 1993. LA.2

5.6.5.b.14 (19) ANFB Critical Power Correlation Application for Coresident Fuel, EMF-1125(P)(A), Supplement 1, Appendix C, Siemens Power Corporation, August 1997.

5.6.5.b.9 (20) ANFB Critical Power Correlation Determination of ATRIUM-9B Additive Constant Uncertainties, ANF-1125(P)(A), Supplement 1, Appendix E, Siemens Power Corporation, September 1998.

5.6.5.c c. The core operating limits shall be determined so that all applicable limits (e.g., fuel thermal-mechanical limits, core thermal-hydraulic limits, ECCS limits, nuclear limits such as shutdown margin, and transient and accident analysis limits) of the safety analysis are met.

5.6.5.d The CORE OPERATING LIMITS REPORT, including any mid-cycle revisions or supplements thereto, shall be provided upon issuance, for each reload cycle, to the NRC Document Control Desk with copies to the Regional Administrator and Resident Inspector. A.2

6.9.B Special Reports A.3

Special reports shall be submitted to the Regional Administrator of the NRC Regional Office within the time period specified for each report. A.2 A.8

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TECHNICAL CHANGES - LESS RESTRICTIVE

LA.1 (cont'd) CRITICAL POWER RATIO. The requirements of ITS 5.6.5 (Core Operating Limits Report) and LCO 3.2.2 are adequate to ensure the required limits are maintained. In addition, the requirements of ITS 5.6.5 provide regulatory controls over the detail to be relocated. As a result, the requirement proposed to be relocated is not required to be included in the ITS to provide adequate protection of the public health and safety. Additionally, 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 details of the actual topical reports document date, revision number, volume, supplement, and company identified in CTS 6.9.A.6.b are proposed to be relocated to the Core Operating Limits Report. The requirement in proposed 5.6.5.b, which lists the title and number of the documents and the added statement that the COLR will contain the complete identification of each of the TS referenced topical reports used to prepare the COLR (i.e., report number, title, revision, date, and any supplements), is adequate. In a letter from Mr. Stuart A. Richards (NRC) to Mr. James F. Mally (Siemens Power Corporation) dated December 15, 1999, entitled "Acceptance for Siemens References to Approved Topical Reports in Technical Specifications," the NRC stated that it is acceptable for the references to Topical Reports in TS to give the Topical Report title and number as long as the complete citation is given in the COLR and a note in the TS that the COLR provides the complete citation of the reports used. Therefore, since all the details of CTS 6.9.A.6.b are maintained in the COLR the proposed changes are considered adequate. 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 COLR will be controlled by the provisions of the COLR change control process described in Chapter 5 of the ITS.

"Specific"

L.1 This change proposes to relax the CTS 6.9.A.3 and 6.9.A.4 requirements for submitting the Annual Radiological Environmental Operating Report and Radioactive Effluent Release Report. CTS 6.9.A.3 requires the Annual Radiological Environmental Operating Report to be submitted prior to May 1 of each year. This proposed change will allow the Annual Radiological Environmental Operating Report to be submitted by May 15 of each year. CTS 6.9.A.4 requires the Radioactive Effluent Release Report to be submitted prior to April 1 of each year. This proposed change will allow the Radioactive

TECHNICAL CHANGES - LESS RESTRICTIVE

L.1 (cont'd) Effluent Release Report to be submitted prior to May 1 of each year. Given that the reports are still required to be provided to the NRC on or before May 15, for the Annual Radiological Environmental Operating Report, and May 1, for the Radioactive Effluent Release Report, and cover the previous calendar year, completion and submittal of these reports is clearly not necessary to assure operation in a safe manner. Additionally, there is no requirement for the NRC to approve the reports. Therefore, this change has no impact on the safe operation of the plant.

RELOCATED SPECIFICATIONS

None

<CTS>

5.2 Organization

5.2.2 Unit Staff (continued)

[5]

~~shall be assigned for each control room from which a reactor is operating in MODES 1, 2, or 3.~~

~~[Two unit sites with both units shutdown or defueled require a total of three non-licensed operators for the two units.]~~

TSTF-258

~~b. At least one licensed Reactor Operator (RO) shall be present in the control room when fuel is in the reactor. In addition, while the unit is in MODE 1, 2, or 3, at least one licensed Senior Reactor Operator (SRO) shall be present in the control room.~~

<6.2.B.3>

b. Shift crew composition may be less than the minimum requirement of 10 CFR 50.54(m)(2)(i) and 5.2.2.a and 5.2.2.g for a period of time not to exceed 2 hours in order to accommodate unexpected absence of on-duty shift crew members provided immediate action is taken to restore the shift crew composition to within the minimum requirements.

radiation protection

<6.2.B.4> TSTF-258

c. A [Health Physics] Technician~~s~~ shall be on site when fuel is in the reactor. The position may be vacant for not more than 2 hours, in order to provide for unexpected absence, provided immediate action is taken to fill the required position. [1] TSTF-65

d

<6.2.B.4>

~~[Administrative procedures shall be developed and implemented to limit the working hours of unit staff who perform safety related functions (e.g., licensed SROs, licensed ROs, health physicists, auxiliary operators, and key maintenance personnel).~~

~~Adequate shift coverage shall be maintained without routine heavy use of overtime. The objective shall be to have operating personnel work an [8 or 12] hour day, nominal 40 hour week while the unit is operating. However, in the event that unforeseen problems require substantial amounts of overtime to be used, or during extended periods of shutdown for refueling, major maintenance, or major plant modification, on a temporary basis the following guidelines shall be followed:~~

~~1. An individual should not be permitted to work more than 16 hours straight, excluding shift turnover time;]~~

[1]

(continued)

<CTS>

5.2 Organization

5.2.2 Unit Staff (continued)

1

~~2. An individual should not be permitted to work more than 16 hours in any 24 hour period, nor more than 24 hours in any 48 hour period, nor more than 72 hours in any 7 day period, all excluding shift turnover time;~~

~~3. A break of at least 8 hours should be allowed between work periods, including shift turnover time;~~

~~4. Except during extended shutdown periods, the use of overtime should be considered on an individual basis and not for the entire staff on a shift.~~

~~Any deviation from the above guidelines shall be authorized in advance by the [Plant Superintendent] or his designee, in accordance with approved administrative procedures, or by higher levels of management, in accordance with established procedures and with documentation of the basis for granting the deviation.~~

manager

TSTF-65

~~Controls shall be included in the procedures such that individual overtime shall be reviewed monthly by the [Plant Superintendent] or his designee to ensure that excessive hours have not been assigned. Routine deviation from the above guidelines is not authorized.~~

manager

<6.2.B.4>

8

TSTF-258 changes not adopted

OR

[The amount of overtime worked by unit staff members performing safety related functions shall be limited and controlled in accordance with the NRC Policy Statement on working hours (Generic Letter 82-12).] 1

<6.2.B.6>

TSTF-258 e → f

8

f. The [~~O~~perations ~~M~~anager or ~~Assistant~~ ~~O~~perations ~~Manager~~] shall hold an SRO license. TSTF-65 C

shift 1 supervisor

TSTF-258 changes not adopted

<6.2.C>

f → g. The Shift Technical Advisor (STA) shall provide advisory technical support to the ~~Shift Supervisor (SS)~~ in the areas of thermal hydraulics, reactor engineering, and plant analysis with regard to the safe operation of the unit. In addition, the STA shall meet the qualifications specified by the Commission Policy Statement on Engineering Expertise on Shift.

shift manager C

7

JUSTIFICATION FOR DEVIATIONS FROM NUREG-1433, REVISION 1
ITS: 5.2 - ORGANIZATION

1. The brackets have been removed and the proper plant specific information has been provided.

2. Typographical/grammatical error corrected.

3. 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.

4. Editorial changes made for enhanced clarity.

5. Changes have been made to ISTS 5.2.2.a to be consistent with current licensing basis.

6. The referenced requirements are Specifications, not CFR requirements. Therefore, the word "Specifications" has been added to clearly state that "5.5.2.a and 5.2.2.g" are Specifications.

7. The proper plant specific description of the individual to whom the STA provides technical support has been provided.

8. ISTS 5.2 (Organization) is revised by TSTF-258, Rev. 4. In order to maintain consistency, to the maximum extent practicable, between the Administrative Controls Technical Specifications of the ComEd nuclear stations, the following changes of TSTF-258, Rev. 4, are not incorporated in ITS 5.2:

    a. ISTS 5.2.2.e contains requirements for control of overtime of the plant staff. These requirements were revised by TSTF-258, Rev. 4.

    b. ISTS 5.2.2.g contains requirements for the Shift Technical Advisor. The title "Shift Technical Advisor (STA)" was deleted by TSTF-258, Rev. 4.

    Not incorporating these changes to ISTS 5.2 is consistent with the NRC approved ITS for the ComEd Byron and Braidwood Stations.

21

INSERT 5.5.7

Tests described in Specification 5.5.7.a and 5.5.7.b shall be performed once per 24 months; after each complete or partial replacement of the HEPA filter bank or charcoal adsorber bank; after any structural maintenance on the HEPA filter bank or charcoal adsorber bank housing; and, following painting, fire, or chemical release in any ventilation zone communicating with the subsystem while it is in operation that could adversely affect the filter bank or charcoal adsorber capability.

Tests described in Specification 5.5.7.c shall be performed once per 24 months; after 1440 hours of adsorber operation for the Standby Gas Treatment System; after 720 hours of adsorber operation for the Control Room Emergency Ventilation System; after any structural maintenance on the charcoal adsorber bank housing; and, following painting, fire, or chemical release in any ventilation zone communicating with the subsystem while it is in operation that could adversely affect the charcoal adsorber capability.

Tests described in Specification 5.5.7.d and 5.5.7.e shall be performed once per 24 months.

L

<CTS>

5.5 Programs and Manuals (continued)

(9) 9

5.5.~~10~~ Diesel Fuel Oil Testing Program

Shall establish 11

<4.9.A.5.a> A diesel fuel oil testing program ~~to implement~~ required testing of both new fuel oil and stored fuel oil ~~shall be established~~. The 10 program shall include sampling and testing requirements, and acceptance criteria, all in accordance with applicable ASTM Standards. The purpose of the program is to establish the following:

<4.9.A.5.a>
<4.9.A.5.b>

a. Acceptability of new fuel oil for use prior to addition to storage tanks by determining that the fuel oil has:

1

1. ~~a~~n API gravity or an absolute specific gravity within limits,

2. ~~a~~ flash point and kinematic viscosity within limits ~~for ASTM 2D fuel oil~~, and

17 or water and sediment within limits

3. ~~a~~ clear and bright appearance with proper color;

△

<4.9.A.5.c>
<4.9.A.6.a>

16 Insert 5.5.9.b

b. ~~Other properties for ASTM 2D fuel oil are within limits within 31 days following~~ ~~sampling and~~ addition to storage tanks; and

TSTF-106

18 in the storage tanks

of the new fuel oil

applicable

<4.9.A.6.b> c. Total particulate concentration of the fuel oil is ≤ 10 mg/l when tested every 31 days in accordance with ~~ASTM D-2276,~~ Standard ~~Method A-2 or A-3~~.

TSTF-118

17 The provisions of SR 3.0.2 and SR 3.0.3 are applicable to the Diesel Fuel Oil Testing Program testing frequencies.

(10) 9

5.5.~~11~~ Technical Specifications (TS) Bases Control Program

<DOC M.2> This program provides a means for processing changes to the Bases of these Technical Specifications.

a. Changes to the Bases of the TS shall be made under appropriate administrative controls and reviews.

b. Licensees may make changes to Bases without prior NRC approval provided the changes do not ~~involve~~ require either of the following:

TSTF-364 △

1

1. ~~a~~ change in the TS incorporated in the license; or

2. ~~a~~ change to the updated (U) FSAR or Bases that ~~involves an unreviewed safety question as defined in~~ requires NRC approval pursuant to 10 CFR 50.59.

5

TSTF-364 △

(continued)

<CTS>

5.6 Reporting Requirements

[12]

5.6.4 Monthly Operating Reports (continued)

TSTF-258 Change not adopted

~~[valves,]~~ shall be submitted on a monthly basis no later than the 15th of each month following the calendar month covered by the report. [1]

<6.9.A.6> 5.6.5 CORE OPERATING LIMITS REPORT (COLR)

<6.9.A.6.a> <A.9>

a. Core operating limits shall be established prior to each reload cycle, or prior to any remaining portion of a reload cycle, and shall be documented in the COLR for the following:

Insert 5.6.5.a [1]

~~[The individual specifications that address core operating limits must be referenced here.]~~

<6.9.A.6.b>

b. The analytical methods used to determine the core operating limits shall be those previously reviewed and approved by the NRC, specifically those described in the following documents:

Insert 5.6.5.b [1] TSTF-363 △C

~~[Identify the Topical Report(s) by number, title, date, and NRC staff approval document, or identify the staff Safety Evaluation Report for a plant specific methodology by NRC letter and date.]~~

<6.9.A.6.c>

c. The core operating limits shall be determined such that all applicable limits (e.g., fuel thermal mechanical limits, core thermal hydraulic limits, Emergency Core Cooling Systems (ECCS) limits, nuclear limits such as SDM, transient analysis limits, and accident analysis limits) of the safety analysis are met.

<6.9.A.6.c>

d. The COLR, including any midcycle revisions or supplements, shall be provided upon issuance for each reload cycle to the NRC.

[7]

~~5.6.6 Reactor Coolant System (RCS) PRESSURE AND TEMPERATURE LIMITS REPORT (PTLR)~~

~~a. RCS pressure and temperature limits for heatup, cooldown, low temperature operation, critically, and hydrostatic testing as well as heatup and cooldown rates shall be established and documented in the PTLR for the following:~~

~~(continued)~~

<CTS>

11 INSERT 5.6.5.a

1. The APLHGR for Specification 3.2.1.

<6.9.A.6.a> 2. The MCPR for Specification 3.2.2.

3. The LHGR for Specification 3.2.3.

4. The LHGR and transient linear heat generation rate limit for Specification 3.2.4. <DOC A.9>

5. Control Rod Block Instrumentation Setpoint for the Rod Block Monitor—Upscale Function Allowable Value for Specification 3.3.2.1.

1 INSERT 5.6.5.b

1. NEDE-24011-P-A, "General Electric Standard Application for Reactor Fuel."

2. Commonwealth Edison Topical Report NFSR-0085, "Benchmark of BWR Nuclear Design Methods." <6.9.A.6.b>

3. Advanced Nuclear Fuels Methodology for Boiling Water Reactors, XN-NF-80-19(P)(A).

4. Generic Mechanical Design for Exxon Nuclear Jet Pump BWR Reload Fuel, XN-NF-85-67(P)(A).

5. Qualification of Exxon Nuclear Fuel for Extended Burnup, XN-NF-82-06(P)(A).

6. Advanced Nuclear Fuels Corporation Generic Mechanical Design for Advanced Nuclear Fuels 9x9-IX and 9x9-9X BWR Reload Fuel, ANF-89-014(P)(A).

7. Generic Mechanical Design Criteria for BWR Fuel Designs, ANF-89-98(P)(A).

8. Exxon Nuclear Plant Transient Methodology for Boiling Water Reactors, XN-NF-79-71(P)(A).

<6.9.A.6.b> 9. ANFB Critical Power Correlation, ANF-1125(P)(A).

10. Advanced Nuclear Fuels Corporation Critical Power Methodology for Boiling Water Reactors/Advanced Nuclear Fuels Corporation Critical Power Methodology for Boiling Water Reactors: Methodology for Analysis of Assembly Channel Bowing Effects/NRC Correspondence, ANF-524(P)(A).

11. COTRANSA 2: A Computer Program for Boiling Water Reactor Transient Analyses, ANF-913(P)(A).

INSERT 5.6.5.b (continued)

12. Advanced Nuclear Fuels Corporation Methodology for Boiling Water Reactors EXEM BWR Evaluation Model, ANF-91-048(P)(A).

13. Commonwealth Edison Topical Report NFSR-0091, "Benchmark of CASMO/MICROBURN BWR Nuclear Design Methods."

14. ANFB Critical Power Correlation Application for Coresident Fuel, EMF-1125(P)(A).

The COLR will contain the complete identification for each of the TS referenced topical reports used to prepare the COLR (i.e., report number, title, revision, date, and any supplements).