ATTACHMENT 1

VOLUME 13

DAVIS-BESSE IMPROVED TECHNICAL SPECIFICATIONS CONVERSION

ITS SECTION 3.8 ELECTRICAL POWER SYSTEMS

Revision 0

LIST OF ATTACHMENTS

ATTACHMENT 1

ITS 3.8.1, AC SOURCES - OPERATING

Current Technical Specification (CTS) Markup and Discussion of Changes (DOCs)

ITS

A01

3/4.8 ELECTRICAL POWER SYSTEMS

3/4.8.1 A.C. SOURCES

OPERATING

LIMITING CONDITION FOR OPERATION

LCO 3.8.1 3.8.1.1 As a minimum, the following A.C. electrical power sources shall be OPERABLE:

a. Two qualified circuits between the offsite transmission network and the onsite Class IE A.C. electrical power distribution system, and

b. Two separate and independent diesel generators each with: LA01

SR 3.8.1.4 1. A separate day fuel tank containing a minimum volume of 4000 gallons of fuel,

2. A separate fuel storage system containing a minimum volume of 32,000 gallons of fuel, and — See ITS 3.8.3

3. A separate fuel transfer pump. LA01

APPLICABILITY: MODES 1, 2, 3 and 4.

ACTION: Add proposed ACTIONS Note A02

ACTION A / ACTION F — a. With one offsite circuit of the above required A.C. electrical power sources inoperable, demonstrate the OPERABILITY of the remaining A.C. sources by performing Surveillance Requirement 4.8.1.1.1.a within one hour and at least once per 8 hours thereafter and by performing Surveillance Requirement 4.8.1.1.2.a.4 within 24 hours. Restore at least two offsite circuits to OPERABLE status within 72 hours or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours. L01

L02 — Add proposed Required Action B.3.1

ACTION B / ACTION F — b. With one diesel generator of the above required A.C. electrical power sources inoperable, demonstrate the OPERABILITY of the remaining A.C. sources by performing Surveillance Requirement 4.8.1.1.1.a within one hour and at least once per 8 hours thereafter and by performing Surveillance Requirement 4.8.1.1.2.a.4 within 24 hours. Restore at least two diesel generators to OPERABLE status within 7 days or be in HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.

Add proposed ACTION D Note A03

ACTION D / Required Action A.1 / Required Action B.3.2 — c. With one offsite circuit and one diesel generator of the above required A.C. electrical power sources inoperable, demonstrate the OPERABILITY of the remaining A.C. sources by performing Surveillance Requirement 4.8.1.1.1.a within one hour and at least once per 8 hours thereafter and by performing Surveillance

ITS 3.8.1

ITS

A01

ELECTRICAL POWER SYSTEMS

ACTION (Continued)

24 L05

Add proposed Required Action B.3.1 L02

Required Action B.3.2 — Requirement 4.8.1.1.2.a.4 within ~~8~~ hours. Restore at least one of
ACTION D — the inoperable sources to OPERABLE status within 12 hours or be in
ACTION F — at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours. With the inoperable offsite source
Required Action B.4 — restored, restore two diesel generators to OPERABLE status within 7 days from the time of the initial loss or be in at least HOT
ACTION F — STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours. With the inoperable diesel generator
Required Action A.3 — restored, restore two offsite power sources to OPERABLE status within 72 hours from the time of the initial loss or be in at
ACTION F — least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.

ACTION C d. With two of the above required offsite A.C. circuits inoperable, ~~demonstrate the OPERABILITY of two diesel generators by performing Surveillance Requirement 4.8.1.1.2.a.4 within 8 hours and at least once per 8 hours thereafter, unless the diesel generators are already operating;~~ L01 restore at least one of the inoperable offsite
ACTION C — sources to OPERABLE status within 24 hours or be in at least HOT
ACTION F — STANDBY within the next 6 hours. With only one offsite source
Required Action A.3 — restored, restore at least two offsite circuits to OPERABLE status within 72 hours from time of initial loss or be in at least HOT
ACTION F — STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.

ACTION E e. With two of the above required diesel generators inoperable,
Required Action B.1 — demonstrate the OPERABILITY of two offsite A.C. circuits by performing Surveillance Requirement 4.8.1.1.1.a within one hour and at least once per 8 hours thereafter; restore at least one of
ACTION E — the inoperable diesel generators to OPERABLE status within 2 hours
ACTION F — or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours. Restore at least two
Required Action B.4 — diesel generators to OPERABLE status within 7 days from time of initial loss or be in at least HOT STANDBY within the next 6 hours
ACTION F — and in COLD SHUTDOWN within the following 30 hours.

Add proposed ACTION I A04

SURVEILLANCE REQUIREMENTS

4.8.1.1.1 Each of the above required qualified circuits between the offsite transmission network and the onsite Class 1E A.C. electrical power distribution system shall be:

SR 3.8.1.1 a. Determined OPERABLE at least once per 7 days by verifying correct breaker alignments and indicated power availability, and

Add proposed Note 1 to SR 3.8.1.9 A10

SR 3.8.1.9 b. Demonstrated OPERABLE at least once each REFUELING INTERVAL ~~during shutdown~~ L08 by transferring (manually and automatically) unit power supply to each of the offsite circuits.

4.8.1.1.2 Each diesel generator shall be demonstrated OPERABLE:

L10

SR 3.8.1.2, SR 3.8.1.3, SR 3.8.1.4, SR 3.8.1.6, SR 3.8.1.7 a. At least once per ~~31~~ days, ~~if Surveillance Requirement 4.8.1.1.2.c has not been performed within the previous 31 days,~~ by:

A05

DAVIS-BESSE, UNIT 1 3/4 8-2 Amendment No. ~~97,107,203,206,~~219

ITS

A01

A06 Add proposed SR 3.8.1.2 Note 1

A07 Add proposed SR 3.8.1.2 Note 2

ELECTRICAL POWER SYSTEMS

SURVEILLANCE REQUIREMENTS (Continued)

SR 3.8.1.4 1. Verifying the fuel level in the day fuel tank.

2. Verifying the fuel level in the fuel storage tank. See ITS 3.8.3

SR 3.8.1.7 3. Verifying the fuel transfer pump can be started and transfers fuel from the storage system to the day tank. Add proposed steady state voltage and frequency M01

SR 3.8.1.2 4. Verifying the diesel starts and ~~accelerates up to 900 rpm~~, preceded by an engine prelube and/or appropriate other warmup procedures. Add proposed SR 3.8.1.3 Notes 1 and 2 A08

SR 3.8.1.2 Note

SR 3.8.1.3 5. Verifying the generator is synchronized, loaded to ≥ ~~1000 kW~~, and operates for ≥ 60 minutes. Add proposed SR 3.8.1.3 Notes 3 and 4 M02

2340 kW and ≤ 2600 kW M03

6. Verifying the diesel generator is aligned to provide standby power to the associated essential busses. LA02

SR 3.8.1.6 7. Verifying that the automatic load sequence timer is OPERABLE with each load sequence time within ± 10% of its required value.

Add proposed SR 3.8.1.5 M04

b. At least once per 92 days by verifying that a sample of diesel fuel from the fuel storage tank is within the acceptable limits specified in Table 1 of ASTM D975-68 when checked for viscosity, water and sediment. See ITS 5.5

31 A05

92 L10

c. At least once per ~~184~~ days by:

SR 3.8.1.4 1. Verifying the fuel level in the day fuel tank.

2. Verifying the fuel level in the fuel storage tank. See ITS 3.8.3

SR 3.8.1.7 3. Verifying the fuel transfer pump can be started and transfers fuel from the storage system to the day tank.

A06 Add proposed SR 3.8.1.8 Note

SR 3.8.1.8 4. Verifying the diesel starts from ambient condition and ~~accelerates to at least 900 rpm~~ in ≤ 10 seconds. Add proposed voltage and frequency M01

SR 3.8.1.3 5. Verifying the generator is synchronized, loaded to ≥ ~~1000 kW~~, and operates for ≥ 60 minutes. M01 L11

2340 kW and ≤ 2600 kW M03

6. Verifying the diesel generator is aligned to provide standby power to the associated essential busses. LA02

SR 3.8.1.6 7. Verifying that the automatic load sequence timer is OPERABLE with each load sequence time within ± 10% of its required value.

DAVIS-BESSE, UNIT 1 3/4 8-3 Amendment No. ~~75, 97, 105,~~ 203

Add proposed SR 3.8.1.3 Notes 1 and 2 A08

Add proposed SR 3.8.1.3 Notes 3 and 4 M02

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A01

ELECTRICAL POWER SYSTEMS

SURVEILLANCE REQUIREMENTS (Continued)

L08

M05

Add proposed SR 3.8.1.10 Note 2

d. At least once each REFUELING INTERVAL during shutdown by:

SR 3.8.1.10 1. Verifying the generator capability to reject a load equal to the largest single emergency load supplied by the generator without tripping.

M08

SR 3.8.1.15 2. Simulating a loss of offsite power in conjunction with a safety features actuation system (SFAS) test signal, and:

Add proposed SR 3.8.1.15 Note 1

A06

actual or

L03

(a) Verifying de-energization of the essential busses and load shedding from the essential busses.

(b) Verifying the diesel starts from ambient condition on the auto-start signal, energizes the essential busses with permanently connected loads, energizes the auto-connected essential loads through the load sequencer and operates for ≥ 5 minutes while its generator is loaded with the essential loads.

Add proposed start time limit and steady state voltage and frequency limits

M07

SR 3.8.1.12 (c) Verifying that all diesel generator trips, except engine overspeed and generator differential, are automatically bypassed upon loss of voltage on the essential bus and/or an SFAS test signal.

SR 3.8.1.13 3. Verifying the diesel generator operates for ≥ 60 minutes while loaded to ≥ 2000 kw.

Add proposed Note 1 and Note 3

M06

4. Deleted.

~~e. At least once per 30 months by subjecting the diesels to an inspection in accordance with procedures prepared in conjunction with its manufacturer's recommendations for this class of standby service.*~~

LA03

Add proposed SR 3.8.1.5, SR 3.8.1.11, and SR 3.8.1.14

M04

~~* The provisions of Specification 4.0.2 are not applicable.~~

LA03

A01

ITS

3/4 LIMITING CONDITIONS FOR OPERATION AND SURVEILLANCE REQUIREMENTS

3/4.0 APPLICABILITY

LIMITING CONDITION FOR OPERATION

3.0.1 Limiting Conditions for Operation and ACTION requirements shall be applicable during the OPERATIONAL MODES or other conditions specified for each specification.

3.0.2 Adherence to the requirements of the Limiting Condition for Operation and/or associated ACTION within the specified time interval shall constitute compliance with the specification. In the event the Limiting Condition for Operation is restored prior to expiration of the specified time interval, completion of the ACTION statement is not required.

3.0.3 When a Limiting Condition for Operation is not met, except as provided in the associated ACTION requirements, action shall be initiated within 1 hour to place the unit in a MODE in which the Specification does not apply by placing it, as applicable, in:

1. At least HOT STANDBY within the next 6 hours,
2. At least HOT SHUTDOWN within the following 6 hours, and
3. At least COLD SHUTDOWN within the subsequent 24 hours.

Where corrective measures are completed that permit operation under the ACTION requirements, the ACTION may be taken in accordance with the specified time limits as measured from the time of failure to meet the Limiting Condition for Operation. Exceptions to these requirements are stated in the individual Specifications.

3.0.4 Entry into an OPERATIONAL MODE or other specified applicability condition shall not be made unless the conditions of the Limiting Condition for Operation are met without reliance on provisions contained in the ACTION statements unless otherwise excepted. This provision shall not prevent passage through OPERATIONAL MODES as required to comply with ACTION statements.

See ITS 3.0

Required Actions A.2, B.2, and C.1

3.0.5 When a system, subsystem, train, component or device is determined to be inoperable solely because its emergency power source is inoperable, or solely because its normal power source is inoperable, it may be considered OPERABLE for the purpose of satisfying the requirements of its applicable Limiting Condition for Operation, provided: (1) its corresponding normal or emergency power source is OPERABLE; and (2) all of its redundant system(s), subsystem(s), train(s), component(s) and device(s) are OPERABLE, or likewise satisfy the requirements of this specification. Unless both conditions (1) and (2) are satisfied, within ~~2 hours~~ ~~action shall be initiated to place the unit in a MODE in which the applicable Limiting Condition for Operation does not apply by placing it as applicable in:~~

~~1. At least HOT STANDBY within the next 6 hours.~~
~~2. At least HOT SHUTDOWN within the following 6 hours, and~~
~~3. At least COLD SHUTDOWN within the subsequent 24 hours.~~

~~This Specification is not applicable in MODES 5 or 6.~~

L04

3.0.6 Equipment removed from service or declared inoperable to comply with ACTIONS may be returned to service under administrative control solely to perform testing required to demonstrate its OPERABILITY or the OPERABILITY of other equipment. This is an exception to Specification 3.0.2 for the system returned to service under administrative control to perform the testing required to demonstrate OPERABILITY.

See ITS 3.0

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Declare required features inoperable.

24 hours for proposed Required Action A.2
4 hours for proposed Required Action B.2
12 hours for Required Action C.1

L04

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A01

ITS

INSTRUMENTATION

3/4.3.2 SAFETY SYSTEM INSTRUMENTATION

SAFETY FEATURES ACTUATION SYSTEM INSTRUMENTATION

LIMITING CONDITION FOR OPERATION

LCO 3.8.1 3.3.2.1 The Safety Features Actuation System (SFAS) functional units shown in Table 3.3-3 shall be OPERABLE with their trip setpoints set consistent with the Allowable Value column of Table 3.3-4.

APPLICABILITY: As shown in Table 3.3-3.

ACTION:

a. With a SFAS functional unit trip setpoint less conservative than the value shown in the Allowable Values column of Table 3.3-4, declare the functional unit inoperable and apply the applicable ACTION requirement of Table 3.3-3, until the functional unit is restored to OPERABLE status with the trip setpoint adjusted consistent with Table 3.3-4.

See ITS 3.3.5 and ITS 3.3.8

b. With a SFAS functional unit inoperable, take the action shown in Table 3.3-3.

SURVEILLANCE REQUIREMENTS

4.3.2.1.1 Each SFAS functional unit shall be demonstrated OPERABLE by the performance of the CHANNEL CHECK, CHANNEL CALIBRATION and CHANNEL FUNCTIONAL TEST during the MODES and at the frequencies shown in Table 4.3-2.

See ITS 3.3.5, ITS 3.3.6, ITS 3.3.7, and ITS 3.3.8

4.3.2.1.2 The logic for the RCS pressure operating bypasses shall be demonstrated OPERABLE during the at power CHANNEL FUNCTIONAL TEST of functional units affected by the RCS pressure operating bypass operation. This RCS pressure operating bypass function shall be demonstrated OPERABLE at least once per REFUELING INTERVAL during CHANNEL CALIBRATION testing of each functional unit affected by the RCS pressure operating bypass operation.

See ITS 3.3.5

4.3.2.1.3 The SAFETY FEATURES RESPONSE TIME* of each SFAS function shall be demonstrated to be within the limit at least once per REFUELING INTERVAL. Each test shall include at least one functional unit per function such that all functional units are tested at least once every N times the REFUELING INTERVAL where N is the total number of redundant functional units in a specific SFAS function as shown in the "Total No. of Units" Column of Table 3.3-3.

See ITS 3.3.5 and ITS 3.3.8

* The response times (except for manual initiation) include diesel generator starting and sequence loading delays, when applicable. The response time limit (except for manual initiation) includes movement of valves and attainment of pump or blower discharge pressure.

See ITS 3.3.5

ITS 3.8.1

A01

ITS

TABLE 3.3-3 (Continued)

SAFETY FEATURES ACTUATION SYSTEM INSTRUMENTATION

LA04

FUNCTIONAL UNIT	TOTAL NO. OF UNITS	UNITS TO TRIP	MINIMUM UNITS OPERABLE	APPLICABLE MODES	ACTION
3. MANUAL ACTUATION					
a. SFAS (except Containment Spray and Emergency Sump Recirculation)	2	2	2	1,2,3,4	12
b. Containment Spray	2	2	2	1,2,3,4	12
4. SEQUENCE LOGIC CHANNELS					
a. Sequencer	$\boxed{4}$	$\boxed{2/BUS}$	2/BUS	1,2,3,4	15$\boxed{\#}$
b. Essential Bus Feeder Breaker Trip Degraded Voltage Relay (DVR)	4*****	2/BUS	2/BUS	1,2,3,4	15#
c. Diesel Generator Start, Load Shed on Essential Bus Loss of Voltage Relay (LVR)	4	2/BUS	2/BUS	1,2,3,4	15#
5. INTERLOCK CHANNELS					
a. Decay Heat Isolation Valve	1	1	1	1,2,3	13#
b. Pressurizer Heaters	2	2	2	3******	14

See ITS 3.3.6

LA04

A09

See ITS 3.3.8

See ITS 3.4.14

See ITS 3.3.5

LCO 3.8.1.c

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ITS 3.8.1

A01

TABLE 3.3-3 (Continued)

TABLE NOTATION

* Trip function may be bypassed in this MODE with RCS pressure below 1800 psig. Bypass shall be automatically removed when RCS pressure exceeds 1800 psig. See ITS 3.3.5

** Trip function may be bypassed in this MODE with RCS pressure below 660 psig. Bypass shall be automatically removed when RCS pressure exceeds 660 psig.

*** DELETED

**** DELETED

***** All functional units may be bypassed for up to one minute when starting each Reactor Coolant Pump or Circulating Water Pump. See ITS 3.3.8

****** When either Decay Heat Isolation Valve is open. See ITS 3.3.5

The provisions of Specification 3.0.4 are not applicable. A09

ACTION STATEMENTS

ACTION 10 - With the number of OPERABLE functional units one less than the Total Number of Units, STARTUP and/or POWER OPERATION may proceed provided, within one hour (except as noted below), the inoperable functional unit is placed in the tripped condition. When one functional unit is placed in an inoperable status solely for performance of a CHANNEL FUNCTIONAL TEST, a declaration of inoperability and associated entry into this ACTION statement may be delayed for up to 8 hours, provided at least two other corresponding functional units are OPERABLE. See ITS 3.3.5

ACTION 11 - With any component in the Output Logic inoperable, trip the associated components within one hour or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours. See ITS 3.3.7

ITS 3.8.1

A01

ITS

TABLE 3.3-3 (Continued)

ACTION STATEMENTS

ACTION 12 - With the number of OPERABLE Units one less than the Total Number of Units, restore the inoperable functional unit to OPERABLE status within 48 hours or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.

See ITS 3.3.6

ACTION 13 - a. With less than the Minimum Units OPERABLE and indicated reactor coolant pressure ≥ 328 psig, both Decay Heat Isolation Valves (DH11 and DH12) shall be verified closed.

b. With Less than the Minimum Units OPERABLE and indicated reactor coolant pressure < 328 psig operation may continue; however, the functional unit shall be OPERABLE prior to increasing indicated reactor coolant pressure above 328 psig.

See ITS 3.3.14

ACTION 14 - With less than the Minimum Units OPERABLE and indicated reactor coolant pressure < 328 psig, operation may continue; however, the functional unit shall be OPERABLE prior to increasing indicated reactor coolant pressure above 328 psig, or the inoperable functional unit shall be placed in the tripped state.

See ITS 3.3.5

ACTION G — ACTION 15 - a. With the number of OPERABLE units one less than the Minimum Units Operable per Bus, place the inoperable unit in the tripped condition within one hour. For functional unit 4.a the sequencer shall be placed in the tripped condition by physical removal of the sequencer module. The inoperable functional unit may be bypassed for up to 2 hours for surveillance testing per Specification 4.3.2.1.1.

See ITS 3.3.8

ACTION H — b. With the number of OPERABLE units two less than the Minimum Units Operable per Bus, declare inoperable the Emergency Diesel Generator associated with the functional units not meeting the required minimum units OPERABLE and take the ACTION required of Specification 3.8.1.1.

Add proposed Action H (first Condition)

L09

A01

TABLE 4.3-2 (Continued)

SAFETY FEATURES ACTUATION SYSTEM INSTRUMENTATION SURVEILLANCE REQUIREMENTS

L06

L07

FUNCTIONAL UNIT	CHANNEL CHECK	CHANNEL CALIBRATION	CHANNEL FUNCTIONAL TEST	MODES IN WHICH SURVEILLANCE REQUIRED
4. SEQUENCE LOGIC CHANNELS				
a. Sequencer	$\boxed{S}$	NA	M – SR 3.8.1.6	1, 2, 3, 4
b. Essential Bus Feeder Breaker Trip, Degraded Voltage Relay (DVR)	S	A(3)	M(3)	1, 2, 3, 4
c. Diesel Generator Start, Load Shed on Essential Bus, Loss of Voltage Relay (LVR)	S	A(3)	M(3)	1, 2, 3, 4
5. INTERLOCK CHANNELS				
a. Decay Heat Isolation Valve	S	R	**	1, 2, 3
b. Pressurizer Heater	S	R	**	3 ##

See ITS 3.3.8

See ITS 3.4.14

See ITS 3.3.5

TABLE NOTATION

(1) Manual actuation switches shall be tested at least once per REFUELING INTERVAL. All other circuitry associated with manual safeguards actuation shall receive a CHANNEL FUNCTIONAL TEST at least once per 31 days.

See ITS 3.3.6

(2) The CHANNEL FUNCTIONAL TEST shall include exercising the transmitter by applying either vacuum or pressure to the appropriate side of the transmitter.

See ITS 3.3.5

(3) The as-left instrument setting shall be returned to a setting within the tolerance band of the trip setpoint established to protect the safety limit.

See ITS 3.3.8

** See Specification 4.5.2.d.1

See ITS 3.4.14

When either Decay Heat Isolation Valve is open.

See ITS 3.3.5

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DISCUSSION OF CHANGES
ITS 3.8.1, AC SOURCES - OPERATING

ADMINISTRATIVE CHANGES

A01 In the conversion of the Davis-Besse Current Technical Specifications (CTS) to the plant specific Improved Technical Specifications (ITS), certain changes (wording preferences, editorial changes, reformatting, revised numbering, etc.) are made to obtain consistency with NUREG-1430, Rev. 3.1, "Standard Technical Specifications-Babcock and Wilcox Plants" (ISTS).

These changes are designated as administrative changes and are acceptable because they do not result in technical changes to the CTS.

A02 The ITS 3.8.1 ACTIONS include a Note that states LCO 3.0.4.b is not applicable to the emergency diesel generators (EDGs). The CTS does not include this Note. This changes the CTS by including the ACTION Note.

The purpose of the ITS 3.8.1 ACTIONS Note is to prohibit entry into the Applicability of LCO 3.8.1 with an inoperable EDG. Currently, CTS 3.8.1.1 precludes entering MODES 1, 2, 3, and 4 when the EDG is inoperable. ITS LCO 3.0.4 has been added in accordance with the Discussion for Changes for ITS Section 3.0, DOC L01. This LCO allows entry into a MODE or other specified condition in the Applicability under certain conditions when a Technical Specification required component is inoperable. ITS LCO 3.0.4.b allows entry into a MODE or other specified condition in the Applicability of a Specification if a risk assessment is performed, that determines it is acceptable to enter the Applicability, and appropriate risk management action are established. This addition of this restriction (LCO 3.0.4.b is not applicable) is acceptable because there is an increased risk associated with entering a MODE or other specified condition in the Applicability with an inoperable EDG, and therefore the provisions of LCO 3.0.4.b should not be applied in this circumstance. The change is acceptable because the CTS 3.8.1.1 does not currently allow this option. This change is considered administrative because it does not result in technical changes to the CTS.

A03 CTS 3.8.1.1 Action c applies when one offsite circuit and one EDG are inoperable. In this condition, an essential bus may be de-energized. CTS 3.8.2.1 provides an Action for an essential bus that is de-energized. A Note to ITS 3.8.1 ACTION D in the Required Actions column states, "Enter applicable Conditions and Required Actions of LCO 3.8.9, "Distribution Systems – Operating," when Condition D is entered with no AC power source to any train."

This change is acceptable because no changes are made to CTS requirements. The change in format from the CTS to the ITS maintains all technical requirements. The addition of the Note only acts as a reminder to enter all appropriate ACTIONS if any essential bus becomes de-energized. In the event AC Sources are inoperable such that a distribution subsystem were inoperable, ITS LCO 3.0.6 would allow taking only the AC Sources ACTIONS; taking exception to complying with the Distribution System ACTIONS. Since the AC Sources ACTIONS may not be sufficiently conservative in this event (an entire train may be without power), specific direction to take appropriate ACTIONS for the Distribution System is added (ITS 3.8.1, Note to ACTION D) when there is not power for a train. This format and construction implements the existing

DISCUSSION OF CHANGES
ITS 3.8.1, AC SOURCES - OPERATING

treatment of this condition within the framework of the Davis Besse ITS methods. This change is designated as administrative because it does not result in a technical change to the CTS.

A04 CTS 3.8.1.1 does not contain an Action for more than two sources of either offsite circuits or EDGs inoperable. Having more than two sources inoperable requires entering CTS LCO 3.0.3. ITS 3.8.1 ACTION I requires entering LCO 3.0.3 immediately if three or more AC Sources are inoperable. This changes the CTS by adding a specific ACTION requiring entry into LCO 3.0.3.

The change is acceptable because the CTS Actions for more than two sources inoperable are the same as the ITS ACTIONS. The change is necessary due to the format of the ITS. This change is designated as administrative because it does not result in a technical change to the CTS.

A05 CTS 4.8.1.1.2.a requires performance of 4.8.1.1.2.a.1, 4.8.1.1.2.a.3, 4.8.1.1.2.a.5, and 4.8.1.1.2.a.7 every 31 days, while CTS 4.8.1.1.2.c requires performance of similar Surveillances (CTS 4.8.1.1.2.c.1, 4.8.1.1.2.c.3, 4.8.1.1.1.2.c.5, and 4.8.1.1.2.c.7) every 184 days. In addition, CTS 4.8.1.1.2.a includes a statement that the Surveillances of CTS 4.8.1.1.2.a are only required if the Surveillances of CTS 4.8.1.1.2.c have not been performed within the previous 31 days. ITS SR 3.8.1.3, SR 3.8.1.4 and SR 3.8.1.6 perform the same Surveillances on a 31 day Frequency and ITS SR 3.8.1.7 is performed on a 92 day Frequency. This changes the CTS by combining the two similar Surveillances (one from CTS 4.8.1.1.2.a and the other from CTS 4.8.1.1.2.c) into a single Surveillance with a Frequency of 31 days or 92 days, as applicable. The change to allow 92 days for CTS 4.8.1.1.2.a.3 and CTS 4.8.1.1.2.c.3 is discussed in DOC L10.

This change is acceptable because CTS 4.8.1.1.2.c.1, 4.8.1.1.2.c.3, 4.8.1.1.2.c.5, and 4.8.1.1.2.c.7 are duplicative of CTS 4.8.1.1.2.a.1, 4.8.1.1.2.a.3, 4.8.1.1.2.a.5, and 4.8.1.1.2.a.7, respectively. Based on the 31 day requirement of CTS 4.8.1.1.2.a, the tests would be performed at a 31 day interval, not the 184 day interval of CTS 4.8.1.1.2.c. This change is designated as administrative because it does not result in a technical change to the CTS.

A06 CTS 4.8.1.1.2.a.4, CTS 4.8.1.1.2.c.4, and CTS 4.8.1.1.2.d.2 require the EDGs to be started. ITS SR 3.8.1.2, SR 3.8.1.8, and SR 3.8.1.15 also require the EDGs to be started. However, each of the ITS Surveillances include a Note concerning prelube. ITS SR 3.8.1.2 and SR 3.8.1.15 Note 1, and the Note to SR 3.8.1.8 state that all EDG starts may be preceded by an engine prelube period and followed by a warm-up period prior to loading. This changes the CTS by adding the Notes to the applicable Surveillance Requirements.

A Note has been added to various Surveillances which allow all EDG starts to be preceded by an engine prelube period to minimize wear and tear on the EDGs during testing. The addition of the Note is considered administrative since the EDGs at Davis Besse run in a continuous prelube mode of operation. In addition the Note to ITS SR 3.8.1.2 allows a warm-up period prior to loading. The addition of this Note is considered administrative because the EDGs are not immediately loaded upon startup, but are allowed to warm-up for a short time

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after startup while the operations staff performs post startup EDG checks. This change is considered administrative because it does not result in a technical change to the CTS.

A07 CTS 4.8.1.1.2.a.4, requires, in part, a manual start of the EDGs. ITS SR 3.8.1.2 also requires the EDGs to be started, however, it includes a Note (Note 2) that states that a modified EDG start involving idling and gradual acceleration to synchronous speed may be used for this SR as recommended by the manufacturer.

The purpose of CTS 4.8.1.1.2.a.4, in part, is to ensure each EDG can be started from standby conditions. This change adds a specific Note that states a modified EDG start involving idling and gradual acceleration to synchronous speed may be used for this SR as recommended by the manufacturer. This change is consistent with current practice and is not precluded by the CTS. The change is acceptable since it is consistent with manufacturer's recommendations. This change is designated as administrative because it does not result in a technical change to the CTS.

A08 CTS 4.8.1.1.2.a.5 and 4.8.1.1.2.c.5 require the EDG to be synchronized and loaded for ≥ 60 minutes. ITS SR 3.8.1.3 Notes 1 and 2 have been added. Note 1 states that EDG loading may include gradual loading as recommended by the manufacturer. Note 2 states that momentary transients outside the load range do not invalidate this test. This changes the CTS by adding explicit Notes that state EDG loadings may include gradual loading as recommended by the manufacturer and momentary transients outside the load range do not invalidate this test.

CTS 4.8.1.1.2.a.5 and 4.8.1.1.2.c.5 require the load to be at a specific value for ≥ 60 minutes. (DOC M03 discusses the load changes.) The Note 1 allowance simply states that prior to entering the load range of the test, the EDG can be gradually loaded. This is currently allowed by the CTS since there is no explicit requirement precluding this operation. This change is acceptable because Note 1 to SR 3.8.3.1 simply clarifies how the EDG can be loaded prior to entering the load range for the test. The addition of Note 2 is considered administrative because CTS 4.8.1.1.2.a.5 and 4.8.1.1.2.c.5 do not require the load to be at rated load. (See M02 for further discussion on load changes.) This change is designated as administrative because it does not result in a technical change to the CTS.

A09 CTS Table 3.3-3 Functional Unit 4 includes a Note # that states the provisions of Specification 3.0.4 are not applicable. ITS 3.8.1 does not include this Note for the sequencers. This changes the CTS by deleting the specific exception to Specification 3.0.4.

This change is acceptable because it results in no technical change to the Technical Specifications. CTS 3.0.4 has been revised as discussed in the Discussion of Changes for ITS Section 3.0. ITS LCO 3.0.4, in part, states that when an LCO is not met, entry into a MODE or other specified condition in the Applicability shall only be made when the associated ACTIONS to be entered permit continued operation in the MODE or other specified condition in the

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Applicability for an unlimited period of time. ITS 3.8.1 ACTION G requires the plant to remove the inoperable load sequencer and allows operation to continue for an unlimited period of time. Therefore, because the ITS still allows the plant to change a MODE or other specified condition in the Applicability, this change is considered to be consistent with the current allowances. This change is designated as administrative because it does not result in a technical change to the CTS.

A10 CTS 4.8.1.1.1.b requires the offsite circuits be demonstrated OPERABLE by transferring (manually and automatically) unit power supply to each of the offsite circuits. ITS SR 3.8.1.9 requires the same Surveillance, broken into two parts - transfer from the unit auxiliary source to the pre-selected offsite circuit and from the normal offsite circuit to the alternate offsite circuit. However a Note is added that states the transfer from the unit auxiliary source to the pre-selected offsite circuit is only required to be met when the unit auxiliary source is supplying the electrical power distribution subsystem. This changes the CTS by clarifying that the Surveillance checks both the transfer from the unit auxiliary source (i.e., the main generator) to the pre-selected offsite circuit and the transfer from one offsite circuit to the other offsite circuit, and by adding a clarification Note to the Surveillance (Note 1 to ITS SR 3.8.1.9).

This change to the Surveillance test is acceptable since both types of transfers are checked due to the design and operation of the Davis-Besse switchyard. The change adding the Note is acceptable since the unit auxiliary source (main generator) automatic transfer scheme is not required for OPERABILITY when it is not supplying power; the normal offsite circuit would be in a configuration to perform its safety function. This change is designated as administrative because it does not result in technical changes to the CTS.

MORE RESTRICTIVE CHANGES

M01 CTS 4.8.1.1.2.a.4, the normal EDG start test, requires that each EDG accelerates up to 900 rpm. CTS 4.8.1.1.2.c.4, the quickstart test, requires that each EDG accelerates up to 900 rpm in less than or equal to 10 seconds. ITS SR 3.8.1.2 requires that each EDG start from standby conditions and achieves steady state voltage $\geq$ 3744 V and $\leq$ 4400 V and frequency $\geq$ 59.5 Hz and $\leq$ 60.5 Hz. ITS SR 3.8.1.8, the 184 day quickstart test, requires each EDG to achieve a voltage $\geq$ 4031 V and a frequency $\geq$ 58.8 Hz in $\leq$ 10 seconds and achieves a steady state voltage $\geq$ 3744 V and $\leq$ 4400 V and frequency $\geq$ 59.5 Hz and $\leq$ 60.5 Hz. This changes the CTS by providing specific steady state voltage and frequency limits for both Surveillances and a minimum voltage limit to be achieved within 10 seconds for the 184 day Surveillance. The change in the speed requirement for the 184 day Surveillance is discussed in DOC L11.

The purpose of the CTS 4.8.1.1.2.a.4 and CTS 4.8.1.1.2.c.4 is to ensure that each EDG can properly startup so that they can supply the emergency loads. This change is acceptable because the added steady state values for voltage and frequency and the added minimum voltage limit help to ensure the EDGs will be capable of supplying the emergency loads when required. This change is

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designated as more restrictive because it adds specific limits to the CTS where none previously existed.

M02 CTS 4.8.1.1.2.a.5 and CTS 4.8.1.1.2.c.5 require each EDG to be synchronized and loaded for ≥ 60 minutes. ITS SR 3.8.1.3 requires the same test, however two additional Notes have been added which place restrictions on the test. Notes 3 and 4 modify the CTS requirements by stating that the SR shall be conducted on only one EDG at a time, and the SR shall be preceded by and immediately follow, without a shutdown of the EDG, a successful performance of ITS SR 3.8.1.2 or ITS SR 3.8.1.8. This changes the CTS by adding restrictions when performing this test.

The purpose of CTS 4.8.1.1.2.a.5 and CTS 4.8.1.1.2.c.5 is to ensure the EDGs can supply the emergency loads. This change is acceptable because CTS 4.8.1.1.2.a.5 and CTS 4.8.1.1.2.c.5 are normally conducted on one EDG at a time. In addition, the loading of a EDG is usually conducted without shutdown after a successful start during performance of CTS 4.8.1.1.2.a.4 or CTS 4.8.1.1.2.c.4. This change is designated as more restrictive because explicit restrictions are added to the EDG load test.

M03 CTS 4.8.1.1.2.a.5 and CTS 4.8.1.1.2.c.5 require, in part, verification that each EDG is loaded to ≥ 1000 kW. ITS 3.8.1.3 requires the same verification, however the test is performed at 2340 to 2600 KW, which corresponds to 90% and 100% of rated load. This changes the CTS by requiring the EDGs to be tested at a higher load during this Surveillance.

The purpose of CTS 4.8.1.1.2.a.5 and CTS 4.8.1.1.2.c.5, in part, is to ensure the EDGs can supply the emergency loads. This change requires the EDGs to be tested at a higher load during this Surveillance. This change is acceptable because the proposed Surveillance Requirement acceptance criteria are necessary for verification that the equipment used to meet the LCO can perform its required functions. The proposed value is consistent with Regulatory Guide 1.9, Rev. 3 (paragraph C.2.2.2), which recommends a load range of 90% to 100% for the load run test. The upper value (100%) will preclude routine overloading of the EDG. This change is considered more restrictive because more stringent Surveillance Requirements are being applied in the ITS than were applied in the CTS.

M04 ITS SR 3.8.1.5 requires that each day tank be checked for accumulated water and to remove it every 31 days. ITS SR 3.8.1.11 requires that all actions encountered from the loss of offsite power, including shedding of the non-essential loads and energization of the essential buses and respective loads from the EDG. It also demonstrates the capability of the EDG to automatically achieve the required voltage and frequency with a specific time. ITS SR 3.8.1.14 requires that the diesel engine can restart from a hot condition and achieve the required voltage and frequency with a specific time. This changes the CTS by adding these Surveillance Requirements.

The purpose of these additional Surveillance Requirements is to ensure the EDGs are OPERABLE. This change is acceptable because it provides additional assurance that the EDGs remain OPERABLE to perform their safety function.

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This change is designated as more restrictive because it adds Surveillance Requirements to the CTS.

M05 CTS 4.8.1.1.2.d.1 requires the verifying that the EDG is capable of rejecting a load equal to the largest single emergency load supplied by the generator without tripping. This surveillance does not specify that a EDG shall be tested at a specific power factor. ITS SR 3.8.1.10 requires the verification that each EDG can reject a load equal to or greater than its associated single largest post-accident load. The SR additionally states in Note 2 "If performed with the EDG synchronized with offsite power, it shall be performed within the power factor limit. However, if grid conditions do not permit, the power factor limit is not required to be met. Under this condition the power factor shall be maintained as close to the limit as practicable." This changes the CTS requirement by specifying a power factor limit if the testing is conducted by synchronizing with the offsite sources. Other changes to CTS 4.8.1.1.2.d.1 are discussed in DOC M01.

The purpose of CTS 4.8.1.1.2.d.1 is to ensure the EDG will continue to supply the emergency loads if the single largest load is tripped. This change is acceptable because the testing should be conducted as close as possible to the conditions that would be experienced by an EDG following an accident. Loading the EDG solely with the inductive characteristics of a large motor will create a power factor less than unity. The design of the EDG is set for full operation with a power factor of $\geq$ 0.8. Therefore, testing of the EDG for a loss of the single largest load within the power factor limit, if applicable, is acceptable. This change is designated as more restrictive because the testing required by the CTS does not currently contain the limitation.

M06 CTS 4.8.1.1.2.d.3 requires verification that the diesel generator operates for $\geq$ 60 minutes while loaded to $\geq$ 2000 kW. ITS SR 3.8.1.13 requires an endurance and load test for each EDG. The endurance and load test requires that the EDGs be operated for $\geq$ 8 hours, with $\geq$ 2 hours loaded at $\geq$ 2730 kW and $\leq$ 2860 kW and the remaining 6 hours loaded at $\geq$ 2340 kW and $\leq$ 2600 kW. This Surveillance is modified by Note 1 and Note 3. Note 1 states that "momentary transients outside the load and power factor ranges do not invalidate this test." Note 3 states "If part b is performed with EDG synchronized with offsite power, it shall be performed within the power factor limit. However, if grid conditions do not permit, the power factor limit is not required to be met. Under this condition the power factor shall be maintained as close to the limit as practicable." This changes the CTS by requiring the emergency diesel generators to be tested for a longer duration, at a high loading, and within a power factor limit, with an allowance to not meet the load or power factor requirements due to momentary transients.

The purpose of CTS 4.8.1.1.2.d.3 is to ensure the EDG can supply the emergency loads. This change requires the EDGs to be tested at a load range of 105% to 110% for 2 continuous hours and a load range of 90% to 100% within the power factor limit, if applicable, for 6 hours, consistent with the recommendations of IEEE Standard 387-1995. The change is acceptable because it provides additional assurance that the EDGs remain OPERABLE to

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perform their safety function. This change is designated as more restrictive because it adds more stringent testing requirements to the CTS.

M07 CTS 4.8.1.1.2.d.2.(b) requires, in part, verification that the diesel starts on auto-start signal, energizes the essential buses with permanently connected loads, energizes the auto-connected essential loads, and operates for ≥ 5 minutes. ITS SR 3.8.1.15 contains the same verification; however the Surveillance also requires verifying that the EDG starts and energizes the permanently connected loads in ≤ 10 seconds and the EDG achieves steady-state voltage and steady-state frequency. This changes the CTS by requiring the EDGs to startup within a certain time limit and to be operated at a specific steady-state voltage and frequency.

The purpose of CTS 4.8.1.1.2.d.2.(b), in part, is ensure that the EDGs can operate when loaded to the essential buses after a loss of offsite power signal concurrent with an SFAS actuation signal. This change allows the EDGs to be tested at the required voltage and frequency. This change is acceptable because it allows the EDGs to achieve the required steady-state voltage and frequency. The proposed requirements are consistent with Regulatory Guide 1.9, Rev. 3 (paragraph C.2.2.6), which recommends, in part, that the EDGs starts on an autostart signal, and attain the required voltage and frequency. The proposed values are the required steady-state voltage and frequency and therefore are considered to be consistent with the recommendations of Regulatory Guide 1.9, Rev. 3. This change is considered more restrictive because more stringent Surveillance Requirements are being applied in the ITS than were applied in the CTS.

M08 CTS 4.8.1.1.2.d.1 requires verification that each EDG can reject a load equivalent to the largest single emergency load without tripping the EDG. ITS SR 3.8.1.10 also requires verification that each EDG can reject a load equivalent to the largest single emergency load, except the acceptance criterion is that the EDG frequency is maintained ≤ 66.75 Hz following the load reject, which is below the EDG overspeed trip setpoint. This changes the CTS by requiring the EDG to maintain a frequency ≤ 66.75 Hz following the load reject instead of not tripping the EDG.

The purpose of CTS 4.8.1.1.2.d.1 is to ensure the EDG will continue to supply the emergency loads if the single largest load is tripped. The change is acceptable since the new acceptance criterion is more limiting than the current criterion and will ensure margin to the overspeed trip setpoint is maintained. The 66.75 Hz value represents 75% of the difference between the synchronous speed and the overspeed trip setpoint. The new criterion is consistent with Safety Guide 9, which is the Safety Guide the Davis-Besse EDGs were originally designed to meet. This change is designated as more restrictive because it adds a more stringent testing criterion in the ITS than is in the CTS.

RELOCATED SPECIFICATIONS

None

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REMOVED DETAIL CHANGES

LA01 *(Type 1 – Removing Details of System Design and System Description, Including Design Limits)* CTS LCO 3.8.1.1.b requires two "separate and independent" EDGs to be OPERABLE, each with a "separate" day fuel tank and a "separate fuel transfer pump." ITS LCO 3.8.1 requires two qualified circuits between the offsite transmission network and the onsite Class 1E distribution system and two EDGs capable of supplying the onsite Class 1E distribution subsystem to be OPERABLE. This changes the CTS by moving the details that the EDGs are "separate and independent" from the CTS to the Bases.

The removal of these details, which are related to system design, from the Technical Specifications, is acceptable because this type of information is not necessary to be included in the Technical Specifications to provide adequate protection of public health and safety. The ITS still retains the requirements for OPERABLE offsite sources and EDGs and that the fuel oil transfer system operated automatically to transfer fuel oil from the storage tank to the day tank. Also, this change is acceptable because the removed information will be adequately controlled in the ITS Bases. Changes to the Bases are controlled by the Technical Specifications Bases Control Program in Chapter 5. This program provides for the evaluation of changes.

LA02 *(Type 1 – Removing Details of System Design and System Description, Including Design Limits)* CTS 4.8.1.1.2.a.6 and 4.8.1.1.2.c.6 require the verification that each EDG is aligned to provide standby power to the associated essential buses. ITS 3.8.1 SRs do not contain this requirement. This changes the CTS by moving the detail that each EDG is aligned to provide standby power to the associated emergency buses from the CTS to the ITS Bases.

The removal of these details, which are related to system design, from the Technical Specifications is acceptable because this type of information is not necessary to be included in the Technical Specifications to provide adequate protection of public health and safety. The ITS still requires the EDGs to be OPERABLE. An OPERABLE EDG must be capable of providing power to the associated essential buses as indicated in the Bases. The details of what an OPERABLE EDG must be capable of performing do not need to appear in the Specification in order for the requirement to apply. Also, this change is acceptable because the removed information will be adequately controlled in the ITS Bases. Changes to the Bases are controlled by the Technical Specification Bases Control Program in Chapter 5. This program provides for the evaluation of changes to ensure the Bases are properly controlled. This change is designated as a less restrictive removal of detail change because information relating to system design is being removed from the Technical Specifications.

LA03 *(Type 4 – Relocation of LCO, SR, or other TS requirement to the TRM, UFSAR, ODCM, QAPM, IST Program, or IIP)* CTS 4.8.1.1.2.e requires each EDG to be subjected to an inspection every 30 months (as modified by footnote *) in accordance with procedures prepared in conjunction with its manufacturer's recommendations for this class of standby service. The ITS does not include this EDG inspection requirement. This changes the CTS by moving the explicit EDG

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inspection Surveillance from the Technical Specifications to the Technical Requirements Manual (TRM).

The removal of these details from the Technical Specifications is acceptable because this type of information is not necessary to provide adequate protection of public health and safety. The purpose of CTS 4.8.1.1.2.e is to ensure that each EDG is inspected in accordance with procedures performed in conjunction with the manufacturer's recommendations. The other EDG Surveillances will ensure the EDG is capable of performing its safety function. This requirement is proposed to be relocated to the TRM since the requirement is not needed to ensure that the EDG remains OPERABLE. This change is acceptable because the removed information will be adequately controlled in the TRM. The TRM is currently incorporated by reference into the UFSAR, thus any changes to the TRM are made under 10 CFR 50.59, which ensures changes are properly evaluated. This change is designated as a less restrictive removal of detail change because a requirement is being removed from the Technical Specifications.

LA04 *(Type 1 – Removing Details of System Design and System Description, Including Design Limits)* CTS Table 3.3-3 for Functional Unit 4 has three columns stating various requirements for each instrument string. These columns are labeled, "TOTAL NO. OF UNITS," "UNITS TO TRIP," and "MINIMUM UNITS OPERABLE." ITS 3.8.1 does not retain the "TOTAL NO. OF UNITS" or "UNITS TO TRIP" columns. This changes the CTS by moving the information of the "TOTAL NO. OF UNITS" and "UNITS TO TRIP" columns to the Bases.

The removal of these details, which are related to system design, from the Technical Specifications is acceptable because this type of information is not necessary to be included in the Technical Specifications to provide adequate protection of public health and safety. The ITS still retains the requirement for the number of required channels and the appropriate Condition to enter if a required channel becomes inoperable. Also, this change is acceptable because the removed information will be adequately controlled in the ITS Bases. Changes to the Bases are controlled by the Technical Specification Bases Control Program in Chapter 5. This program provides for the evaluation of changes to ensure the Bases are properly controlled. This change is designated as a less restrictive removal of detail change because information relating to system design is being removed from the Technical Specifications.

LESS RESTRICTIVE CHANGES

L01 *(Category 4 – Relaxation of Required Action)* CTS 3.8.1.1 Action a states, in part, with one offsite circuit inoperable perform CTS 4.8.1.1.2.a.4 within 24 hours. CTS 3.8.1.1 Action d states, in part, with two offsite circuits inoperable perform CTS 4.8.1.1.2.a.4 within 8 hours and once per 8 hours thereafter, unless the EDGs are already operating. CTS 4.8.1.1.2.a.4 requires verification that the diesel starts and accelerates up to 900 rpm, preceded by an engine prelube and/or appropriate other warm-up procedure. ITS 3.8.1 ACTIONS A and C do not contain these requirements. This changes the CTS by deleting the requirement to test the diesel when one or both offsite circuits are inoperable.

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The purpose of the CTS 4.8.1.1.2.a.4 requirement in CTS 3.8.1.1 Actions a and c is to ensure that the EDGs are OPERABLE in case a loss of offsite power were to occur. Since the EDGs are tested on monthly basis, there is no reason to believe that they will not perform their intended safety function. Furthermore, the inoperability of one or more offsite circuits does not affect the OPERABILITY of the EDGs, since the EDGs are independent of the offsite circuits. Therefore, there is no need to put the EDGs through unnecessary testing. This change is designated as less restrictive because the requirement to perform testing on the associated EDG is not being retained.

L02 *(Category 4 – Relaxation of Required Action)* When an EDG is found inoperable, CTS 3.8.1.1 Action b, requires a demonstration that the remaining EDG is OPERABLE within 24 hours. When an EDG and an offsite circuit are concurrently inoperable, CTS 3.8.1.1 Action c requires a similar demonstration within 8 hours. (Note: The time to perform the EDG test in CTS 3.8.1.1 Action c has been changed to 24 hours as described in DOC L05.) ITS 3.8.1 Required Action B.3.2 includes a requirement to perform SR 3.8.1.2, which requires the verification that the EDG starts from standby conditions and achieves steady state voltage and frequency. In addition, ITS 3.8.1 Required Action B.3.1 has been added and provides the option to determine OPERABLE EDG(s) are not inoperable due to common cause failure. This changes the CTS by providing an allowance to not start an OPERABLE EDG as long as it can be shown that there is no common mode failure.

The purpose of the CTS 4.8.1.1.2.a.4 requirement in CTS 3.8.1.1 Actions b and c is to demonstrate that the remaining EDG is OPERABLE. This change is acceptable because the Required Actions are used to establish remedial measures that must be taken in response to the degraded conditions in order to minimize risk associated with continued operation while providing time to repair inoperable features. The Required Actions are consistent with safe operation under the specified Condition, considering the OPERABLE status of the redundant systems or features. This includes capacity and capability of remaining systems or features, and a reasonable time for repairs or replacement, and the low probability of a DBA occurring during the repair period. The CTS requires a test of the remaining EDG to demonstrate OPERABILITY when it is determined that an EDG is inoperable. This change adds an option to determine the OPERABLE EDG is not inoperable due to a common cause failure rather than to perform a demonstration of OPERABILITY. This is acceptable because it avoids unnecessary testing of the EDG while at the same time ensures the EDG is OPERABLE. This change is designated as less restrictive because less stringent Required Actions are being applied in the ITS than were applied in the CTS.

L03 *(Category 6 – Relaxation of Surveillance Requirement Acceptance Criteria)* CTS 4.8.1.1.2.d.2 requires verification of EDG performance following a "simulated safety features actuation system (SFAS) test signal." ITS SR 3.8.1.15 specifies that the signal may be from either an "actual" or simulated (i.e., test) signal. This changes the CTS by explicitly allowing the use of either and actual or simulated signal for the test.

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The purpose of CTS 4.8.1.1.2.d.2 is to ensure that the AC Sources operate correctly upon receipt of an actuation signal. This change is acceptable because it has been determined that the relaxed Surveillance Requirement acceptance criteria are not necessary for verification that the equipment used to meet the LCO can perform its required functions. Equipment cannot discriminate between an "actual," "simulated," or "test" signal, therefore, the results of the testing are unaffected by the type of signal used to initiate the test. This change allows taking credit for unplanned actuation if sufficient information is collected to satisfy the Surveillance test requirements. The change also allows a simulated signal to be used if necessary. This change is designated as less restrictive because less stringent Surveillance Requirements are being applied in the ITS than were applied in the CTS.

L04 *(Category 3 – Relaxation of Completion Time)* CTS 3.0.5 allows a system, subsystem, train, component, or device to be considered OPERABLE with an inoperable emergency or normal power source provided its corresponding normal or emergency power source is OPERABLE and its redundant system(s), subsystem(s), train(s), component(s), and device(s) are OPERABLE. CTS 3.0.5 requires a unit shutdown to start within two hours with these requirements not met. CTS 3.0.5 also provides an explicit time period to be in HOT STANDBY (MODE 3), HOT SHUTDOWN (MODE 4), and COLD SHUTDOWN (MODE 5). ITS 3.8.1 ACTION A (one required offsite source inoperable) requires the declaration of required feature(s) with no offsite power available inoperable when its redundant required feature(s) is inoperable. The Completion Time allowed by the Required Action A.2 is 24 hours from discovery of no offsite power to one train concurrent with inoperability of redundant required feature(s). ITS 3.8.1 ACTION B (one required EDG inoperable) requires the declaration of required feature(s) supported by the inoperable EDG inoperable when its required redundant feature(s) is inoperable. The Completion Time allowed by the Required Action B.2 is 4 hours from discovery of Condition B concurrent with inoperability of redundant required feature(s). ITS 3.8.1 ACTION C (two required offsite circuits inoperable) requires the declaration of required feature(s) inoperable when its redundant required feature(s) is inoperable. The Completion Time allowed by the Required Action C.1 is 12 hours from discovery of Condition C concurrent with inoperability of redundant required features. This changes the CTS by allowing more time to restore inoperable equipment and replaces the explicit times to be in MODE 3, MODE 4, and MODE 5 with a requirement to declare the affected features inoperable (and thus to take the ACTIONS required by the individual system LCO, including possible shutdown of the unit).

This change is acceptable because the Completion Time is consistent with safe operation under the specified Condition, considering the OPERABLE status of the redundant systems or features. This includes the capacity and capability of remaining systems or features, a reasonable time for repairs or replacement, and the low probability of a DBA occurring during the allowed Completion Time. This change allows more time to restore inoperable equipment when required AC Sources are inoperable concurrent with inoperabilities of redundant required features and deletes the explicit times to be in MODE 3, MODE 4, and MODE 5. By declaring the affected supported equipment inoperable, and as a result, taking the Technical Specifications ACTIONS of the affected supported equipment, unit

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operation is maintained within the bounds of the Technical Specifications and approved ACTIONS. Since the AC Sources support the OPERABILITY of the affected equipment, it is appropriate that the proper action, in this condition, would be to declare that affected supported equipment inoperable. CTS 3.0.5 is overly restrictive, in that if the associated supported equipment were inoperable for other reasons and the redundant equipment was also inoperable, a restoration time is sometimes provided, in other CTS sections. The 24 hour Completion Time when one required offsite circuit is inoperable is acceptable because: a) the redundant counterpart to the inoperable required feature is still OPERABLE although single failure protection may have been lost; b) the capacity and capability of the remaining AC Sources is still available; c) a reasonable time for repairs is provided for restoration before the unit is subjected to transients associated with shutdown; and d) the low probability of a DBA occurring during this period. The 12 hour Completion Time when two required offsite circuits are inoperable is acceptable because Regulatory Guide 1.93 allows a Completion Time of 24 hours for two required offsite circuits inoperable. When a concurrent redundant required function is inoperable, a shorter Completion Time of 12 hours is appropriate. The 4 hour Completion Time with one required EDG inoperable takes into account the component OPERABILITY of the redundant counterpart to the inoperable required feature and is considered to be less of a risk than subjecting the unit to transients associated with shutdown. 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. This change is designated as less restrictive because additional time is allowed to restore equipment to OPERABLE status and the change deletes the explicit times to reach MODE 3, MODE 4, and MODE 5.

L05 *(Category 3 – Relaxation of Completion Time)* CTS 3.8.1.1 Action c specifies the compensatory actions for one inoperable offsite circuit and one inoperable DG. The Actions include a requirement to demonstrate the OPERABILITY of the remaining OPERABLE EDG by performing Surveillance Requirement 4.8.1.1.2.a.4 within 8 hours. ITS 3.8.1 Required Action B.3.2 allows 24 hours to perform a similar check on the remaining OPERABLE EDG. This changes the CTS by extending the time to perform this check from 8 hours to 24 hours.

The purpose of the CTS Action c requirement to perform CTS 4.8.1.1.2.a.4 is to ensure that the other EDG is not inoperable as a result of a similar, yet undetected, failure (i.e., due to a common mode failure). This change is acceptable because the proposed 24 hour time limit to perform CTS 4.8.1.1.2.a.4 when equipment is inoperable has already been approved by the NRC. CTS 3.8.1.1 Action b includes a similar requirement to perform CTS 4.8.1.1.2.a.4 when only an EDG is inoperable, but allows 24 hours to perform the verification. When both an offsite circuit and an EDG are inoperable, the AC Sources are in a more degraded state. The focus of the operations personnel should be in restoring the inoperable AC Sources, not in attempting to perform a routine Surveillance is a shorter amount of time. The proposed 24 hour time limit is considered a reasonable time to complete the DG start tests on two DGs. Generic Letter 84-15 identified that a 24 hour time limit was acceptable to perform these common mode failure checks. In addition, the change is considered acceptable since the vast majority of DG start tests demonstrate that

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the DG is in fact OPERABLE. This change is designated as less restrictive because more time will be allowed to complete a Required Action in the ITS than is allowed in the CTS.

L06 *(Category 6 – Relaxation of Surveillance Requirement Acceptance Criteria)* CTS Table 4.3-2 Functional Unit 4.a requires a CHANNEL FUNCTIONAL TEST of the Sequencer every month. ITS 3.8.1 does not include this CHANNEL FUNCTIONAL TEST; instead ITS SR 3.8.1.6 requires verification that the interval between each sequenced load block is within 10% of design interval for each load sequencer. This changes the CTS by not requiring a CHANNEL FUNCTIONAL TEST.

The purpose of the CTS monthly CHANNEL FUNCTIONAL TEST is to verify that the sequencer is operating correctly. ITS SR 3.8.1.6 will verify that the sequencer is operating correctly by verifying that sufficient time exists for the EDG to restore frequency and voltage prior to applying the next load and that the safety analysis assumptions regarding ESF equipment time delays are not violated. This change is acceptable because ITS SR 3.8.1.6 performs a similar function to the CTS monthly CHANNEL FUNCTIONAL TEST. This change is designated as less restrictive because the requirement to perform a CHANNEL FUNCTIONAL TEST has been deleted.

L07 *(Category 5 – Deletion of Surveillance Requirement)* CTS 4.3-2 Functional Unit 4 requires a CHANNEL CHECK of the sequencer. ITS 3.8.1 does not require a CHANNEL CHECK. This changes the CTS by not requiring a CHANNEL CHECK of the sequencer.

This change is acceptable because the deleted Surveillance Requirement is not necessary to verify that the equipment used to meet the LCO is consistent with the safety analysis. The purpose of performing a CHANNEL CHECK, as described in ITS Section 1.0, is to qualitatively assess, by observation, channel behavior during operation. It should include, where possible, comparison of the channel indication and status to other indications or status derived from independent instrument channels measuring the same parameters. The load sequencers provide signals to individual loads in order to start the loads under accident (SFAS coincident with loss of offsite power) conditions. However, the sequencers do not provide any "indication" to the operators that can be used to determine channel behavior. The indication provided is a status light, which indicates that the sequencer has not received any signals from the SFAS logic or the loss of voltage logic. Thus, the CHANNEL CHECK requirement provides no qualitative information that the sequencers will work properly. Since the operators routinely monitor the status of SFAS or loss of voltage signals, and alarms would be received in the control room if these conditions existed, there is no need to specify a CHANNEL CHECK for these instruments. This change is acceptable because the deleted Surveillance Requirement is not necessary to verify that the equipment used to meet the LCO is consistent with the safety analysis. Thus, appropriate equipment continues to be tested in a manner and at a Frequency necessary to give confidence that the assumptions in the safety analyses are protected. Each load sequencer will continue to be tested by ITS SR 3.8.1.6 (the load sequencer functional test) to ensure the safety analyses

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assumptions will be met. This change is designated as less restrictive because a Surveillance which is required in the CTS will not be required in the ITS.

L08 *(Category 10 – Deletion of Surveillance Requirement Shutdown Performance Requirements)* CTS 4.8.1.1.1.b and CTS 4.8.1.1.2.d contains a requirement to perform various tests "during shutdown." These tests have been incorporated in ITS SR 3.8.1.9, SR 3.8.1.10, SR 3.8.1.12, SR 3.8.1.13, and SR 3.8.1.15. ITS SR 3.8.1.9, SR 3.8.1.10, SR 3.8.1.12, and SR 3.8.1.13 include a Note which states that the Surveillance (for SR 3.8.1.9, part b of the Surveillance only) shall not normally be performed in MODE 1 or 2. ITS SR 3.8.1.15 includes a Note which states that the Surveillance shall not normally be performed in MODE 1, 2, 3, or 4. The Notes also state that the Surveillance may be performed to reestablish OPERABILITY provided an assessment determines the safety of the plant is maintained or enhanced. The Notes further state that credit may be taken for unplanned events that satisfy the SR. This changes the CTS by allowing the Surveillance to be performed in the operating MODES as long as the associated assessment is performed or provided that it is an unplanned event that satisfies the requirements of the SR.

The purpose of CTS 4.8.1.1.1.b and 4.8.1.1.2.d is to confirm the OPERABILITY of the offsite circuits and EDGs. This change is acceptable because the proposed Surveillance Frequency provides an acceptable level of equipment reliability. The proposed Surveillance does not include the restriction on unit conditions at all times. It allows the unit to perform the Surveillances to reestablish OPERABILITY provided an assessment determines the safety of the plant is maintained or enhanced and it allows the unit to credit an unplanned event for satisfying the Surveillances, provided the necessary data is obtained. Furthermore, the proposed Surveillance Note still restricts planned performance of the Surveillance to MODES other than MODES 1, 2, 3, and 4. The control of the unit conditions appropriate to perform the test 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 Specification Surveillances that do not dictate unit conditions for the Surveillance. This change is designated as less restrictive because Surveillances may be performed at plant conditions other than shutdown.

L09 *(Category 4 – Relaxation of Required Action)* CTS Table 3.3-3 Action 15a requires, with the number of OPERABLE sequencers one less than the minimum number of sequencers OPERABLE per bus, that the inoperable sequencer module be removed within 1 hour. If this action is not accomplished, the shutdown requirements of CTS 3.0.3 would apply. ITS 3.8.1 ACTION G also requires the inoperable sequencer to be removed within 1 hour when one of the two sequencers per bus is inoperable. However, ITS 3.8.1 ACTION H allows the associated EDG to be declared inoperable immediately when the Required Action and associated Completion Time of Condition G are not met. This changes the CTS by allowing the associated EDG to be immediately declared inoperable instead of entering CTS 3.0.3 and shutting down the unit.

The purpose of CTS Table 3.3-3 Action 15a is to provide appropriate actions when one of the two sequencers is inoperable. Required Actions are used to

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establish remedial measures that must be taken in response to the degraded conditions in order to minimize risk associated with continued operation while providing time to repair inoperable features. This change is acceptable because the Required Actions are consistent with safe operation under the specified Condition, considering the OPERABLE status of the redundant systems or features. This includes the capacity and capability of remaining systems or features, a reasonable time for repairs or replacement, and the low probability of a DBA occurring during the repair period. These sequencers ensure proper loading of the EDGs under an accident (SFAS) conditions (i.e., it supports EDG OPERABILITY) and the appropriate action for this condition is to declare the EDG inoperable. The current requirements are overly restrictive. For example, if an EDG were inoperable for other reasons, then a 7 day allowed outage time is provided. However, if one sequencer is inoperable and untripped, but the EDG is otherwise fully OPERABLE, then an immediate shutdown is required. Furthermore, CTS Table 3.3-3 Action 15b requires the EDG to be declared inoperable when both sequencers on one bus are inoperable. Thus, the allowance to declare the EDG inoperable due to load sequencer inoperability has already been approved by the NRC. This change is designated as less restrictive because less stringent Required Actions are being applied in the ITS than were applied in the CTS.

L10 *(Category 7 – Relaxation Of Surveillance Frequency, Non-24 Month Type Change)* CTS 4.8.1.1.2.a.3 and CTS 4.8.1.1.2.c.3 require that the fuel transfer pump can be started and that it transfers fuel from the storage system to the day tank. The test Frequency for these Surveillances 31 days and 184 days, respectively. However, as discussed in DOC A05, since the Frequency for CTS 4.8.1.1.2.a.3 is 31 days, the 184 day Frequency for CTS 4.8.1.1.2.c.3 is limited to 31 days. ITS SR 3.8.1.7 requires the verification that the fuel oil transfer system operates to transfer fuel oil from the fuel oil storage tank to the day tank every 92 days. This changes the CTS by changing the test Frequency from 31 days to 92 days.

The purpose of CTS 4.8.1.1.2.a.3 and CTS 4.8.1.1.2.c.3 is to ensure the fuel oil transfer system can function properly. The ISTS allows a nominal 92 day Frequency for this test (ISTS SR 3.8.1.6), and states that in the ISTS Bases that this is consistent with the ASME OM Code. However, the ISTS Bases also provides words for why a 31 day Frequency is appropriate under certain conditions. The ISTS Bases state that: "if the design of fuel transfer systems is such that pumps will 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 part of DG OPERABILITY, the Frequency of this SR should be modified to reflect individual designs." Thus, the ISTS Bases is stating that a 92 day Frequency is allowed if the fuel oil pumps do not normally need to run to refill the day tank after every EDG monthly test. The Davis-Besse EDG day tank capacity is approximately 5400 gallons, and the transfer pump automatically shuts off at a day tank level of approximately 5250 gallons. The minimum day tank fuel oil volume required by CTS and ITS is 4000 gallons (ITS SR 3.8.1.4). Thus, the difference between the level when the fuel oil transfer pumps automatically stops on high level and the minimum level required by the ITS is in excess of

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1000 gallons. The EDG burns approximately 200 gallons/hr of fuel oil at full load, and ITS SR 3.8.1.3 requires a 1 hour run at full load every month. Thus, the fuel oil transfer pumps are not required to automatically start to maintain fuel oil level in the day tank above the minimum required ITS value of 4000 gallons after every EDG monthly run test. A detailed review of the test history for the fuel oil transfer pumps since 2004 indicates no failures that were considered Maintenance Rule Functional Failures for the EDG System. In addition, the proposed 92 day fuel oil transfer pump test Frequency is consistent with the requirements of ASME Operation and Maintenance Standards and Guides (OM Codes) for similar pumps. Therefore, this change in the test Frequency is acceptable. This change is designated as less restrictive because Surveillances will be performed less frequently under the ITS than under the CTS.

L11 *(Category 6 – Relaxation of Surveillance Requirement Acceptance Criteria)* CTS 4.8.1.1.2.c.4, the quickstart test, requires that each EDG starts from ambient conditions and accelerates to at least 900 rpm in less than or equal to 10 seconds. ITS SR 3.8.1.8, in part, requires each EDG start from standby conditions and achieves voltage $\geq$ 4031 V and frequency $\geq$ 58.8 Hz in $\leq$ 10 seconds. This changes the CTS by decreasing the speed (i.e., frequency) requirement from 900 rpm (60 Hz) to 58.8 Hz.

The purpose of the CTS 4.8.1.1.2.c.4 is to ensure that each EDG can properly startup so that they can supply the emergency loads. This change is acceptable because the relaxed Surveillance Requirement acceptance criterion is not necessary for verification that the equipment used to meet the LCO can perform its required functions. This change decreases the minimum frequency requirement for the EDG during a quickstart test. This change is acceptable because the value is consistent with the minimum steady state frequency proposed in other Surveillances (e.g., ITS SR 3.8.1.2) and continues to ensure that the EDG can be started to sufficient speed to accept required emergency loads. This change is designated as less restrictive because less stringent Surveillance Requirements are being applied in the ITS than were applied in the CTS.

Improved Standard Technical Specifications (ISTS) Markup and Justification for Deviations (JFDs)

CTS

3.8 ELECTRICAL POWER SYSTEMS

3.8.1 AC Sources - Operating

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

LCO 3.8.1.1.a a. Two qualified circuits between the offsite transmission network and the onsite Class 1E AC Electrical Power Distribution System; 2

emergency E

LCO 3.8.1.1.b b. Two diesel generators (DGs) each capable of supplying one train of the onsite Class 1E AC Electrical Power Distribution System; and 1 2

Two 1 2 ;

3.3.2.1 Table 3.3-3 c. ~~Automatic~~ load sequencers for Train A and Train B. 3

two load sequencers for

APPLICABILITY: MODES 1, 2, 3, and 4.

ACTIONS

E

---NOTE---

DOC A02 LCO 3.0.4.b is not applicable to DGs. 1

CONDITION	REQUIRED ACTION	COMPLETION TIME
Action a, LCO 3.0.5 A. One ~~[required]~~ offsite circuit inoperable.	A.1 Perform SR 3.8.1.1 for OPERABLE ~~[required]~~ offsite circuit. AND A.2 Declare required feature(s) with no offsite power available inoperable when its redundant required feature(s) is inoperable. AND	1 hour AND Once per 8 hours thereafter 24 hours from discovery of no offsite power to one train concurrent with inoperability of redundant required feature(s) 3

CTS

AC Sources - Operating
3.8.1

ACTIONS (continued)

CTS	CONDITION	REQUIRED ACTION		COMPLETION TIME	
Action a, LCO 3.0.5		A.3	Restore ~~[required]~~ offsite circuit to OPERABLE status.	72 hours	3
Action b, LCO 3.0.5	B. One ~~[required]~~ E DG inoperable.	B.1	Perform SR 3.8.1.1 for OPERABLE ~~[required]~~ offsite circuit(s).	1 hour AND Once per 8 hours thereafter	3 1
		AND			
		B.2	E Declare required feature(s) supported by the inoperable DG inoperable when its redundant required feature(s) is inoperable.	4 hours from discovery of Condition B concurrent with inoperability of redundant required feature(s)	1
		AND			
		B.3.1	E Determine OPERABLE DG~~[(s)]~~ is not inoperable due to common cause failure.	~~[~~24~~]~~ hours	3 1
		OR			
		B.3.2	Perform SR 3.8.1.2 for OPERABLE E DG~~[(s)]~~.	~~[~~24~~]~~ hours	3 1
		AND			
		B.4	Restore ~~[required]~~ E DG to OPERABLE status.	7 days ~~[72 hours]~~	3 1 4

CTS

ACTIONS (continued)

	CONDITION	REQUIRED ACTION	COMPLETION TIME	
Action d. LCO 3.0.5	C. Two ~~[required]~~ offsite circuits inoperable.	C.1 Declare required feature(s) inoperable when its redundant required feature(s) is inoperable.	12 hours from discovery of Condition C concurrent with inoperability of redundant required feature(s)	3
		AND		
		C.2 Restore one ~~[required]~~ offsite circuit to OPERABLE status.	24 hours	3
Action c, LCO 3.0.5	D. One ~~[required]~~ offsite circuit inoperable. AND One ~~[required]~~ DG inoperable. E	-----NOTE----- Enter applicable Conditions and Required Actions of LCO 3.8.9, "Distribution Systems - Operating," when Condition D is entered with no AC power source to any train.		3 3 1
		D.1 Restore ~~[required]~~ offsite circuit to OPERABLE status.	12 hours	3
		OR		
		D.2 Restore ~~[required]~~ DG to OPERABLE status. E	12 hours	3 1
Action e	E. Two ~~[required]~~ DGs inoperable. E	E.1 Restore one ~~[required]~~ DG to OPERABLE status. E	2 hours	3 1

CTS

ACTIONS (continued)

	CONDITION	REQUIRED ACTION	COMPLETION TIME	
	-----REVIEWER'S NOTE----- [This Condition may be deleted if the unit design is such that any sequencer failure mode will only affect the ability of the associated DG to power its respective safety loads following a loss of offsite power independent of, or coincident with, a Design Basis Event. ------------------------------ INSERT 1	~~F~~ G.1 Restore [required] [automatic load sequencer] to OPERABLE status. Remove inoperable load sequencer.	[~~12~~ 1] hours[~~/~~]	5 7
Table 3.3-3 Action 15a	~~F~~ G. ~~One~~ One or more trains with [~~required~~] [~~automatic~~] load sequencer[~~]~~] inoperable. INSERT 2			7
Actions a, b, c, d, and e	~~G~~ F. Required Action and Associated Completion Time of Condition A, B, C, D, E[~~or~~] [~~F~~] not met.	~~G~~ F.1 Be in MODE 3. AND ~~G~~ F.2 Be in MODE 5.	~~12~~ 6 hours 36 hours	7 12 3 7
DOC A04	~~H~~ I. Three or more [~~required~~] AC sources inoperable.	~~H~~ I.1 Enter LCO 3.0.3.	Immediately	7 3

SURVEILLANCE REQUIREMENTS

	SURVEILLANCE		FREQUENCY	
4.8.1.1.1.a	SR 3.8.1.1	Verify correct breaker alignment and indicated power availability for each [~~required~~] offsite circuit.	7 days	3

7 INSERT 1

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

7 INSERT 2

DOC L09, Table 3.3-3 Action 15b	H. ----------NOTE---------- Separate Condition entry is allowed for each train. ---------------------------- Required Action and associated Completion Time of Condition G not met. OR One or more trains with two sequencers inoperable.	H.1 Declare associated EDG inoperable.	Immediately

CTS

SURVEILLANCE REQUIREMENTS (continued)

CTS	SURVEILLANCE		FREQUENCY	
4.8.1.1.2.a.4	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. E 2. A modified DG start involving idling and/or 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. ---------- Verify each DG starts from standby conditions and achieves steady state voltage ≥ [3740] 4 V and ≤ [4580] 4400 V, and frequency ≥ [58.8] 59.5 Hz and ≤ [61.2] 60.5 Hz.	31 days	1 3 1 10 1 3
4.8.1.1.2.a.5	SR 3.8.1.3	-----NOTES----- 1. DG loadings may include gradual loading as recommended by the manufacturer. 2. Momentary transients outside the load range do not invalidate this test. 3. This Surveillance shall be conducted on only one DG at a time. 4. This SR shall be preceded by and immediately follow, without shutdown, a successful performance of SR 3.8.1.2 or SR 3.8.1.[7] 8. ---------- Verify each DG is synchronized and loaded and operates for ≥ 60 minutes at a load ≥ [4500] 2340 kW and ≤ [5000] 2600 kW.	31 days	1 1 10 1 3
LCO 3.8.1.1.b.1, 4.8.1.1.2.a.1	SR 3.8.1.4	Verify each day tank ~~[and engine mounted tank]~~ contains ≥ [220] 4000 gal of fuel oil.	31 days	3

CTS

SURVEILLANCE REQUIREMENTS (continued)

CTS		SURVEILLANCE	FREQUENCY	
DOC M04	SR 3.8.1.5	Check for and remove accumulated water from each day tank [and engine ~~mounted~~ tank].	[31] days	3
4.8.1.1.2.a.3	SR 3.8.1.~~6~~ 7 Move SR 3.8.1.6 to here from page 3.8.1-14	Verify the fuel oil transfer system operates to ~~[automatically]~~ fuel oil transfer fuel oil from storage tank~~[s]~~ to the day tank [and engine ~~mounted~~ tank].	[92] days	10 10 3
4.8.1.1.2.c.4	SR 3.8.1.~~7~~ 8	E -----NOTE----- All DG starts may be preceded by an engine prelube period. -----		10 1
		E Verify each DG starts from standby condition and achieves: a. In ≤ [10] seconds, voltage ≥ ~~[3740]~~ 4031 V and frequency ≥ [58.8] Hz~~, and~~ ; 4 b. Steady state voltage ≥ [3740] V and ≤ ~~[4580]~~ 4400 V, and frequency ≥ ~~[58.8]~~ 59.5 Hz and ≤ ~~[61.2]~~ 60.5 Hz.	184 days	1 3
4.8.1.1.1.b	SR 3.8.1.~~8~~ 9 INSERT 3	2. -----NOTE----- S [~~This Surveillance~~ SR 3.8.1.9.b shall not normally be performed in MODE 1 or 2. However, ~~this Surveillance~~ it may be performed to reestablish OPERABILITY provided an assessment determines the safety of the plant is maintained or enhanced. Credit may be taken for unplanned events that satisfy this SR. -----		10 20 3
	INSERT 4	~~Verify [automatic [and] manual] transfer of AC power sources from~~ the normal offsite circuit to ~~each~~ the alternate ~~[required]~~ offsite circuit.	~~[18]~~ 24 months []	20 3

(20) **INSERT 3**

1. SR 3.8.1.9.a is only required to be met when the unit auxiliary source is supplying the electrical power distribution subsystem.

(20) **INSERT 4**

:

a) The unit auxiliary source to the pre-selected offsite circuit; and

b)

CTS

SURVEILLANCE REQUIREMENTS (continued)

	SURVEILLANCE		FREQUENCY	
4.8.1.1.2.d.1	SR 3.8.1 ~~9~~ 10	-----NOTES----- 1. This Surveillance shall not normally be performed in MODE 1 or 2. However, this Surveillance may be performed to reestablish OPERABILITY provided an assessment determines the safety of the plant is maintained or enhanced. Credit may be taken for unplanned events that satisfy this SR. E 2. If performed with the DG synchronized with offsite power, it shall be performed ~~at a~~ within the power factor limit ≤ [~~0~~.9]. However, if grid conditions do not permit, the power factor limit is not required to be met. Under this condition the power factor shall be maintained as close to the limit as practicable. -----		10 1 14
		E Verify each DG rejects a load greater than or equal to its associated single largest post-accident load, and ~~:~~ ~~a.~~ ~~F~~following load rejection, the frequency is ≤ [~~63~~] 66.75 Hz ~~:~~ . ~~b. Within [3] seconds following load rejection, the voltage is ≥ [3740] V and ≤ [4580] V, and~~ ~~c. Within [3] seconds following load rejection, the frequency is ≥ [58.8] Hz and ≤ [61.2] Hz.~~	[~~18~~] 24 months	1 3 3 13

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE		FREQUENCY
SR 3.8.1.10	------------------------------NOTES------------------------------ [1. This Surveillance shall not normally be performed in MODE 1 or 2. However, this Surveillance may be performed to reestablish OPERABILITY provided an assessment determines the safety of the plant is maintained or enhanced. Credit may be taken for unplanned events that satisfy this SR. 2. If performed with the DG synchronized with offsite power, it shall be performed at a power factor ≤ [0.9]. However, if grid conditions do not permit, the power factor limit is not required to be met. Under this condition the power factor shall be maintained as close to the limit as practicable.] --- Verify each DG does not trip, and voltage is maintained ≤ [5000] V during and following a load rejection of ≥ [4500] kW and ≤ [5000] kW.	[18] months

8

CTS

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE		FREQUENCY
DOC M04 SR 3.8.1.11 E	------NOTES------ 1. All DG starts may be preceded by an engine prelube period. 2. This Surveillance shall not normally be performed in MODE 1, 2, 3, or 4. However, portions of the Surveillance may be performed to reestablish OPERABILITY provided an assessment determines the safety of the plant is maintained or enhanced. Credit may be taken for unplanned events that satisfy this SR. ------------	1
	Verify on an actual or simulated loss of offsite power signal: a. De-energization of ~~[emergency]~~ essential buses[;] ; b. Load shedding from ~~[emergency]~~ essential buses[;] ; and E c. DG auto-starts from standby condition and: 1. Energizes permanently connected loads in ≤ [10] seconds[;] ; 2. Energizes auto-connected shutdown load s through ~~[automatic load sequencer]~~ individual time delay relays [;] ; 3. Maintains steady-state voltage ≥ [3740] V 4 and ≤ ~~[4580]~~ 4400 V[;] ; 4. Maintains steady-state frequency ≥ ~~[58.8]~~ 59.5 Hz and ≤ ~~[61.2]~~ 60.5 Hz[;] ; and 5. Supplies permanently connected and auto-connected shutdown loads for ≥ 5 minutes.	~~[18]~~ 24 months 3 1 1 2 1 6 3

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SURVEILLANCE REQUIREMENTS (continued)

	SURVEILLANCE	FREQUENCY
SR 3.8.1.12	-----------------------------NOTES---------------------------- 1. All DG starts may be preceded by an engine prelube period. 2. This Surveillance shall not normally be performed in MODE 1 or 2. However, portions of the Surveillance may be performed to reestablish OPERABILITY provided an assessment determines the safety of the plant is maintained or enhanced. Credit may be taken for unplanned events that satisfy this SR. --- Verify on an actual or simulated [Engineered Safety Feature (ESF)] actuation signal each DG auto-starts from standby condition and: a. In ≤ [12] seconds after auto-start and during tests, achieves voltage ≥ [3740] V and frequency ≥ [58.8] Hz, b. Achieves steady state voltage ≥ [3740] V and≤ [4580] V and frequency ≥ [58.8] Hz and ≤ [61.2] Hz, c. Operates for ≥ 5 minutes, d. Permanently connected loads remain energized from the offsite power system, and e. Emergency loads are energized [or auto-connected through the automatic load sequencer] from the offsite power system.	[18] months] 15

CTS

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE		FREQUENCY
4.8.1.1.2.d.2.c SR 3.8.1.[13] 12	-----NOTE----- [This Surveillance shall not normally be performed in MODE 1 or 2. However, this Surveillance may be performed to reestablish OPERABILITY provided an assessment determines the safety of the plant is maintained or enhanced. Credit may be taken for unplanned events that satisfy this SR.] -----	
	E Verify each DG's noncritical automatic trips are bypassed on [actual or simulated loss of voltage signal on the essential ~~emergency~~ bus ~~concurrent with~~ or an actual or simulated ~~ESF~~ Safety Features Actuation System (SFAS) actuation signal].	[~~18~~] 24 months

15 3 1

CTS

SURVEILLANCE REQUIREMENTS (continued)

	SURVEILLANCE	FREQUENCY
4.8.1.1.2.d.3	SR 3.8.1.~~14~~ 13 -----NOTES----- 1. Momentary transients outside the load and power factor ranges do not invalidate this test. 2. This Surveillance shall not normally be performed in MODE 1 or 2. However, this Surveillance may be performed to reestablish OPERABILITY provided an assessment determines the safety of the plant is maintained or enhanced. Credit may be taken for unplanned events that satisfy this SR. 3. If part b is performed with ~~DG~~ EDG synchronized with offsite power, it shall be performed ~~at a~~ within the power factor limit ≤ [~~0~~.9]. However, if grid conditions do not permit, the power factor limit is not required to be met. Under this condition the power factor shall be maintained as close to the limit as practicable. ---------- Verify each E DG operates for ≥ ~~24~~ 8 hours: a. For ≥ ~~[2]~~ hours loaded ≥ ~~[5250]~~ 2730 kW and ≤ ~~[6000]~~ 2860 kW ~~and~~ ; b. For the remaining hours of the test loaded ≥ ~~[4500]~~ 2340 kW and ≤ ~~[5000]~~ 2600 kW.	~~[18]~~ 24 months

15 11 14 1 16 2 3

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CTS

SURVEILLANCE REQUIREMENTS (continued)

	SURVEILLANCE	FREQUENCY
DOC M04 SR 3.8.1.15 14	----------NOTES---------- 1. This Surveillance shall be performed within 5 minutes of shutting down the DG after the DG has operated ≥ [2] hours loaded ≥ [4500] kW and ≤ [5000] kW. 1 2600 2340 Momentary transients outside of load range do not invalidate this test. E 2. All DG starts may be preceded by an engine prelube period. ----------------------------------	15 1 3 1
	E Verify each DG starts and achieves: a. In ≤ [10] seconds, voltage ≥ [3740] V and frequency ≥ [58.8] Hz and 4031 ; 4 b. Steady state voltage ≥ [3740] V and ≤ [4580] V, and frequency ≥ [58.8] Hz and ≤ [61.2] Hz. 4400 59.5 60.5	[18] months 24 1 2 3
SR 3.8.1.16	----------NOTE---------- ~~This Surveillance shall not normally be performed in MODE 1, 2, 3, or 4. However, this Surveillance may be performed to reestablish OPERABILITY provided an assessment determines the safety of the plant is maintained or enhanced. Credit may be taken for unplanned events that satisfy this SR.~~ ---------------------------------- ~~Verify each DG:~~ ~~a. Synchronizes with offsite power source while loaded with emergency loads upon a simulated restoration of offsite power,~~ ~~b. Transfers loads to offsite power source, and~~ ~~c. Returns to ready-to-load operation.~~	~~[18] months~~ 17

CTS

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE		FREQUENCY	
SR 3.8.1.17	----------NOTE---------- [This Surveillance shall not normally be performed in MODE 1, 2, or 3. However, portions of the Surveillance may be performed to reestablish OPERABILITY provided an assessment determines the safety of the plant is maintained or enhanced. Credit may be taken for unplanned events that satisfy this SR. -------------------- Verify, with a DG operating in test mode and connected to its bus, an actual or simulated ESF actuation signal overrides the test mode by: a. Returning DG to ready-to-load operation and [b. Automatically energizing the emergency load from offsite power.]	[18] months]	18
4.8.1.1.2.a.7 SR 3.8.1.~~18~~ 6	----------NOTE---------- [This Surveillance shall not normally be performed in MODE 1, 2, 3, or 4. However, this Surveillance may be performed to reestablish OPERABILITY provided an assessment determines the safety of the plant is maintained or enhanced. Credit may be taken for unplanned events that satisfy this SR.] -------------------- Verify interval between each sequenced load block is within ± [10% of design interval] for each emergency ~~[and shutdown]~~ load sequencer and each emergency time delay relay.	~~[18] months~~ 31 days	10 9 10 3

Move to after SR 3.8.1.5 on Page 3.8.1-6

CTS

SURVEILLANCE REQUIREMENTS (continued)

	SURVEILLANCE	FREQUENCY	
4.8.1.1.d.2.a, 4.8.1.1.d.2.b	SR 3.8.1.[19] 15 E -----NOTES----- 1. All DG starts may be preceded by an engine prelube period. 2. This Surveillance shall not normally be performed in MODE 1, 2, 3, or 4. However, portions of the Surveillance may be performed to reestablish OPERABILITY provided an assessment determines the safety of the plant is maintained or enhanced. Credit may be taken for unplanned events that satisfy this SR. -----		15 1
	Verify on an actual or simulated loss of offsite power signal in conjunction with an actual or simulated ~~ESF~~ SFAS actuation signal:	[18] months 24	3 1
	a. De-energization of ~~emergency~~ essential buses ;		1 2
	b. Load shedding from ~~emergency~~ essential buses ;		2
	E c. DG auto-starts from standby condition and:		1
	1. Energizes permanently connected loads in ≤ [10] seconds ;		2
	2. Energizes auto-connected emergency loads through [load sequencer] and individual time delay relays ;		2
	3. Achieves steady-state voltage ≥ [374~~0~~]4 V and ≤ ~~[4580]~~ 4400 V ;		3 2
	4. Achieves steady-state frequency ≥ ~~[58.8]~~ 59.5 Hz and ≤ ~~[61.2]~~ 60.5 Hz ; and		2
	5. Supplies permanently connected and auto-connected emergency loads for ≥ [5] minutes.		

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE		FREQUENCY
SR 3.8.1.20	-------------------NOTE------------------- All DG starts may be preceded by an engine prelube period. -- Verify, when started simultaneously from standby condition, each DG achieves, in ≤ [10] seconds, voltage ≥ [3740] V and ≤ [4580] V, and frequency ≥ [58.8] Hz and ≤ [61.2] Hz.	10 years

19

JUSTIFICATION FOR DEVIATIONS
ITS 3.8.1, AC SOURCES - OPERATING

1. Changes are made (additions, deletions, and/or changes) to the ISTS that reflect the plant specific nomenclature.

2. These punctuation corrections have been made consistent with the Writer's Guide for the Improved Standard Technical Specifications, TSTF-GG-05-01, Section 5.1.3.

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

4. ISTS 3.8.1 Required Action B.4 Completion Time has been changed to reflect the current Davis Besse licensing bases duration for returning the EDG to OPERABLE status when one EDG is inoperable. The 7 day Completion Time was approved by the NRC as documented in the Safety Evaluation for Amendment 206, dated February 26, 1996.

5. The Reviewer's Note has been deleted. This information is for the NRC reviewer to be keyed in to what is needed to meet this requirement. This is not meant to be retained in the final version of the plant specific submittal.

6. Typographical error.

7. ISTS 3.8.1 ACTION F (ITS 3.8.1 ACTION G) has been modified consistent with the Davis Besse current licensing basis. The Davis-Besse design includes two load sequencers per train. CTS Table 3.3-3 Action 15a provides the Actions for when one load sequencer per bus is inoperable and requires the sequencer be removed within 1 hour. This Action is taken on a per bus basis. CTS Table 3.3-3 Action 15b provides the Actions when both load sequencers for a bus are inoperable and requires immediately declaring the associated EDG inoperable. This Action is reflected in proposed ITS 3.8.1 ACTION H and is also taken on a per bus basis. These Actions were approved by the NRC as documented in the Safety Evaluation for Amendment 211, dated April 23, 1996. Due to this change, ISTS 3.8.1 ACTION G, which provides the default actions for ITS 3.8.1 ACTIONS A, B, C, D, and E, but not the two load sequencer ACTIONS, has been changed to ITS 3.8.1 ACTION F to follow the ACTIONS to which it applies.

8. As stated in the ISTS SR 3.8.1.10 Bases, ISTS SR 3.8.1.10 is based upon the recommendations of Regulatory Guide 1.108. Davis-Besse has not committed to fully implement this Regulatory Guide, but has used its guidance where appropriate consistent with the Davis-Besse design and licensing basis, and the recommendations of the EDG manufacturer for testing of the Davis-Besse EDGs. ISTS SR 3.8.1.10 has not been included in the Davis-Besse ITS since it is not consistent with current testing practices for the EDGs and tests a design feature (EDG capability to reject a full load without overspeed tripping or exceeding the predetermined voltage limits) that is not credited in the Davis-Besse accident analysis. No postulated design basis event results in a full load rejection, and the potential consequences of any postulated single active component failure or single operator failure (such as tripping open the EDG output circuit breaker) that results in full load rejection, are bounded by the potential consequences that would result from an immediate failure of the EDG subsystem itself. Furthermore, if the EDG rejects the full load, operator action would be required to re-establish these loads, regardless of whether or not the EDG overspeeds. Since the accident analysis

JUSTIFICATION FOR DEVIATIONS
ITS 3.8.1, AC SOURCES - OPERATING

assumes no operator actions associated with ECCS take place in the first 10 minutes following an accident, verification of this design feature does not materially contribute to the demonstration of EDG OPERABILITY.

9. ISTS SR 3.8.1.18 Note has been deleted. The frequency of the ISTS 3.8.1.18 has been changed from 18 months to 31 days. Therefore, the Note does not apply.

10. ISTS SR 3.8.1.18 Frequency has been changed to 31 days to match the current Davis Besse licensing basis. Additionally, the Surveillance has been renumbered to ITS SR 3.8.1.6 to reflect the proper place where the 31 day Surveillance Frequency should be. Also, subsequent SRs have been renumbered, as necessary, to reflect the numbering change.

11. Editorial error corrected.

12. Typographical error corrected. The standard time to reach MODE 3 is 6 hours, not 12 hours.

13. The ISTS SR 3.8.1.9.b and c limits imposed on return to steady state frequency and voltage following a single load rejection are not presented as specific TS requirements in ITS SR 3.8.1.10. The specific criteria referenced would not be appropriate for certain methods of performing this test, e.g., if performed while the EDG was loaded only with the single largest load. Furthermore, the Davis-Besse EDGs were designed to meet Safety Guide 9, dated March 10, 1971. This NRC Safety Guide did not include these criteria. In addition, due to this deletion, the load reject maximum frequency requirement has been made part of the first paragraph, instead of leaving it as part a. This change was previously approved in the ITS conversion for the James A. FitzPatrick Nuclear Power Plant and the Monticello Nuclear Generating Plant.

14. ISTS SR 3.8.1.9 (ITS SR 3.8.1.10) requires the load rejection of the single largest post-accident load for each EDG while ISTS SR 3.8.1.14 (ITS SR 3.8.1.13) requires an endurance and load test for each EDG. The endurance and load test is performed at two different load ranges; part a is performed between 105% and 110% of the continuous rating and part b is performed between 90% and 100% of the continuous rating. Note 2 of ISTS SR 3.8.1.9 and Note 3 ISTS SR 3.8.1.14 require the testing to be performed at a specific power factor value. Note 2 to ISTS SR 3.8.1.9 (Note 2 to ITS SR 3.8.1.10) has been modified to only require testing "within the power factor limit" and Note 3 to ISTS SR 3.8.1.14 (ITS SR 3.8.1.13) has been modified to only require testing "within the power factor limit" during the load ranges required in part b of the SR (i.e., 90% to 100% of the continuous rating). Currently, neither ISTS SR 3.8.1.9 nor ISTS SR 3.8.1.14 are required in the CTS, and there are no power factor limit requirements in the CTS. The ITS will include the requirement to test at a power factor limit (Note 2 to SR 3.8.1.10 and Note 3 to SR 3.8.1.13), but it will not specify a specific power factor value (e.g., 0.9) in the Notes to the Surveillances. The specific power factor value is included in the ITS Bases for the two Surveillances and will therefore be controlled under ITS 5.5.13, the Technical Specifications Bases Control Program. This program provides for the evaluation of changes to ensure the Bases are properly controlled. Several plants that have converted to the ITS did not include a specific power factor value in the ITS. This type of change was previously approved in the ITS conversion for

JUSTIFICATION FOR DEVIATIONS
ITS 3.8.1, AC SOURCES - OPERATING

Monticello Nuclear Generating Plant, James A. FitzPatrick Nuclear Power Plant, Quad Cities Unit 1 and 2, Dresden Units 1 and 2, and LaSalle Units 1 and 2. In addition, testing at a power factor limit has not been included for part a of ITS SR 3.8.1.10. During EDG testing at a load equivalent to 105% to 110% of the EDG continuous rating the power factor limit does not have to be met since this part of the test is testing the EDGs at a load in excess of that assumed in the accident analysis.

15. ISTS SR 3.8.1.12 requires verification of proper performance of the offsite circuits and the EDGs on an actual or simulated engineered safety feature (ESF) actuation signal. This Surveillance has not been adopted in the Davis-Besse ITS. ISTS SR 3.8.1.19, the SFAS/loss of offsite power Surveillance (ITS SR 3.8.1.15), verifies each aspect of the requirements specified in ISTS SR 3.8.1.12 at a 24 month Frequency. Thus, there is no need to periodically perform this SR to demonstrate the proper operation of the offsite circuits and EDGs on a Safety Features Actuation System (SFAS) actuation signal. When only an SFAS actuation signal is present, the Emergency Core Cooling Systems (ECCS) loads start immediately and the essential buses are not de-energized. These ECCS pump starts are adequately tested in the various Surveillances for the individual pumps and the SFAS logic is adequately tested as part of the SFAS instrumentation Specifications. This is also consistent with the current licensing basis, since this Surveillance is not included in the CTS. Subsequent Surveillances have been renumbered, as applicable.

16. ISTS SR 3.8.1.14 requires each EDG to operate for ≥ 24 hours. ITS SR 3.8.1.13 requires each EDG to operate for ≥ 8 hours. The 8 hour duration for this test is considered sufficient to demonstrate EDG OPERABILITY. This change is based on the requirements of IEEE Standard 387-1995, "IEEE Standard Criteria for Diesel Generator Units Applied as Standby Power Supplies for Nuclear Power Generating Stations." IEEE Standard 387-1995, Section 7.5.9 and Table 3 for the endurance and load test conducted during shutdown/refueling once every two years, state to demonstrate the load carrying capability for an interval of not less than 8 hours, of which 2 hours should be at a load equivalent to the short time rating of the diesel generator and 6 hours at a load equivalent to the 90%-100% of the continuous rating.

17. ISTS SR 3.8.1.16 requires each EDG to be synchronized with offsite power while loaded with the emergency loads upon a simulated restoration of offsite power and to transfer the loads to the offsite power source. The Davis-Besse design of the EDGs is such that when an emergency start signal is received by the EDGs, the EDG governor cannot be shifted back to the droop mode until the EDG is secured. Thus, this Surveillance would require Davis-Besse to synchronize the EDG to the offsite source with no droop set into the EDG governor. Any perturbation in voltage or frequency during this time could result in an overpower or reverse power event of the EDG, and could potentially damage the EDG. Therefore, this Surveillance is not being adopted by Davis-Besse, consistent with current licensing basis.

18. ISTS SR 3.8.1.17 is not included in the Davis-Besse ITS since this feature was not included in the Davis-Besse design. This SR demonstrates that with an EDG operating in the test mode and connected to its bus, an ESF actuation signal overrides the test mode and returns the EDG to ready-to-load operation. At Davis-Besse, with an EDG connected to its bus, if an SFAS actuation signal were

JUSTIFICATION FOR DEVIATIONS
ITS 3.8.1, AC SOURCES - OPERATING

received, the EDG would stay connected to its bus. Furthermore, the EDGs do not perform any safety-related function for a LOCA-only event since the offsite circuits remain available. Therefore, this SR is not applicable.

19. ISTS SR 3.8.1.20 is not included in the Davis-Besse ITS. This SR is intended to periodically verify acceptable electrical and physical independence of the EDGs and associated electrical distribution systems. Adequate independence (both electrical and physical) of the EDGs and associated electrical distribution systems was a requirement (and has been established in) the original plant design. Furthermore, existing maintenance practices and configuration control practices are judged to be sufficient to ensure continued acceptable separation and independence. Thus, there is no need to periodically perform this SR to demonstrate continued acceptable independence or simultaneous start capability. This is also consistent with the current licensing basis.

20. ISTS SR 3.8.1.8 (ITS SR 3.8.1.9) has been revised to include two parts consisting of: a) an automatic and manual transfer from the unit auxiliary source (i.e., main generator) to the pre-selected offsite circuit; and b) an automatic and manual transfer from the normal offsite circuit to the alternate offsite circuit. These changes were made consistent with the manner in which the CTS Surveillance is performed. However, a Note has also been added to ISTS SR 3.8.1.8 (ITS SR 3.8.1.9) that states SR 3.8.1.9.a is only required to be met when the unit auxiliary source is supplying the electrical power distribution subsystem. This change is necessary since the automatic and manual transfer from the unit auxiliary source to the pre-selected offsite circuit is not necessary when the offsite circuit is supplying onsite power. In this situation, the offsite circuit is performing its function by supplying the onsite power. Also, due to the Note addition, the remaining Note has been renumbered. Furthermore, since the unit auxiliary source is normally placed in service when in MODE 1, the Note restriction has only been applied to the transfer from the normal offsite circuit to the alternate offsite circuit.

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Improved Standard Technical Specifications (ISTS) Bases Markup and Justification for Deviations (JFDs)

All changes are 1 unless otherwise noted

B 3.8 ELECTRICAL POWER SYSTEMS

B 3.8.1 AC Sources - Operating

BASES

BACKGROUND

The unit Class 1E AC Electrical Power Distribution System AC sources consist of the offsite power sources (preferred power sources, normal and alternate(s)) and the onsite standby power sources (Train A and Train B diesel generators (DGs)). As required by 10 CFR 50, Appendix A, GDC 17 (Ref. 1), the design of the AC electrical power system provides independence and redundancy to ensure an available source of power to the Engineered Safety Feature (ESF) systems.

The onsite Class 1E AC Distribution System is divided into redundant load groups (trains) so that the loss of any one group does not prevent the minimum safety functions from being performed. Each train has connections to two preferred offsite power sources and a single DG.

Offsite power is supplied to the unit switchyard(s) from the transmission network by [two] transmission lines. From the switchyard(s), two electrically and physically separated circuits provide AC power, through [step down station auxiliary transformers], to the 4.16 kV ESF buses. A detailed description of the offsite power network and the circuits to the Class 1E ESF buses is found in the FSAR, Chapter [8] (Ref. 2).

An offsite circuit consists of all breakers, transformers, switches, interrupting devices, cabling, and controls required to transmit power from the offsite transmission network to the onsite Class 1E ESF bus(es). Certain required unit loads are returned to service in a predetermined sequence in order to prevent overloading the transformer supplying offsite power to the onsite Class 1E Distribution System. Within [1 minute] after the initiating signal is received, all automatic and permanently connected loads needed to recover the unit or maintain it in a safe condition are returned to service via the load sequencer.

The onsite standby power source for each 4.16 kV ESF bus is a dedicated DG. DGs [11] and [12] are dedicated to ESF buses [11] and [12], respectively. A DG starts automatically on a Reactor Coolant System (RCS) pressure signal or on an [ESF bus degraded voltage or undervoltage signal] (refer to LCO 3.3.5, "Engineered Safety Feature Actuation System (ESFAS) Instrumentation" [] and LCO 3.3.8, "Emergency Diesel Generator (EDG) Loss of Power Start (LOPS)"]). After the DG has started, it will automatically tie to its respective bus after offsite power is tripped as a consequence of ESF bus undervoltage or degraded

2 INSERT 1

345 kV substations at Bay Shore, Lemoyne, and Ohio Edison – Beaver substations. During normal operation of the station, the unit auxiliary power transformer, connected to the generator isolated phase bus, provides the normal source of electrical power for station auxiliaries.

Two startup transformers are supplied from different 345 kV switchyard bus sections. Each startup transformer provides power for startup, shutdown, and post-shutdown requirements. Normally, each startup transformer is the reserve power source for one 13.8 kV bus. In event of failure of the unit auxiliary transformer supply, each 13.8 kV bus is provided with a fast transfer scheme that will automatically transfer to the pre-selected startup transformer. When power is being supplied to a 13.8 kV bus by a startup transformer, the fast transfer scheme will automatically transfer to the alternate startup transformer (if pre-selected). Reserve source selector switches are provided to pre-select the alignment.

Power supply to the 4.16 kV system is from two bus tie transformers. Each bus tie transformer normally supplies one essential and one non-essential 4.16 kV bus and is available as a reserve source for the other two 4.16 kV buses. Each essential 4.16 kV bus is provided with a fast transfer scheme that will transfer the bus from the normal source to an alternate source of power.

Two 4.16 kV essential buses, C1 and D1, provide power to ESF equipment for safe station shutdown.

All changes are 1 unless otherwise noted

BASES

BACKGROUND (continued)

an SFAS Incident Level 2 actuation

voltage, independent of or coincident with [a safety injection (SI)] signal. The E DGs will also start and operate in the standby mode without tying to the [ESF] essential bus on an [SI signal] SFAS Incident Level 2 actuation alone. 3 Following the trip of offsite power, [a sequencer/]an undervoltage signal [/] strips nonpermanent loads from the [ESF] essential bus. 2 When the E DG is tied to the [ESF] essential bus, loads are then sequentially connected to its respective [ESF] essential bus by the automatic load sequencer or individual time delay relays, as applicable. The sequencing logic and individual time delay relays control[s] the permissive and starting signals to motor breakers to prevent overloading the E DG by automatic load application.

essential 2

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

Certain required unit loads are returned to service in a predetermined sequence in order to prevent overloading the E DG in the process. Within [1] ~~minute~~ 35 seconds after the initiating signal is received, all loads needed to recover the unit or maintain it in a safe condition are returned to service.

EDG 1 EDG 2 are consistent with

Ratings for [~~Train A~~] and [~~Train B DGs~~] [~~satisfy~~] the requirements of Regulatory Guide 1.9 (Ref. 3). The continuous service rating of each E DG is [~~7000~~] 2600 kW with [1 0]% overload permissible for up to 2 hours in any 24 hour period. 3 The ESF loads that are powered from the 4.16 kV [~~ESF~~] essential buses are listed in Reference 2. INSERT 1A 1

APPLICABLE SAFETY ANALYSES

The initial conditions of DBA and transient analyses in the U FSAR, [~~Chapter~~] Section [6] (Ref. 4) and [~~Chapter~~] Section [15] (Ref. 5), assume ESF ~~s~~ystems are OPERABLE. 7 3 The AC electrical power sources are designed to provide sufficient capacity, capability, redundancy, and reliability to ensure the availability of necessary power to ESF ~~s~~ystems so that the fuel, RCS, and containment design limits are not exceeded. 7 These limits are discussed in more detail in the Bases for Section 3.2, Power Distribution Limits; Section 3.4, Reactor Coolant System (RCS); and Section 3.6, Containment Systems.

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

1 **INSERT 1A**

Each EDG has its own day tank and fuel oil transfer system. The fuel oil transfer system, which includes one transfer pump, is capable of transferring fuel oil from the associated fuel oil storage tank to the day tank. Each transfer pump is capable of maintaining the level in the day tank when the associated EDG is operating a full load.

BASES

APPLICABLE SAFETY ANALYSES (continued)

a. An assumed loss of all offsite power or all onsite AC power, and ; 4

b. A worst-case single failure.

- Operating ies

The AC ~~sources~~ satisf~~y~~ Criterion 3 of 10 CFR 50.36(c)(2)(ii). 2

LCO

Two qualified circuits between the offsite transmission network and the onsite Class 1E Electrical Power Distribution System and separate and independent E DGs for each train ensure availability of the required power to shut down the reactor and maintain it in a safe shutdown condition after an anticipated operational occurrence (AOO) or a postulated DBA.

~~Qualified offsite circuits are those that are described in the FSAR and are part of the licensing basis for the unit.~~ 11

Move to Page B 3.8.1-4, after first paragraph

two

[In addition, ~~one required automatic~~ load sequencer s per train must be OPERABLE.] 3

Each offsite circuit must be capable of maintaining rated frequency and voltage, and accepting required loads during an accident, while connected to the ~~ESF~~ essential buses. 2

~~[Offsite circuit #1 consists of Safeguards Transformer B, which is supplied from Switchyard Bus B, and is fed through breaker 52-3 powering the ESF transformer XNB01, which, in turn, powers the #1 ESF bus through its normal feeder breaker. Offsite circuit #2 consists of the Startup Transformer, which is normally fed from the Switchyard Bus A, and is fed through breaker PA 0201 powering the ESF transformer, which, in turn, powers the #2 ESF bus through its normal feeder breaker.]~~ INSERT 2

Each E DG must be capable of starting, accelerating to rated speed and voltage, and connecting to its respective ~~ESF~~ essential bus on detection of bus undervoltage. This will be accomplished within [10] seconds. Each E DG must also be capable of accepting required loads within the assumed ~~loading sequence intervals~~ times, and continue to operate until offsite power can be restored to the ~~ESF~~ essential buses. These capabilities are required to be met from a variety of initial conditions, such as E DG in standby with the engine hot and E DG in standby with the engine at ambient conditions. Additional E DG capabilities must be demonstrated to meet required Surveillances, e.g., capability of the E DG to ~~revert to standby status on an ECCS signal while operating in parallel test mode~~ reject the single largest load. INSERT 2A 3 1 10

3 **INSERT 2**

A qualified offsite to onsite circuit consists of one 345 – 13.8 kV startup transformer, one 13.8 kV bus, one 13.8 – 4.16 kV tie transformer, and the respective circuit paths, including the nonessential bus and feeder breakers, to one 4.16 kV essential bus. Furthermore, analysis has shown that the impedances of the 345 – 13.8 kV startup transformers and the 13.8 – 4.16 kV tie transformers are such that acceptable voltage levels cannot be guaranteed for all accident scenarios and the entire station emergency loads (i.e., the essential buses) being simultaneously supplied through a single 345 – 13.8 kV startup transformer and a single 13.8 – 4.16 kV tie transformer. Thus, if both essential buses are being powered in this manner, both offsite circuits are inoperable.

In addition, in MODES 3 and 4, in lieu of one of the 345 – 13.8kV startup transformers, one main transformer and one unit auxiliary transformer with the generator links removed (i.e., a backfeed alignment) may be used.

1 **INSERT 2A**

In addition, day tank fuel oil level and fuel oil transfer system requirements must be met for each EDG.

All changes are 1 unless otherwise noted

BASES

LCO (continued)

(which include all required individual time delay relays)

E

Insert paragraph from Page B 3.8.1-3

Proper sequencing of loads, [including tripping of non-essential loads,] is a required function for DG OPERABILITY. 3

The AC sources in one train must be separate and independent (to the extent possible) of the AC sources in the other train. For the DGs, separation and independence are complete. E

An offsite

For the offsite AC sources, 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.] 2 2 3

essential

one

essential

APPLICABILITY

The reserve source selector switches are used to ensure this capability is available. Therefore, if both reserve source selector switches are selected to the same offsite circuit (i.e., the same startup transformer), the non-selected offsite circuit is inoperable.

load

The AC sources [and sequencers] are required to be OPERABLE in MODES 1, 2, 3, and 4 to ensure that: 3

a. Acceptable fuel design limits and reactor coolant pressure boundary limits are not exceeded as a result of AOOs or abnormal transients, and ; 4

b. Adequate core cooling is provided and containment OPERABILITY and other ~~vital~~ functions are maintained in the event of a postulated DBA. 2

safety

The AC power requirements for MODES 5 and 6 are covered in LCO 3.8.2, "AC Sources - Shutdown." and other conditions in which AC sources are required 2

ACTIONS

A Note prohibits the application of LCO 3.0.4.b to an inoperable DG. There is an increased risk associated with entering a MODE or other specified condition in the Applicability with an inoperable DG and the provisions of LCO 3.0.4.b, which allow entry into a MODE or other specified condition in the Applicability with the LCO not met after performance of a risk assessment addressing inoperable systems and components, should not be applied in this circumstance. E E

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All changes are 1 unless otherwise noted

BASES

ACTIONS (continued)

A.1

To ensure a highly reliable power source remains with one offsite circuit inoperable, it is necessary to verify the OPERABILITY 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.

~~-----REVIEWER'S NOTE-----
The turbine driven auxiliary feedwater pump is only required to be considered a redundant required feature, and, therefore, required to be determined OPERABLE by this Required Action, if the design is such that the remaining OPERABLE motor or turbine driven auxiliary feedwater pump(s) is not by itself capable (without any reliance on the motor driven auxiliary feedwater pump powered by the emergency bus associated with the inoperable diesel generator) of providing 100% of the auxiliary feedwater flow assumed in the safety analysis.~~ 5

A.2

Required Action A.2, which only applies if the train cannot be powered from an offsite source, is intended to provide assurance that an event coincident with a single failure of the associated E DG will not result in a complete loss of safety function of critical redundant required features. These features are powered from the redundant AC electrical power train. ~~This includes motor driven emergency feedwater pumps. Single train systems, such as turbine driven emergency feedwater pumps, may not be included.~~ 2

These redundant required features are those assumed to function to mitigate an accident, coincident with a loss of offsite power, in the safety analyses, such as the Emergency Core Cooling System. These redundant required features do not include monitoring requirements, such as post accident monitoring instrumentation and remote shutdown monitoring instrumentation. 12

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

a. The train has no offsite power supplying it s loads ; and 7 3

b. A redundant required feature on the other train is inoperable. 2

All changes are 1 unless otherwise noted

BASES

ACTIONS (continued)

If at any time during the existence of Condition A (one offsite circuit inoperable) a redundant required feature subsequently becomes inoperable, this Completion Time begins to be tracked~~,~~ . 7

Discovering no offsite power to one train of the onsite Class 1E Electrical Power Distribution System coincident with one or more inoperable redundant required support or supported features, or both, that are associated with the other train that has offsite power, results in starting the Completion Time~~s~~ for the Required Action. Twenty-four hours is acceptable because it minimizes risk while allowing time for restoration before subjecting the unit to transients associated with shutdown. 2

The remaining OPERABLE offsite circuit and E DGs are adequate to supply electrical power to essential bus C1 ~~Train A~~ and essential bus D1 ~~Train B~~ of the onsite Class 1E Distribution System. 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. 2 2

A.3

Consistent with ~~According to~~ Regulatory Guide 1.93 (Ref. 6), operation may continue in Condition A for a period that should not exceed 72 hours. With one offsite circuit inoperable, the 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 unit safety systems. In this Condition, however, the remaining OPERABLE offsite circuit and E DGs are adequate to supply electrical power to the onsite Class 1E Distribution System. 2

The 72 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.

B.1

To ensure a highly reliable power source remains with an inoperable E DG, it is necessary to verify the availability of the 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 an offsite ~~a~~ circuit fails to pass SR 3.8.1.1, it is inoperable. Upon offsite circuit inoperability, additional Conditions and Required Actions must then be entered. 2

All changes are 1 unless otherwise noted

BASES

ACTIONS (continued)

~~-----REVIEWER'S NOTE-----~~
~~The turbine driven auxiliary feedwater pump is only required to be considered a redundant required feature, and, therefore, required to be determined OPERABLE by this Required Action, if the design is such that the remaining OPERABLE motor or turbine driven auxiliary feedwater pump(s) is not by itself capable (without any reliance on the motor driven auxiliary feedwater pump powered by the emergency bus associated with the inoperable diesel generator) of providing 100% of the auxiliary feedwater flow assumed in the safety analysis.~~ 5

B.2

Required Action B.2 is intended to provide assurance that a loss of offsite power, during the period that a n E DG is inoperable, does not result in a complete loss of safety function of critical ~~systems. These features are designed with~~ redundant required features ~~redundant safety related trains.~~ ~~This includes motor driven emergency feedwater pumps. Single train systems, such as turbine driven emergency feedwater pumps, are not included.~~ Redundant required feature failures consist of inoperable features associated with a train, redundant to the train that has an inoperable E DG. 12 2

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

a. An inoperable E DG exists ; ~~and~~ 3

b. A redundant required feature on the other train is inoperable. 2

If at any time during the existence of this ~~C~~ condition (one E DG inoperable) a required feature subsequently becomes inoperable, this Completion Time begins to be tracked. 7

Discovering one ~~required~~ E DG inoperable coincident with one or more inoperable redundant required support or supported features, or both, that are associated with the OPERABLE E DG, 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. 2

All changes are 1 unless otherwise noted

BASES

ACTIONS (continued)

E

In this Condition, the remaining OPERABLE DG 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 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, a reasonable time for repairs, and the low probability of a DBA occurring during this period.

B.3.1 and B.3.2

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

E

In the event the inoperable DG is restored to OPERABLE status prior to completing either B.3.1 or B.3.2, the [plant corrective action program] will continue to evaluate the common cause possibility. This continued evaluation, however, is no longer under the 24 hour constraint imposed while in Condition B. 3

E According to Generic Letter 84-15 (Ref. 7), [24] hours is reasonable to confirm that the OPERABLE DG(s) is not affected by the same problem as the inoperable DG. 2

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All changes are 1 unless otherwise noted

BASES

ACTIONS (continued)

B.4

According to Regulatory Guide 1.93 (Ref. 6), operation may continue in Condition B for a period that should not exceed 72 hours. 2

In Condition B, the remaining OPERABLE E DG and offsite circuits are adequate to supply electrical power to the onsite Class 1E Distribution System. The ~~72 hour~~ 7 day Completion Time takes into account the capacity and capability of the remaining AC sources, a reasonable time for repairs, and the low probability of a DBA occurring during this period. The 7 day Completion Time is also acceptable as described in Reference 8. 2

C.1 and C.2

Required Action C.1, which applies when two offsite circuits are inoperable, is intended to provide assurance that an event with a coincident single failure will not result in a complete loss of redundant required ~~safety functions~~ features. These redundant required features are those assumed to function to mitigate an accident, coincident with a loss of offsite power, in the safety analyses, such as the Emergency Core Cooling System. These redundant required features do not include monitoring requirements, such as post accident monitoring instrumentation and remote shutdown monitoring instrumentation. The Completion Time for this failure of redundant required features is reduced to 12 hours from that allowed for one train without offsite power (Required Action A.2). The rationale for the reduction to 12 hours is that Regulatory Guide 1.93 (Ref. 6) allows a Completion Time of 24 hours for two required offsite circuits inoperable, based upon the assumption that two complete safety trains are OPERABLE. When a concurrent redundant required feature failure exists, this assumption is not the case, and a shorter Completion Time of 12 hours is appropriate. 12 These features are powered from redundant AC safety trains. ~~This includes motor driven auxiliary feedwater pumps. Single train features, such as turbine driven auxiliary pumps, are not included in the list.~~ 2

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

a. All required offsite circuits are inoperable; and 3

b. A redundant required feature is inoperable. 2

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

All changes are 1 unless otherwise noted

BASES

ACTIONS (continued)

According to Regulatory Guide 1.93 (Ref. 6), operation may continue in Condition C for a period that should not exceed 24 hours. This level of degradation means that the offsite electrical power system does not have the capability to effect a safe shutdown and to mitigate the effects of an accident; however, the onsite AC sources have not been degraded. This level of degradation generally corresponds to a total loss of the immediately accessible offsite power sources.

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

a. The configuration of the redundant AC electrical power system that remains available is not susceptible to a single bus or switching failure ; and 3

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

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

According to Regulatory Guide 1.93 (Ref. ~~Reference~~ 6), with the available offsite AC sources, two less than required by the LCO, operation may continue for 24 hours. If two offsite sources are restored within 24 hours, unrestricted operation may continue. If only one offsite source is restored within 24 hours, power operation would continue in accordance with Condition A. 8

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All changes are 1 unless otherwise noted

BASES

ACTIONS (continued)

D.1 and D.2

s - Operating 9

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 train, the Conditions and Required Actions for LCO 3.8.9, "Distribution Systems - Operating," must be immediately entered. This allows Condition D to provide requirements for the loss of one offsite circuit and one DG without regard to whether a train is de-energized. LCO 3.8.9 provides the appropriate restrictions for a de-energized train. E

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

both E

With Train A ~~and~~ Train B DGs inoperable, there are no remaining standby AC sources. Thus, with an assumed loss of offsite electrical power, insufficient standby AC sources are available to power the minimum required ESF functions. Since the offsite electrical power system is the only source of AC power for 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 generator trip could also result in a total loss of offsite AC power, however, the time allowed for continued operation is severely restricted. The intent here is to avoid the risk associated with an immediate controlled shutdown and to minimize the risk associated with this level of degradation.

All changes are 1 unless otherwise noted

BASES

ACTIONS (continued) 8

Regulatory Guide 1.93. (Ref.) E

According to ~~Reference 6~~, with both DGs inoperable, operation may continue for a period that should not exceed 2 hours.

G

[~~F~~.1 10

~~The sequencer(s) is an essential support system to [both the offsite circuit and the DG associated with a given ESF bus]. [Furthermore, the sequencer is on the primary success path for most major AC electrically powered safety systems powered from the associated ESF bus.] Therefore, loss of an [ESF bus sequencer] affects every major ESF system in the [division]. The [12] hour Completion Time provides a period of time to correct the problem commensurate with the importance of maintaining sequencer OPERABILITY. This time period also ensures that the probability of an accident (requiring sequencer OPERABILITY) occurring during periods when the sequencer is inoperable is minimal.~~ 3

INSERT 3

~~This Condition is preceded by a Note that allows the Condition to be deleted if the unit design is such that any sequencer failure mode will only affect the ability of the associated DG to power its respective safety loads under any conditions. Implicit in this Note is the concept that the Condition must be retained if any sequencer failure mode results in the inability to start all or part of the safety loads when required, regardless of power availability, or results in overloading the offsite power circuit to a safety bus during an event thereby causing its failure. Also implicit in the Note is that the Condition is not applicable to any train that does not have a sequencer.]~~

F

~~G~~.1 and ~~G~~.2 10

If the inoperable AC electrical power sources 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 6 hours and to MODE 5 within 36 hours. The allowed Completion Times are reasonable, based on operating experience, to reach the required unit conditions from full power conditions in an orderly manner and without challenging plant systems.

3 **INSERT 3**

One of the SFAS actions during an Incident Level 2 is to start the EDG. In the event of a loss of offsite power concurrent with an SFAS trip, the SFAS sequencer will apply emergency loads to the essential bus in accordance with the sequencer load program. Each SFAS actuation channel has two sequencer modules.

With one or more trains with one sequencer inoperable, the 1 hour Completion Time provides a period of time to remove the inoperable module from the SFAS cabinet. As noted, since each train is independent from the other train, separate Condition entry is allowed for inoperable sequencers in each train.

H.1

With one or more trains with two sequencers inoperable, the EDG cannot be loaded in the proper sequence and therefore, cannot meet its safety function. Therefore, the EDG must be immediately declared inoperable. As noted, since each train is independent from the other train, separate Condition entry is allowed for inoperable sequencers in each train.

All changes are 1 unless otherwise noted

BASES

ACTIONS (continued)

I

~~H~~.1 10

I

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

SURVEILLANCE REQUIREMENTS

The AC sources are designed to permit inspection and testing of all important areas and features, especially those that have a standby function, in accordance with ~~10 CFR 50, Appendix A, GDC 18~~ UFSAR, Section 8 (Ref. ~~8~~ 9). Periodic component tests are supplemented by extensive functional tests during refueling outages (under simulated accident conditions). The SRs for demonstrating the OPERABILITY of the E DGs are ~~in accordance~~ consistent with the recommendations of Regulatory Guide 1.9 (Ref. 3)~~, Regulatory Guide 1.108 (Ref. 9),~~ and Regulatory Guide 1.137 (Ref. 10)~~, as addressed in the FSAR~~.

Where the SRs discussed herein specify voltage and frequency tolerances, the following is applicable. The minimum steady state output voltage of ~~[3740]~~ 3744 V is 90% of the nominal 4160 V output voltage~~. This value, which is specified in ANSI C84.1 (Ref. 11), allows for voltage drop to the terminals of 4000 V motors whose minimum operating voltage is specified as 90% or 3600 V. It also allows for voltage drops to motors and other equipment down through the 120 V level where minimum operating voltage is also usually specified as 90% of name plate rating.~~ , and is consistent with Safety Guide 9 (Ref. 11). The specified maximum steady state output voltage of ~~[4756]~~ 4400 V is equal to the maximum operating voltage specified for 4000 V motors. It ensures that for a lightly loaded distribution system, the voltage at the terminals of 4000 V motors is no more than the maximum rated operating voltages. 3

The specified steady state minimum and maximum frequencies of the E DG are ~~58.8~~ 59.5 Hz and ~~61.2~~ 60.5 Hz, respectively. These values are ~~equal to ± 2% of the 60 Hz nominal frequency and are derived from the recommendations given in Regulatory Guide 1.9 (Ref. 3).~~ based on plant-specific analysis values. 2

All changes are 1 unless otherwise noted

BASES

SURVEILLANCE REQUIREMENTS (continued)

SR 3.8.1.1

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

8

SR 3.8.1.2 and SR 3.8.1.[7] 10

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

To minimize the wear on moving parts that do not get lubricated when the engine is not running, these SRs are modified by a Note (Note 1 for SR 3.8.1.2 and the Note for SR 3.8.1.[7]) to indicate that all DG starts for these Surveillances may be preceded by an engine prelube period and followed by a warmup period prior to loading ~~by an engine prelube period~~. 8 E 7 10 7 7

For the purposes of SR 3.8.1.2 and SR 3.8.1.[7] testing, the DGs are started from standby conditions. Standby conditions for [a] an DG means that the diesel engine coolant and oil are being continuously circulated and temperature is being maintained consistent with manufacturer recommendations. 8 E 10 7

[In order to reduce stress and wear on diesel engines, some manufacturers recommend a modified start in which the starting speed of DGs is limited, warmup is limited to this lower speed, and the DGs are gradually accelerated to synchronous speed prior to loading. This is the intent of Note 2, which is only applicable when such modified start procedures are recommended by the manufacturer.] 3 E E 3

SR 3.8.1.[7] requires that, at a 184 day Frequency, the DG starts from standby conditions and achieves required voltage and frequency within 10 seconds. The 10 second start requirement supports the assumptions of the design basis LOCA analysis in the UFSAR, ~~Chapter [15]~~ Section 15 (Ref. 5). The minimum voltage limit is based on the voltage required for EDG breaker closure and the minimum frequency limit is based on the recommendations of Safety Guide 9 (Ref. 11). 8 E 10

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All changes are 1 unless otherwise noted

BASES

SURVEILLANCE REQUIREMENTS (continued)

The 10 second start requirement is not applicable to SR 3.8.1.2 (see Note 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 3.8.1.7 8 applies. 10

Since SR 3.8.1.7 8 requires 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 to the SR requirements, the time for the E DG to reach steady state operation, unless the modified E DG start method is employed, is ~~periodically~~ monitored ~~and the trend evaluated~~ to identify degradation of governor and voltage regulator performance.

The 31 day Frequency for SR 3.8.1.2 is consistent with Regulatory Guide 1.9 (Ref. 3). The 184 day Frequency for SR 3.8.1.7 8 is a reduction in cold testing consistent with Generic Letter 84-15 (Ref. 7). These Frequencies provide adequate assurance of E DG OPERABILITY, while minimizing degradation resulting from testing. 10

SR 3.8.1.3

INSERT 4 This Surveillance verifies that the E DGs are capable of synchronizing with the offsite electrical system and accepting loads ~~greater than or equal to~~ INSERT 5 ~~the equivalent of the maximum expected accident loads~~. A ~~minimum~~ run time of 60 minutes ~~is required to stabilize engine temperatures~~ ensures the engine temperatures are stabilized, while minimizing the time that the E DG is connected to the offsite source. 6 2

Although no power factor requirements are established by this SR, the E DG is normally operated at a lagging power factor between ~~[0.8 lagging]~~ 0.95 and ~~[1.0]~~ 0.95. The ~~[~~0.8~~]~~ value is the design rating of the machine, while the ~~[1.0]~~ is an ~~operational~~ administrative limitation ~~[to ensure circulating currents are minimized]~~. The load band is provided to avoid routine overloading of the E DG. Routine overloading may result in more frequent teardown inspections ~~in accordance with vendor recommendations in order to maintain DG OPERABILITY~~ INSERT 6. 3

The 31 day Frequency for this Surveillance is consistent with Regulatory Guide 1.9 (Ref. 3).

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6 **INSERT 4**

Consistent with Regulatory Guide 1.9 (Ref. 3),

2 **INSERT 5**

90% to 100% of the continuous rating of the EDG

1 **INSERT 6**

being required in order to maintain EDG reliability

All changes are 1 unless otherwise noted

SURVEILLANCE REQUIREMENTS (continued)

This SR is modified by four Notes. Note 1 indicates that diesel engine runs for this Surveillance may include gradual loading, as recommended by the manufacturer, so that mechanical stress and wear on the diesel engine are minimized. Note 2 states that momentary transients because of changing bus loads do not invalidate this test. ~~Similarly, momentary power factor transients above the limit will not invalidate the test.~~ 2 Note 3 indicates that this Surveillance should be conducted on only one E 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 E DG start must precede this test to credit satisfactory performance.

SR 3.8.1.4

This SR provides verification that the level of fuel oil in the day tank ~~[and engine mounted tank]~~ is ~~at or above the level at which fuel oil is automatically added~~ within the required limit. The level is expressed as an equivalent volume in gallons, and ~~is selected to~~ ensure s adequate fuel oil for ~~a minimum of~~ approximately ~~[1]~~ 20 hour s of E DG operation at full load ~~plus 10%~~. This volume is also credited (in conjunction with the minimum required level in the associated storage tank) to support 7 days of EDG operation at full load. s

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

SR 3.8.1.5

Microbiological fouling is a major cause of fuel oil degradation. There are numerous bacteria that can grow in fuel oil and cause fouling, but all must have a water environment in order to survive. Removal of water from ~~the~~ each fuel oil day ~~[and engine mounted]~~ tank~~s~~ once every [31] days eliminates 3 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 E DG operation. Water may come from any of several sources, including condensation, ground water, rain water, contaminated fuel oil, and from breakdown of the fuel oil by bacteria. Frequent checking for and removal of accumulated water minimizes fouling and provides data regarding the watertight integrity of the fuel oil system. The Surveillance Frequenc~~ies~~ y 7 ~~are established by~~ is consistent with Regulatory Guide 1.137 (Ref. 10). This SR is for preventive maintenance. The presence of water does not necessarily represent failure of this SR, provided the accumulated water is removed during the performance of this Surveillance.

All changes are 1 unless otherwise noted

BASES

SURVEILLANCE REQUIREMENTS (continued)

Move SR 3.8.1.6 to here from Page B 3.8.1-31 10

SR 3.8.1.~~6~~ 7

(one per fuel oil transfer system)

This Surveillance demonstrates that each ~~required~~ fuel oil transfer pump operates and transfers fuel oil from its associated storage tank to its associated day tank. This is required to support continuous operation of standby power sources. This Surveillance provides assurance that the fuel oil transfer pump is OPERABLE, the fuel oil piping system is intact, the fuel delivery piping is not obstructed, and the controls and control systems for ~~automatic~~ fuel transfer systems are OPERABLE. 10

[The Frequency for this SR is ~~variable, depending on individual system design, with up to a~~ [92] day ~~interval~~ s. The [92] day Frequency corresponds to the testing requirements for pumps as contained in the ASME OM Code (Ref. 12)~~; however, the design of fuel transfer systems is such that pumps will 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 part of DG OPERABILITY, the Frequency of this SR should be modified to reflect individual designs~~.] 10 3 1 10

~~SR 3.8.1.7~~

~~See SR 3.8.1.2.~~ 6

INSERT 6A

[SR 3.8.1.~~8~~ 9 10

Transfer of each [4.16 kV ~~ESF~~ essential bus] power supply from the normal offsite circuit to the alternate offsite circuit (via the fast transfer between the two startup transformers) demonstrates the OPERABILITY of the alternate circuit distribution network to power the shutdown loads. The ~~[18~~ 24 month] Frequency of the Surveillance is based on engineering judgment, taking into consideration the unit conditions required to perform the Surveillance, and is intended to be consistent with expected fuel cycle lengths. Operating experience has shown that these components usually pass the SR when performed at the ~~[18~~ 24 month] Frequency. Therefore, the Frequency was concluded to be acceptable from a reliability standpoint. 3 3 3

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10 INSERT 6A

Transfer of each 4.16 kV essential bus power supply from the unit auxiliary source (i.e., the main generator) to the pre-selected offsite circuit (i.e., pre-selected startup transformer) demonstrates that if the unit auxiliary source is supplying power, the transfer circuitry to the qualified offsite circuits is OPERABLE. This ensures the capability of the offsite circuits to be properly aligned, since the unit auxiliary source is not a qualified offsite circuit. As noted (Note 1), the transfer capability is only required to be met if the unit auxiliary source is supplying the electrical power distribution subsystem.

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All changes are 1 unless otherwise noted

BASES

SURVEILLANCE REQUIREMENTS (continued)

(Note 2) 3.8.1.9.b 10

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, unit safety systems. This restriction from normally performing the Surveillance in MODE 1 or 2 SR 3.8.1.9.b is further amplified to allow the Surveillance to be performed for the purpose of reestablishing OPERABILITY (e.g., post work testing following corrective maintenance, corrective modification, deficient or incomplete surveillance testing, and other unanticipated OPERABILITY concerns) provided an assessment determines plant safety is maintained or enhanced. This assessment shall, as a minimum, consider the potential outcomes and transients associated with a failed Surveillance, a successful Surveillance, and a perturbation of the offsite or onsite system when they are tied together or operated independently for the Surveillance; as well as the operator procedures available to cope with these outcomes. These shall be measured against the avoided risk of a plant shutdown and startup to determine that plant safety is maintained or enhanced when the Surveillance is performed in MODE 1 or 2. Risk insights or deterministic methods may be used for this assessment. Credit may be taken for unplanned events that satisfy this SR.] 3

10

SR 3.8.1.9 10

E

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 E response characteristics and capability to reject the largest single load

INSERT 7 a

without exceeding predetermined ~~voltage and frequency and while maintaining a specified~~ margin to the overspeed trip. [For the CR-3 emergency DGs, the largest single load is 616 kW (HPI pump).] 2 10 [After performance of SR 3.8.1.17, the diesel load is reduced to approximately 1200 kW and allowed to run at this load for 3 to 5 minutes. The load is then reduced to ≥ 616 kW and the DGs output breaker is opened. Verification that the DG did not trip is made.] 10 This Surveillance may be accomplished by either:

E E

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

; 4

1 **INSERT 7**

(the high pressure injection pumps - approximately 540 kW)

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All changes are 1 unless otherwise noted

BASES

SURVEILLANCE REQUIREMENTS (continued)

or its equivalent E

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

INSERT 8

~~As required by IEEE-308 (Ref. 13)~~, the load rejection test is acceptable if the increase in diesel speed does not exceed 75% of the difference between synchronous speed and the overspeed trip setpoint, or 15% above synchronous speed, whichever is lower. INSERT 8A 10

~~The time, voltage, and frequency tolerances specified in this SR are derived from Regulatory Guide 1.9 (Ref. 3) recommendations for response during load sequence intervals. The [3] seconds specified is equal to 60% of a typical 5 second load sequence interval associated with sequencing of the largest load. The voltage and frequency specified are consistent with the design range of the equipment powered by the DG. SR 3.8.1.9.a corresponds to the maximum frequency excursion, while SR 3.8.1.9.b and SR 3.8.1.9.c are steady state voltage and frequency values to which the system must recover to following load rejection.~~ 10 The 24 [18 month] Frequency ~~is consistent with the recommendation of Regulatory Guide 1.108 (Ref. 9)~~.

takes into consideration unit conditions required to perform the Surveillance, and is intended to be consistent with expected fuel cycle lengths

This SR is modified by two Notes. The reason for Note 1 is that during operation with the reactor critical, performance of this SR could cause perturbations to the electrical distribution systems that could challenge continued steady state operation and, as a result, unit safety systems. This restriction from normally performing the Surveillance in MODE 1 or 2 is further amplified to allow the Surveillance to be performed for the purpose of reestablishing OPERABILITY (e.g., post work testing following corrective maintenance, corrective modification, deficient or incomplete surveillance testing, and other unanticipated OPERABILITY concerns) provided an assessment determines plant safety is maintained or enhanced. This assessment shall, as a minimum, consider the potential outcomes and transients associated with a failed Surveillance, a successful Surveillance, and a perturbation of the offsite or onsite system when they are tied together or operated independently for the Surveillance; as well as the operator procedures available to cope with these outcomes. These shall be measured against the avoided risk of a plant shutdown and startup to determine that plant safety is maintained or enhanced when the Surveillance is performed in MODE 1 or 2. Risk insights or deterministic methods may be used for this assessment. Credit may be taken for unplanned events that satisfy this SR. Note 2

1 **INSERT 8**

Consistent with Safety Guide 9 (Ref. 11),

1 10 **INSERT 8A**

This corresponds to 66.75 Hz, which is 75% of the difference between synchronous speed and the overspeed trip setpoint.

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All changes are 1 unless otherwise noted

BASES

SURVEILLANCE REQUIREMENTS (continued)

E within the limit n E The power factor limit is ≤ 0.85 for EDG 1 and ≤ 0.86 for EDG 2. 10

ensures that the DG is tested under load conditions that are as close to design basis conditions as possible. When synchronized with offsite power, testing should be performed ~~at/a~~ power factor ~~of ≤ [0.9]~~. This power factor is representative of the actual inductive loading a DG would see under design basis accident conditions. Under certain conditions, however, Note 2 allows the Surveillance to be conducted ~~at a power factor other than ≤ [0.9]~~ outside the power factor limit. These conditions occur when grid voltage is high, and the additional field excitation needed to get the power factor to ~~≤ [0.9]~~ within the limit results in voltages on the ~~emergency~~ essential busses that are too high. Under these conditions, the power factor should be maintained as close as practicable to ~~[0.9]~~ the limit while still maintaining acceptable voltage limits on the ~~emergency~~ essential busses. In other circumstances, the grid voltage may be such that the ~~DG~~ EDG excitation levels needed to obtain a power factor ~~of [0.9]~~ within limit may not cause unacceptable voltages on the ~~emergency~~ essential busses, but the excitation levels are in excess of those recommended for the ~~DG~~ EDG. In such cases, the power factor shall be maintained as close as practicable to ~~[0.9]~~ the power factor limit without exceeding the EDG excitation limits. 10

~~-----------------------------------REVIEWER'S NOTE-----------------------------------~~
~~The above MODE restrictions may be deleted if it can be demonstrated to the staff, on a plant specific basis, that performing the SR with the reactor in any of the restricted MODES can satisfy the following criteria, as applicable:~~

~~a. Performance of the SR will not render any safety system or component inoperable,~~

~~b. Performance of the SR will not cause perturbations to any of the electrical distribution systems that could result in a challenge to steady state operation or to plant safety systems, and~~

~~c. Performance of the SR, or failure of the SR, will not cause, or result in, an AOO with attendant challenge to plant safety systems.~~ 5

All changes are 1 unless otherwise noted

BASES

SURVEILLANCE REQUIREMENTS (continued)

SR 3.8.1.10

This Surveillance demonstrates the DG capability to reject a full load without overspeed tripping or exceeding the predetermined voltage limits. The DG full load rejection may occur because of a system fault or inadvertent breaker tripping. This Surveillance ensures proper engine generator load response under the simulated test conditions. This test simulates the loss of the total connected load that the DG experiences following a full load rejection and verifies that the DG will not trip upon loss of the load. These acceptance criteria provide DG damage protection. While the DG is not expected to experience this transient during an event and continues to be available, this response ensures that the DG is not degraded for future application, including reconnection to the bus if the trip initiator can be corrected or isolated.

The [18 month] Frequency is consistent with the recommendation of Regulatory Guide 1.108 (Ref. 9) and is intended to be consistent with expected fuel cycle lengths. 10

This SR is modified by two Notes. The reason for Note 1 is that during operation with the reactor critical, performance of this SR could cause perturbation to the electrical distribution systems that could challenge continued steady state operation and, as a result, unit safety systems. This restriction from normally performing the Surveillance in MODE 1 or 2 is further amplified to allow the Surveillance to be performed for the purpose of reestablishing OPERABILITY (e.g., post work testing following corrective maintenance, corrective modification, deficient or incomplete surveillance testing, and other unanticipated OPERABILITY concerns) provided an assessment determines plant safety is maintained or enhanced. This assessment shall, as a minimum, consider the potential outcomes and transients associated with a failed Surveillance, a successful Surveillance, and a perturbation of the offsite or onsite system when they are tied together or operated independently for the Surveillance; as well as the operator procedures available to cope with these outcomes. These shall be measured against the avoided risk of a plant shutdown and startup to determine that plant safety is maintained or enhanced when the Surveillance is performed in MODE 1 or 2. Risk insights or deterministic methods may be used for this assessment. Credit may be taken for unplanned events that satisfy this SR.

All changes are 1 unless otherwise noted

BASES

SURVEILLANCE REQUIREMENTS (continued)

~~Note 2 ensures that the DG is tested under load conditions that are as close to design basis conditions as possible. When synchronized with offsite power, testing should be performed at a power factor of ≤ [0.9]. This power factor is representative of the actual inductive loading a DG would see under design basis accident conditions. Under certain conditions, however, Note 2 allows the Surveillance to be conducted at a power factor other than ≤ [0.9]. These conditions occur when grid voltage is high, and the additional field excitation needed to get the power factor to ≤ [0.9] results in voltages on the emergency busses that are too high. Under these conditions, the power factor should be maintained as close as practicable to [0.9] while still maintaining acceptable voltage limits on the emergency busses. In other circumstances, the grid voltage may be such that the DC excitation levels needed to obtain a power factor of [0.9] may not cause unacceptable voltages on the emergency busses, but the excitation levels are in excess of those recommended for the DC. In such cases, the power factor shall be maintained as close as practicable to [0.9] without exceeding the DG excitation limits.~~ 10

~~-----REVIEWER'S NOTE-----~~
~~The above MODE restrictions may be deleted if it can be demonstrated to the staff, on a plant specific basis, that performing the SR with the reactor in any of the restricted MODES can satisfy the following criteria, as applicable:~~

~~a. Performance of the SR will not render any safety system or component inoperable,~~

~~b. Performance of the SR will not cause perturbations to any of the electrical distribution systems that could result in a challenge to steady state operation or to plant safety systems, and~~ 5

~~c. Performance of the SR, or failure of the SR, will not cause, or result in, an AOO with attendant challenge to plant safety systems.~~

SR 3.8.1.11

Consistent with ~~As required by~~ Regulatory Guide ~~1.108~~ 1.9 (Ref. ~~9~~ 3), paragraph ~~2.a.(1)~~ C.2.2.4, this Surveillance demonstrates the as designed operation of the standby power sources during loss of the offsite source. This test verifies all actions encountered from the loss of offsite power, including shedding of the non-essential loads and energization of the ~~emergency~~ essential buses and respective loads from the E DG. It further demonstrates the capability of the E DG to automatically achieve the required voltage and frequency within the specified time.

All changes are 1 unless otherwise noted

BASES

SURVEILLANCE REQUIREMENTS (continued)

E

The DG auto-start time of [10] seconds is derived from requirements of the accident analysis to respond to a design basis large break LOCA. The Surveillance should be continued for a minimum of 5 minutes in order to demonstrate that all starting transients have decayed and stability has been achieved. 3

The requirement to verify the connection and power supply of permanent and auto-connected loads is intended to satisfactorily show the relationship of these loads to the DG loading logic. In certain circumstances, ~~many~~ of these loads can not actually be connected or loaded without undue hardship or potential for undesired operation. ~~For instance, Emergency Core Cooling Systems (ECCS) injection valves are not desired to be stroked open, high pressure injection systems are not capable of being operated at full flow, or decay heat removal (DHR) systems performing a DHR function are not desired to be realigned to the ECCS mode of operation.~~ 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. 10

E

(i.e., the individual time delay relays for the component cooling water, service water, and makeup pumps)

some

E

24

The Frequency of [~~18~~ months] ~~is consistent with the recommendations of Regulatory Guide 1.108 (Ref. 9), paragraph 2.a.(1),~~ takes into consideration unit conditions required to perform the Surveillance, and is intended to be consistent with expected fuel cycle lengths. 3

E

E

This SR is modified by two Notes. The reason for Note 1 is to minimize wear and tear on the DGs during testing. For the purpose of this testing, the DGs must be started from standby conditions, that is, with the engine coolant and oil continuously circulated and temperature maintained consistent with manufacturer recommendations. The reason for Note 2 is that performing the Surveillance would remove a required offsite circuit from service, perturb the electrical distribution system, and challenge safety systems. This restriction from normally performing the Surveillance in MODE 1 ~~or~~ 2 is further amplified to allow portions of the Surveillance to be performed for the purpose of reestablishing OPERABILITY (e.g., post work testing following corrective maintenance, corrective modification, deficient or incomplete surveillance testing, and other unanticipated OPERABILITY concerns) provided an assessment determines plant safety is maintained or enhanced. This assessment shall, as a minimum, consider the potential outcomes and transients associated with a failed partial Surveillance, a successful partial

, 3, or 4 2

,

All changes are 1 unless otherwise noted

BASES

SURVEILLANCE REQUIREMENTS (continued)

Surveillance, and a perturbation of the offsite or onsite system when they are tied together or operated independently for the partial Surveillance; as well as the operator procedures available to cope with these outcomes. These shall be measured against the avoided risk of a plant shutdown and startup to determine that plant safety is maintained or enhanced when portions of the Surveillance are performed in MODE 1, ~~or~~ 2. Risk insights or deterministic methods may be used for the assessment. Credit may be taken for unplanned events that satisfy this SR. , 3, or 4 2

[SR 3.8.1.12

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) and operates for ≥ 5 minutes. The 5 minute period provides sufficient time to demonstrate stability. SR 3.8.1.12.d and SR 3.8.1.12.e ensure that permanently connected loads and emergency loads are energized from the offsite electrical power system on an ESF signal without loss of offsite power.

The requirement to verify the connection of permanent and auto-connected loads is intended to satisfactorily show the relationship of these loads to the DG loading logic. In certain circumstances, many of these loads can not 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 DHR systems performing a DHR function are not desired to be realigned to the ECCS mode of operation. 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.] 10

[The Frequency of [18 months] takes into consideration unit 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 was concluded to be acceptable from a reliability standpoint.

All changes are 1 unless otherwise noted

BASES

SURVEILLANCE REQUIREMENTS (continued)

~~This SR is modified by two Notes. The reason for Note 1 is to minimize wear and tear on the DGs during testing. For the purpose of this testing, the DGs must be started from standby conditions, that is, with the engine coolant and oil continuously circulated and temperature maintained consistent with manufacturer recommendations. The reason for Note 2 is that during operation with the reactor critical, performance of this Surveillance could cause perturbations to the electrical distribution systems that could challenge continued steady state operation and, as a result, unit safety systems. This restriction from normally performing the Surveillance in MODE 1 or 2 is further amplified to allow portions of the Surveillance to be performed for the purpose of reestablishing OPERABILITY (e.g., post work testing following corrective maintenance, corrective modification, deficient or incomplete surveillance testing, and other unanticipated OPERABILITY concerns) provided an assessment determines plant safety is maintained or enhanced. This assessment shall, as a minimum, consider the potential outcomes and transients associated with a failed partial Surveillance, a successful partial Surveillance, and a perturbation of the offsite or onsite system when they are tied together or operated independently for the partial Surveillance; as well as the operator procedures available to cope with these outcomes. These shall be measured against the avoided risk of a plant shutdown and startup to determine that plant safety is maintained or enhanced when portions of the Surveillance are performed in MODE 1 or 2. Risk insights or deterministic methods may be used for the assessment. Credit may be taken for unplanned events that satisfy this SR.]~~ 10

SR 3.8.1.~~13~~ 12 10

This Surveillance demonstrates that E DG noncritical protective functions (e.g., high jacket water temperature) are bypassed on a loss of voltage signal or ~~concurrent with~~ an ~~ESF~~ SFAS actuation test signal. Noncritical automatic trips are all automatic trips except: 10

a. Engine overspeed; and

b. Generator differential current~~;~~ .

~~[c. Low lube oil pressure;~~

~~d. High crankcase pressure; and~~

~~e. Start failure relay.]~~ 3

The noncritical trips are bypassed during DBAs and provide ~~an~~ alarms on ~~an~~ abnormal engine conditions. Th~~is~~ese alarms provide~~s~~ the operator with

All changes are 1 unless otherwise noted

BASES

SURVEILLANCE REQUIREMENTS (continued)

E

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. E

24

The [18 month] Frequency is based on engineering judgment, taking into consideration unit conditions required to perform the Surveillance~~, and is intended to be consistent with expected fuel cycle lengths~~. Operating experience has shown that these components usually pass the SR when performed at the [18 month] Frequency. Therefore, the Frequency was concluded to be acceptable from a reliability standpoint. 3

24 3

The SR is modified by a Note. The reason for the Note is that performing the Surveillance would remove a required DG from service. This restriction from normally performing the Surveillance in MODE 1 or 2 is further amplified to allow the Surveillance to be performed for the purpose of reestablishing OPERABILITY (e.g., post work testing following corrective maintenance, corrective modification, deficient or incomplete surveillance testing, and other unanticipated OPERABILITY concerns) provided an assessment determines plant safety is maintained or enhanced. This assessment shall, as a minimum, consider the potential outcomes and transients associated with a failed Surveillance, a successful Surveillance, and a perturbation of the offsite or onsite system when they are tied together or operated independently for the Surveillance; as well as the operator procedures available to cope with these outcomes. These shall be measured against the avoided risk of a plant shutdown and startup to determine that plant safety is maintained or enhanced when the Surveillance is performed in MODE 1 or 2. Risk insights or deterministic methods may be used for this assessment. Credit may be taken for unplanned events that satisfy this SR. E

~~-----------------------------------REVIEWER'S NOTE-----------------------------------~~

~~The above MODE restrictions may be deleted if it can be demonstrated to the staff, on a plant specific basis, that performing the SR with the reactor in any of the restricted MODES can satisfy the following criteria, as applicable:~~

~~a. Performance of the SR will not render any safety system or component inoperable,~~

~~b. Performance of the SR will not cause perturbations to any of the electrical distribution systems that could result in a challenge to steady state operation or to plant safety systems, and~~ 5

~~c. Performance of the SR, or failure of the SR, will not cause, or result in, an AOO with attendant challenge to plant safety systems.~~

~~---~~

All changes are 1 unless otherwise noted

BASES

SURVEILLANCE REQUIREMENTS (continued)

SR 3.8.1.14 13 10

Consistent with IEEE 387-1995 (Ref. 13), this Surveillance demonstrates

Regulatory Guide 1.108 (Ref. 9), paragraph 2.a.(3), requires demonstration once per 18 months that the DGs can start and run continuously at full load capability for an interval of not less than 24 hours, ≥ [2] hours of which is at a load equivalent to 110% of the continuous duty rating and the remainder of the time at a load equivalent to the continuous duty rating of the DG. The DG starts for this Surveillance can be performed either from standby or hot conditions. The provisions for prelubricating 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.

(90% to 100% of the EDG continuous rating) continuous E E 8 105% to 10 3 90% to 100% of 10

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. E E

24 based on engineering judgment, taking 3

The [18 month] Frequency is consistent with the recommendations of Regulatory Guide 1.108 (Ref. 7), paragraph 2.a.(3), takes into consideration unit conditions required to perform the Surveillance and is intended to be consistent with expected fuel cycle lengths.

INSERT 9

This Surveillance is modified by three Notes. Note 1 states that momentary transients due to changing bus loads do not invalidate this test. Similarly, momentary power factor transients above the power factor limit will not invalidate the test. The reason for Note 2 is that during operation with the reactor critical, performance of this Surveillance could cause perturbations to the electrical distribution systems that could challenge continued steady state operation and, as a result, unit safety systems. Note 3 ensures that the DG is tested under load conditions that are as close to design basis conditions as possible. When synchronized with offsite power, testing should be performed at a power factor of ≤ [0.9]. This power factor is representative of the actual inductive loading a DG would see under design basis accident conditions. Under certain conditions, however, Note 3 allows the Surveillance to be conducted at a power factor other than ≤ [0.9]. These conditions occur when grid voltage is high, and the additional field excitation needed to get the power factor to ≤ [0.9] results in voltages on the emergency busses that are too high. Under these conditions, the power factor should be maintained as close as practicable to [0.9] while still maintaining acceptable voltage limits on the emergency busses. In other circumstances, the grid voltage may be such that the DG excitation levels needed to obtain a power factor of [0.9] may not cause unacceptable voltages on the emergency busses, but the excitation levels are in excess of those recommended for the DG. In such

When an EDG is tested at a load equivalent to 90% to 100% of the continuous rating,

Insert Note 2, from page B 3.8.1-28

E 7 10 within the 10 limit an E The power factor limit is ≤ 0.85 for EDG 1 and ≤ 0.86 for EDG 2. outside the power factor limit within the limit essential 10 the limit essential E within limit essential E

1 **INSERT 9**

Operating experience has shown that these components usually pass the SR when performed at the 24 month Frequency. Therefore, the Frequency is acceptable from a reliability standpoint.

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All changes are 1 unless otherwise noted

BASES

SURVEILLANCE REQUIREMENTS (continued)

the power factor limit

E

cases, the power factor shall be maintained as close as practicable to [0.9] without exceeding the DG excitation limits. This restriction from normally performing the Surveillance in MODE 1 or 2 is further amplified to allow the Surveillance to be performed for the purpose of reestablishing OPERABILITY (e.g. post work testing following corrective maintenance, corrective modification, deficient or incomplete surveillance testing, and other unanticipated OPERABILITY concerns) provided an assessment determines plant safety is maintained or enhanced. This assessment shall, as a minimum, consider the potential outcomes and transients associated with a failed Surveillance, a successful Surveillance, and a perturbation of the offsite or onsite system when they are tied together or operated independently for the Surveillance; as well as the operator procedures available to cope with these outcomes. These shall be measured against the avoided risk of a plant shutdown and startup to determine that plant safety is maintained or enhanced when the Surveillance is performed in MODE 1 or 2. Risk insights or deterministic methods may be used for this assessment. Credit may be taken for unplanned events that satisfy this SR. 10

Move to Page B 3.8.1-27 as Insert Note 2

7

14

SR 3.8.1.15 10

The minimum voltage limit is based on the voltage required for EDG breaker closure and the minimum frequency limit is based on the recommendations of Safety Guide 9 (Ref. 11).

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 to respond to a design basis large break LOCA. 3

24

INSERT 10

The [18 month] Frequency is ~~consistent with the recommendations of Regulatory Guide 1.108 (Ref. 9), paragraph 2.a.(5).~~ 3

This SR is modified by two Notes. Note 1 ensures that the test is performed with the diesel sufficiently hot. The load band is provided to avoid routine overloading of the DG. Routine overloads may result in more frequent teardown inspections, in accordance with vendor recommendations, in order to maintain DG OPERABILITY. The requirement that the diesel has operated for at least [2] hours at 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. 3

E E 1 approximately , stabilized E

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(1) INSERT 10

based on engineering judgment 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 24 month Frequency. Therefore, the Frequency is acceptable from a reliability standpoint.

All changes are 1 unless otherwise noted

BASES

SURVEILLANCE REQUIREMENTS (continued)

~~SR 3.8.1.16~~

~~As required by Regulatory Guide 1.108 (Ref. 9), paragraph 2.a.(6), this Surveillance ensures that the manual synchronization and automatic load transfer from the DG to the offsite source can be made and 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 and auto-close signal on bus undervoltage, and the load sequence timers are reset.~~

~~The Frequency of [18 months] is consistent with the recommendations of Regulatory Guide 1.108 (Ref. 9), paragraph 2.a.(6), and takes into consideration unit conditions required to perform the Surveillance.~~

~~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. This restriction from normally performing the Surveillance in MODE 1 or 2 is further amplified to allow the Surveillance to be performed for the purpose of reestablishing OPERABILITY (e.g., post work testing following corrective maintenance, corrective modification, deficient or incomplete surveillance testing, and other unanticipated OPERABILITY concerns) provided an assessment determines plant safety is maintained or enhanced. This assessment shall, as a minimum, consider the potential outcomes and transients associated with a failed Surveillance, a successful Surveillance, and a perturbation of the offsite or onsite system when they are tied together or operated independently for the Surveillance; as well as the operator procedures available to cope with these outcomes. These shall be measured against the avoided risk of a plant shutdown and startup to determine that plant safety is maintained or enhanced when the Surveillance is performed in MODE 1 or 2. Risk insights or deterministic methods may be used for this assessment. Credit may be taken for unplanned events that satisfy this SR.~~ 10

~~[SR 3.8.1.17~~

~~Demonstration of the test mode override ensures that the DG availability under accident conditions will not be compromised as the result of testing and the DG will automatically reset to ready to load operation if a LOCA actuation signal is received during operation in the test mode. Ready to load operation is defined as the DG running at rated speed and voltage with the DG output breaker open. These provisions for automatic switchover are required by IEEE-308 (Ref. 13), paragraph 6.2.6(2).~~ 10

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All changes are 1 unless otherwise noted

BASES

SURVEILLANCE REQUIREMENTS (continued)

The requirement to automatically energize the emergency loads with offsite power is essentially identical to that of SR 3.8.1.12. The intent in the requirement associated with SR 3.8.1.17.b is to show that the emergency loading was not affected by the DG operation in test mode. In lieu of actual demonstration of connection and loading of loads, testing that adequately shows the capability of the emergency loads to perform these functions is acceptable. This testing may include any series of sequential, overlapping, or total steps so that the entire connection and loading sequence is verified.

The [18 month] Frequency is consistent with the recommendations of Regulatory Guide 1.108 (Ref. 9), paragraph 2.a.(8), takes into consideration unit 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. This restriction from normally performing the Surveillance in MODE 1 or 2 is further amplified to allow portions of the Surveillance to be performed for the purpose of reestablishing OPERABILITY (e.g., post work testing following corrective maintenance, corrective modification, deficient or incomplete surveillance testing, and other unanticipated OPERABILITY concerns) provided an assessment determines plant safety is maintained or enhanced. This assessment shall, as a minimum, consider the potential outcomes and transients associated with a failed partial Surveillance, a successful partial Surveillance, and a perturbation of the offsite or onsite system when they are tied together or operated independently for the partial Surveillance; as well as the operator procedures available to cope with these outcomes. These shall be measured against the avoided risk of a plant shutdown and startup to determine that plant safety is maintained or enhanced when portions of the Surveillance are performed in MODE 1 or 2. Risk insights or deterministic methods may be used for the assessment. Credit may be taken for unplanned events that satisfy this SR.] 10

All changes are 1 unless otherwise noted

BASES

SURVEILLANCE REQUIREMENTS (continued)

and emergency time delay relays (i.e., the makeup pump relays) 10 10

6

SR 3.8.1.~~18~~

coincident with

Under accident ~~[and]~~ loss of offsite power[] conditions loads are sequentially connected to the bus by the ~~[automatic]~~ load sequencer[]. The sequencing logic controls the permissive and starting signals to motor breakers to prevent overloading of the DGs due to high motor starting currents. The [10]% load sequence time interval tolerance ensures that sufficient time exists for the DG to restore frequency and voltage prior to applying the next load and that safety analysis assumptions regarding ESF equipment time delays are not violated. Reference 2 provides a summary of the automatic loading of ~~ESF~~ buses.

S 3 E E 3 essential 10

31 days

Move to after SR 3.8.1.5 on Page B 3.8.1-17

based on engineering judgment, taking

The Frequency of ~~[18 months]~~ is ~~consistent with the recommendations of Regulatory Guide 1.108 (Ref. 9), paragraph 2.a.(2), takes~~ into consideration unit conditions required to perform the Surveillance~~, and is intended to be consistent with expected fuel cycle lengths~~. INSERT 11

3

~~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. This restriction from normally performing the Surveillance in MODE 1 or 2 is further amplified to allow the Surveillance to be performed for the purpose of reestablishing OPERABILITY (e.g., post work testing following corrective maintenance, corrective modification, deficient or incomplete surveillance testing, and other unanticipated OPERABILITY concerns) provided an assessment determines plant safety is maintained or enhanced. This assessment shall, as a minimum, consider the potential outcomes and transients associated with a failed Surveillance, a successful Surveillance, and a perturbation of the offsite or onsite system when they are tied together or operated independently for the Surveillance; as well as the operator procedures available to cope with these outcomes. These shall be measured against the avoided risk of a plant shutdown and startup to determine that plant safety is maintained or enhanced when the Surveillance is performed in MODE 1 or 2. Risk insights or deterministic methods may be used for this assessment. Credit may be taken for unplanned events that satisfy this SR.~~

10

1 **INSERT 11**

Operating experience has shown that these components usually pass the SR when performed at the 31 day Frequency. Therefore, the Frequency is acceptable from a reliability standpoint.

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All changes are 1 unless otherwise noted

BASES

SURVEILLANCE REQUIREMENTS (continued)

-----REVIEWER'S NOTE-----
~~The above MODE restrictions may be deleted if it can be demonstrated to the staff, on a plant specific basis, that performing the SR with the reactor in any of the restricted MODES can satisfy the following criteria, as applicable:~~

~~a. Performance of the SR will not render any safety system or component inoperable,~~

~~b. Performance of the SR will not cause perturbations to any of the electrical distribution systems that could result in a challenge to steady state operation or to plant safety systems, and~~

~~c. Performance of the SR, or failure of the SR, will not cause, or result in, an AOO with attendant challenge to plant safety systems.~~
---------- 5

15

SR 3.8.1.~~19~~ 10

E

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.

E

This Surveillance demonstrates the DG operation, as discussed in the Bases for SR 3.8.1.11, during a loss of offsite power actuation test signal in conjunction with an ~~ESF~~ SFAS actuation signal. For this test, the EDG loading logic includes both the load sequencer and the individual time delay relays for the makeup pumps. 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. E

24

The Frequency of ~~[18~~ months~~]~~ takes into consideration unit conditions required to perform the Surveillance and is intended to be consistent with an expected fuel cycle length of ~~[18~~ months~~]~~. 3 3

24

This SR is modified by two Notes. The reason for Note 1 is to minimize wear and tear on the DGs during testing. For the purpose of this testing, the DGs must be started from standby conditions, that is, with the engine coolant and oil continuously circulated and temperature maintained E

All changes are 1 unless otherwise noted

BASES

SURVEILLANCE REQUIREMENTS (continued)

consistent with manufacturer recommendations for E DGs. The reason for Note 2 is that performing the Surveillance would remove a required offsite circuit from service, perturb the electrical distribution system, and challenge safety systems. This restriction from normally performing the Surveillance in MODE 1, ~~or~~ 2, 3, or 4 is further amplified to allow portions of the Surveillance to be performed for the purpose of reestablishing OPERABILITY (e.g., post work testing following corrective maintenance, corrective modification, deficient or incomplete surveillance testing, and other unanticipated OPERABILITY concerns) provided an assessment determines plant safety is maintained or enhanced. This assessment shall, as a minimum, consider the potential outcomes and transients associated with a failed partial Surveillance, a successful partial Surveillance, and a perturbation of the offsite or onsite system when they are tied together or operated independently for the partial Surveillance; as well as the operator procedures available to cope with these outcomes. These shall be measured against the avoided risk of a plant shutdown and startup to determine that plant safety is maintained or enhanced when portions of the Surveillance are performed in MODE 1, ~~or~~ 2, 3, or 4. Risk insights or deterministic methods may be used for the assessment. Credit may be taken for unplanned events that satisfy this SR. 2

~~SR 3.8.1.20~~

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

~~The 10 year Frequency is consistent with the recommendations of Regulatory Guide 1.108 (Ref. 9).~~ 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.~~

BASES

REFERENCES

1. 10 CFR 50, Appendix A, GDC 17.

2. U FSAR, ~~Chapter~~ [8]. Section 8.3.1.1 (1) (3)

3. Regulatory Guide 1.9, Rev. 3.

4. U FSAR, ~~Chapter~~ [6]. Section (1) (3)

5. U FSAR, ~~Chapter~~ [15]. Section

6. Regulatory Guide 1.93, Rev. [0], [~~date~~]. December 1973 (3)

7. Generic Letter 84-15. NRC Safety Evaluation for Amendment 206, dated February 26, 1996. (1)

8. ~~10 CFR 50, Appendix A, GDC 18.~~

UFSAR, Section 8.

9. ~~Regulatory Guide 1.108, Rev. [1], [August 1977].~~ (1)

10. Regulatory Guide 1.137, Rev. [/] 1, [~~date~~]. October 1979 (3)

~~11. ANSI C84.1-1982.~~ (1)

11. Safety Guide 9, March 10, 1971.

12. ASME Code for Operation and Maintenance of Nuclear Power Plants.

~~13. IEEE Standard 308-[1978].~~ (1)

13. IEEE 387-1995.

JUSTIFICATION FOR DEVIATIONS
ITS 3.8.1 BASES, AC SOURCES - OPERATING

1. Changes are made (additions, deletions, and/or changes) to the ISTS Bases, which reflect the plant specific nomenclature, number, reference, system description, analysis, or licensing basis description.
2. Changes are made to reflect the Specification.
3. The brackets have been removed and the proper plant specific information/value has been provided.
4. These punctuation corrections have been made consistent with the Writer's Guide for the Improved Standard Technical Specifications, TSTF-GG-05-01, Section 5.1.3.
5. The Reviewer's Note is deleted because it is not intended to be included in the plant specific ITS submittal.
6. Changes have been made to be consistent with similar phrases in other Bases.
7. Grammatical/editorial error corrected.
8. Changes are made to indicate the correct reference rather than to refer to the Reference number only.
9. The proper title is provided for ITS 3.8.9, "Distribution Systems – Operating."
10. Changes made to be consistent with changes made to the Specifications.
11. The qualified offsite circuit is described in this LCO section. Therefore, a reference to a description in the FSAR is not needed.
12. Editorial clarification consistent with TSTF-402T.

Specific No Significant Hazards Considerations (NSHCs)

DETERMINATION OF NO SIGNIFICANT HAZARDS CONSIDERATIONS
ITS 3.8.1, AC SOURCES - OPERATING

There are no specific NSHC discussions for this Specification.

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ATTACHMENT 2

ITS 3.8.2, AC SOURCES - SHUTDOWN

Current Technical Specification (CTS) Markup and Discussion of Changes (DOCs)

ITS 3.8.2

A01

ITS

ELECTRICAL POWER SYSTEMS

A.C. SOURCES

SHUTDOWN

LIMITING CONDITION FOR OPERATION

LCO 3.8.2 3.8.1.2 As a minimum, the following A.C. electrical power sources shall be OPERABLE:

a. One qualified circuit between the offsite transmission network and the onsite Class 1E A.C. electrical power distribution system, and M01

b. One diesel generator with: M02

SR 3.8.2.1 1. Day fuel tank containing a minimum volume of 4000 gallons of fuel,

2. A fuel storage system containing a minimum volume of 32,000 gallons of fuel, and See ITS 3.8.3

3. A fuel transfer pump. LA01

APPLICABILITY: MODES 5 and 6. During movement of irradiated fuel assemblies. M03

ACTION: Add proposed ACTIONS Note A02 Add proposed ACTION A Note Add proposed Required Action A.1 L01

ACTIONS A and B With less than the above minimum required A.C. electrical power sources OPERABLE, suspend all operations involving CORE ALTERATIONS or positive reactivity changes until the minimum required A.C. electrical power sources are restored to OPERABLE status. L02 L03

Add proposed Required Actions A.2.3 and B.3 M04

SURVEILLANCE REQUIREMENTS

SR 3.8.2.1 4.8.1.2 The above required A.C. electrical power sources shall be demonstrated OPERABLE by the performance of each of the Surveillance Requirements of 4.8.1.1.1 and 4.8.1.1.2 except for requirements 4.8.1.1.1.b, 4.8.1.1.2.a.5, 4.8.1.1.2.a.7, 4.8.1.1.2.c.5, 4.8.1.1.2.c.7, and 4.8.1.1.2.d.2.

Add proposed SR 3.8.2.1 exceptions L05

L04

DISCUSSION OF CHANGES
ITS 3.8.2, AC SOURCES - SHUTDOWN

ADMINISTRATIVE CHANGES

A01 In the conversion of the Davis-Besse Current Technical Specifications (CTS) to the plant specific Improved Technical Specifications (ITS), certain changes (wording preferences, editorial changes, reformatting, revised numbering, etc.) are made to obtain consistency with NUREG-1430, Rev. 3.1, "Standard Technical Specifications-Babcock and Wilcox Plants" (ISTS).

These changes are designated as administrative changes and are acceptable because they do not result in technical changes to the CTS.

A02 CTS 3.8.1.2 does not address the situation when an essential bus is de-energized as a result of the loss of an AC Source to an essential bus. A Note has been added to the Required Actions for an inoperable offsite circuit (ITS ACTION A) which requires entry into the applicable Conditions and Required Actions of LCO 3.8.10 when one required train (essential bus) is de-energized as a result of an inoperable offsite circuit. This changes the CTS by directing entry into LCO 3.8.10.

AC Sources are considered a support system to the AC distribution System (ITS 3.8.10) If AC Sources are inoperable such that a distribution subsystem is made inoperable, then ITS LCO 3.0.6 would allow taking only the AC Sources ACTIONS; taking exception to complying with the AC Distribution System ACTIONS. Since the AC Sources ACTIONS may not be sufficiently conservative in the event, specific direction to take appropriate ACTIONS for the Distribution System is added (proposed Note to ITS 3.8.2 ACTION A). This format and construction implements the existing treatment of this condition within the framework of the Davis Besse CTS methods. This change is designated as administrative because it does not result in a technical change to the CTS.

MORE RESTRICTIVE CHANGES

M01 CTS 3.8.1.2.a requires one qualified circuit between the offsite transmission network and the onsite Class 1E distribution system to be OPERABLE. ITS LCO 3.8.2.a requires one qualified circuit between the offsite transmission network and the onsite 1E AC electrical power distribution subsystem(s) required by LCO 3.8.10, "Distribution Systems – Shutdown," to be OPERABLE. This changes the CTS by being specific as to what the required circuit must be capable of powering.

The purpose of CTS 3.8.1.2.a is to ensure the offsite circuit is OPERABLE in order to supply the equipment supported by the onsite Class 1E distribution system. The existing requirement of CTS LCO 3.8.1.2.a for one qualified offsite circuit to be OPERABLE during shutdown conditions is not specific as to what that circuit must be powering. The requirement in ITS LCO 3.8.2.a specifies that the circuit must be available to supply power to all equipment required to be OPERABLE in the current plant conditions. This change is acceptable since the added restriction conservatively assures the needed offsite circuit is powering all AC loads required to be OPERABLE. This change is designated as more restrictive because more explicit offsite circuit requirements have been added.

DISCUSSION OF CHANGES
ITS 3.8.2, AC SOURCES - SHUTDOWN

M02 CTS 3.8.1.2.b requires one EDG to be OPERABLE. ITS LCO 3.8.2.b requires one EDG capable of supplying one train of the onsite Class 1E AC electrical power distribution subsystem(s) required by LCO 3.8.10. This changes the CTS by being specific as to what the required EDG must be capable of powering.

The purpose of CTS 3.8.1.2.b is to ensure the EDG is OPERABLE. This change provides an explicit requirement as to what the required EDG must be capable of powering. Similar to the added restrictions for an OPERABLE offsite circuit (refer to DOC M01 above), the single unit EDG required OPERABLE during shutdown conditions by CTS 3.8.1.2.b is not specific as to what train that EDG must be associated with. The requirements in ITS LCO 3.8.2.b will ensure the OPERABLE EDG is associated with one or more systems, subsystems, or components required to be OPERABLE. This added restriction enforces a level of Technical Specification control which currently is enforced only by administrative procedures. This change is designated as more restrictive because more explicit EDG requirements have been added.

M03 CTS 3.8.1.2 is applicable during MODES 5 and 6. ITS 3.8.2 is applicable in MODES 5 and 6, and during the movement of irradiated fuel assemblies. In addition, a Note has been added to the ACTIONS of ITS 3.8.2 which states that LCO 3.0.3 is not applicable. This changes the CTS by requiring the AC Sources to be OPERABLE under more conditions than is currently required.

The purpose of CTS 3.8.1.2 is to ensure that sufficient AC Sources are available to mitigate the consequences of an analyzed event during shutdown modes. This change provides an explicit requirement that the AC Sources must be OPERABLE during the movement of irradiated fuel assemblies. The movement of irradiated fuel assemblies may occur during MODE 5 or 6, however the operations could also occur while the unit is operating if moving fuel only in the spent fuel pool. CTS 3.8.1.1 (ITS 3.8.1) and CTS 3.8.1.2 do not provide the appropriate compensatory actions under this condition. The activity should be suspended immediately when the AC Sources are not available consistent with the immediate actions for CORE ALTERATIONS in the CTS 3.8.1.2 Action; that is the actions in LCO 3.0.3 will not place the unit in a safe condition. This change is acceptable because the proposed Applicability is consistent with the Applicability in the AC Distribution System – Shutdown Specification (CTS 3.8.2.2 and ITS 3.8.10). AC Sources provides the power for the AC Distribution System. This change is designated as more restrictive because the Applicability of the Specification has been expanded.

M04 The CTS 3.8.1.2 Action requires the suspension of CORE ALTERATIONS and positive reactivity changes when a required AC Source is inoperable. It does not include an action to restore the inoperable AC Source. ITS 3.8.2 Required Actions A.2.3 and B.3 require the immediate initiation of action to restore the required AC Sources to OPERABLE status. This changes the CTS by adding explicit requirements to restore the inoperable AC Sources to OPERABLE status.

The purpose of ITS 3.8.1.2 Required Actions A.2.3 and B.3 is to place the unit within the requirements of the LCO. When a required offsite circuit or a required EDG is inoperable, the actions imposed by the CTS 3.8.1.2 Action do not

DISCUSSION OF CHANGES
ITS 3.8.2, AC SOURCES - SHUTDOWN

necessarily place the unit in a MODE or other specified condition in which CTS LCO 3.8.1.2 is not applicable. Therefore, proposed ITS 3.8.2 Required Actions A.2.3 and B.3 are being added. These Required Actions implement a requirement to immediately initiate action to restore the required AC Sources to an OPERABLE status. These additional restrictions are consistent with implicit assumptions and will ensure action is immediately taken to restore compliance with the LCO requirements. This change is designated as more restrictive because the Required Actions do not exist in the CTS.

RELOCATED SPECIFICATIONS

None

REMOVED DETAIL CHANGES

LA01 *(Category 1 – Removing Details of System Design and System Description Including Design Limits)* CTS LCO 3.8.1.2.b specifies that an EDG be OPERABLE with a fuel transfer pump. ITS LCO 3.8.2.b requires an OPERABLE EDG capable of supplying one train of the onsite Class 1E power distribution subsystem(s). This changes the CTS by moving the details that an OPERABLE EDG requires "a fuel transfer pump" from the CTS to the Bases.

The removal of these details, which are related to system design, from the Technical Specifications is acceptable because this type of information is not necessary to be included in the Technical Specifications to provide adequate protection of public health and safety. The ITS still retains the requirements for an OPERABLE EDG and that the fuel oil transfer system operates automatically to transfer fuel oil from the storage tank to the day tank. Also, this change is acceptable because the removed information will be adequately controlled in the ITS Bases. Changes to the Bases are controlled by the Technical Specifications Bases Control Program in Chapter 5. This program provides for the evaluation of changes to ensure the Bases are properly controlled. This change is designated as a less restrictive removal of detail change because information relating to system design is being removed from the Technical Specifications.

LESS RESTRICTIVE CHANGES

L01 *(Category 4 – Relaxation of Required Action)* The CTS 3.8.1.2 Action requires the suspension of certain activities when the required AC Source is inoperable. ITS 3.8.2 provides an alternate Required Action (ITS 3.8.2 Required Action A.1) that allows the declaration of affected required feature(s) with no offsite power available inoperable instead of requiring the specified activities to be suspended. This changes the CTS by allowing the affected required feature(s) with no offsite power available to be declared inoperable instead of suspending the specified activities.

The purpose of CTS 3.8.1.2 is to ensure the appropriate offsite circuit is OPERABLE. This change is acceptable because the Required Actions are used

DISCUSSION OF CHANGES
ITS 3.8.2, AC SOURCES - SHUTDOWN

to establish remedial measure that must be taken in response to the degraded conditions in order to minimize risk associated with continued operation while providing time to repair inoperable features. The Required Actions are consistent with safe operation under the specified Condition, considering the OPERABLE status of the redundant systems or features. This includes the capacity and capability of remaining systems or features, a reasonable time for repairs or replacement, and the low probability of a loss of offsite power occurring during the repair period. This changes the CTS by allowing the affected required feature(s) with no offsite power available to be declared inoperable instead of suspending specified activities (i.e., movement of irradiated fuel assemblies). Since the ITS 3.8.2 circuit OPERABILITY requirements are proposed to require supplying power to all required electrical power distribution subsystems, if one or more subsystems are not powered by an offsite circuit, that circuit is inoperable. Conservative actions can be assured if all required equipment with offsite power is declared inoperable and the associated ACTIONS of the individual equipment taken (ITS 3.8.2 Required Action A.1). This change is designated as less restrictive because less stringent Required Actions are being applied in the ITS than were applied in the CTS.

L02 (*Category 4 – Relaxation of Required Action)* The CTS 3.8.1.2 Action specifies the compensatory action for an inoperable required AC Source. One of the compensatory actions is the suspension of CORE ALTERATIONS. Under similar conditions, ITS 3.8.2 does not require suspension of CORE ALTERATIONS. This changes the CTS by deleting the requirement to suspend CORE ALTERATIONS when a required AC source is inoperable.

The purpose of the CTS 3.8.1.2 Action to suspend CORE ALTERATIONS is to minimize the possibility of an event that may need the AC source to mitigate the consequences of the event. CORE ALTERATION is defined in CTS 1.12, in part, as "the movement of any fuel, sources, or reactivity control components, within the reactor vessel with the vessel head removed and fuel in the vessel." CORE ALTERATIONS only occur when the reactor vessel head is removed - it only applies in MODE 6. There is only one accident considered during MODE 6 that involves a CORE ALTERATION: a fuel handling accident. According to the Standard Review Plan, a fuel handling accident is initiated by the dropping of an irradiated fuel assembly, either in the containment or in the fuel building. Suspension of CORE ALTERATIONS, except for suspension of movement of irradiated fuel, will not prevent or impair the mitigation of a fuel handling accident. ITS 3.8.2 retains the requirement to suspend movement of irradiated fuel assemblies in ITS 3.8.2 Required Action A.2.1 (for an inoperable required offsite circuit) and Required Action B.1 (for an inoperable required EDG). Therefore, since the only CORE ALTERATION analyzed in the safety analysis and potentially affected by a loss of a AC source is covered by the ITS Required Actions, deletion of the term "CORE ALTERATIONS" is acceptable. This change is designated as less restrictive because less stringent Required Actions are being applied in the ITS than were applied in the CTS.

L03 *(Category 4 – Relaxation of Required Action)* The CTS 3.8.1.2 Action specifies the compensatory action for an inoperable required AC Source. One of the compensatory actions is the suspension of positive reactivity "changes." ITS 3.8.2 Required Action A.2.2 (for an inoperable required offsite circuit) and

DISCUSSION OF CHANGES
ITS 3.8.2, AC SOURCES - SHUTDOWN

Required Action B.2 (for an inoperable required DG) require the immediate suspension of operations involving positive reactivity "additions that could result in loss of required SDM or boron concentration." This changes the CTS compensatory actions by allowing positive reactivity changes as long as SDM and boron concentration limitations are met.

The purpose of the CTS 3.8.1.2 Action is to suspend any positive reactivity additions that could affect the SDM of the reactor core. This change is acceptable because the Required Actions are used to establish remedial measures that must be taken in response to the degraded conditions in order to minimize risk associated with continued operation while providing time to repair inoperable features. The Required Actions are consistent with safe operation under the specified Condition, considering the OPERABLE status of the affected redundant systems or features. This includes the capacity and capability of remaining systems or features, a reasonable time for repairs or replacement, and the low probability of a DBA occurring during the repair period. The requirements for SDM are specified in ITS LCO 3.1.1 while the requirements for boron concentration are specified in ITS LCO 3.9.1. The proposed actions may result in an overall reduction in SDM or RCS boron concentration, but provide acceptable margin to maintaining subcritical operation. The proposed Required Action is to suspend operations involving positive reactivity additions that could result in loss of required SDM or boron concentration. These limitations are considered acceptable. The ITS 3.8.2 Bases also state that introduction of temperature changes including temperature increases when operating with a positive moderator temperature coefficient must be evaluated to ensure the temperature change does not result in a loss of required SDM. This change is designated as less restrictive because less stringent Required Actions are being applied in the ITS than were applied in the CTS.

L04 *(Category 7 – Relaxation of Surveillance Frequency, Non-24 Month Type Change)* CTS 4.8.1.2 requires the AC electrical power sources to be demonstrated OPERABLE by the performance of each of the Surveillance Requirements of 4.8.1.1.1 and 4.8.1.1.2 except for requirements 4.8.1.1.1.b, 4.8.1.1.2.a.5, 4.8.1.1.2.a.7, 4.8.1.1.2.c.5, 4.8.1.1.2.c.7, and 4.8.1.1.2.d.2. ITS SR 3.8.2.1 has included a similar allowance in the Note to SR 3.8.2.1. However, additional ITS SRs are exempt from being required to be performed. ITS SR 3.8.2.1 states the following SRs are not required to be performed: SR 3.8.1.3, SR 3.8.1.10, SR 3.8.1.11, SR 3.8.1.12, SR 3.8.1.13, and SR 3.8.1.14. This changes the CTS by not requiring the performance of CTS 4.8.1.1.2.d.1 (ITS SR 3.8.1.10) and CTS 4.8.1.1.2.d.3 (ITS SR 3.8.1.13).

The purpose of CTS 3.8.1.2 is to ensure the appropriate AC Sources are demonstrated to be OPERABLE. This change is acceptable because the new Surveillance Frequency provides an acceptable level of equipment reliability. Currently CTS 4.8.1.1.1.b, 4.8.1.1.2.a.5, 4.8.1.1.2.a.7, 4.8.1.1.2.c.5, 4.8.1.1.2.c.7, and 4.8.1.1.2.d.2 are not required to be performed (however they must be met). CTS 4.8.1.1.2.d.1 (ITS SR 3.8.1.10) is the EDG single largest load reject test and CTS 4.8.1.1.2.d.3 (ITS SR 3.8.1.13) is the EDG 8 hour run test. These two tests normally require the EDG to be paralleled with offsite power. This condition (the only required EDG and the only required offsite source connected) presents a significant risk of a single fault resulting in station blackout. The NRC has

DISCUSSION OF CHANGES
ITS 3.8.2, AC SOURCES - SHUTDOWN

previously recognized this in the exception stated in CTS 4.8.1.2. In an effort to consistently address this concern and to avoid potential conflicting Technical Specifications, the Surveillances that would require the EDG to be connected to the offsite source or would require disconnection of the required offsite circuit and deenergization of required buses are excepted from performance requirements. The exception does not take the requirement for the EDG to be capable of performing the particular function, just to the requirement to demonstrate it while that source of power is being relied on to meet the supporting LCO. This change is acceptable since it is the intent that these SRs must still be capable of being met, but actual performance is not required during periods when the EDG and the offsite circuit are required to be OPERABLE. This change is designated as less restrictive because Surveillances will be performed less frequently under the ITS than under the CTS.

L05 *(Category 5 – Deletion of Surveillance Requirements)* CTS 4.8.1.2 requires the AC electrical power sources to be demonstrated OPERABLE by the performance of each of the Surveillance Requirements of 4.8.1.1.1 and 4.8.1.1.2 except for requirements 4.8.1.1.1.b, 4.8.1.1.2.a.5, 4.8.1.1.2.a.7, 4.8.1.1.2.c.5, 4.8.1.1.2.c.7, and 4.8.1.1.2.d.2. ITS SR 3.8.2.1 has included a similar allowance in the Note to SR 3.8.2.1. However, the ITS is exempting SRs from being required to be met, not just exempting them from being performed. ITS SR 3.8.2.1 states the following SRs are not required to be met: SR 3.8.1.7, SR 3.8.1.9, and SR 3.8.1.15. This changes the CTS by not requiring CTS 4.8.1.1.1.b (ITS SR 3.8.1.9), CTS 4.8.1.1.2.a.7 and 4.8.1.1.2.c.7 (ITS SR 3.8.1.7), and CTS 4.8.1.1.2.d.2, including parts (a) and (b) (ITS SR 3.8.1.15) to be met.

The purpose of CTS 3.8.1.2 is to ensure the appropriate AC Sources are demonstrated OPERABLE. This change is acceptable because the deleted Surveillance Requirements are not necessary to verify that the equipment used to meet the LCO can perform its required functions. Thus, appropriate equipment continues to be tested in a manner and at a Frequency necessary to give confidence that the equipment can perform its assumed safety function. This change deletes certain Surveillances from being required to be met. These Surveillances are CTS 4.8.1.1.1.b (ITS SR 3.8.1.9), the offsite source transfer verification test, CTS 4.8.1.1.2.a.7 and 4.8.1.1.2.c.7 (ITS SR 3.8.1.7), the load sequencer test, and CTS 4.8.1.1.2.d.2, including parts (a) and (b) (ITS SR 3.8.1.15), the SFAS/loss of offsite power signal test. ITS SR 3.8.1.9 is not required to be met since only one offsite circuit is required to be OPERABLE by ITS 3.8.2. Therefore, requiring the automatic and manual transfer capability from one offsite circuit to the other offsite circuit to be OPERABLE is not applicable. ITS SR 3.8.1.7 and ITS SR 3.8.1.15 are not required to be met since the SFAS signal is not required to be OPERABLE in the MODES or other specified conditions listed in the Applicability of ITS 3.8.2 (as shown in ITS 3.3.5). The CTS and ITS also do not require the ECCS subsystem(s) to be OPERABLE in MODE 5 and 6. The EDGs are required to support the equipment powered from the essential buses. However, when the ECCS subsystem(s) are not required to be OPERABLE, then there is no reason to require the EDG to autostart on an SFAS actuation signal. In addition, the SFAS actuation signal is only an anticipatory start signal; the EDGs are only needed during a LOCA if a loss of offsite power occurs concurrently. The EDGs are also required to start if a loss of offsite power occurs. The requirement to autostart the required EDG(s) on a

DISCUSSION OF CHANGES
ITS 3.8.2, AC SOURCES - SHUTDOWN

loss of offsite power signal is being maintained in the ITS (ITS SR 3.8.1.11). Thus, when in these conditions (associated ECCS subsystem(s) not required to be OPERABLE), there is no reason to require the EDGs to be capable of automatically starting on an SFAS actuation signal (either by itself or concurrent with a loss of offsite power signal). This change is designated as less restrictive because Surveillance which are required in CTS will not be required in the ITS.

Improved Standard Technical Specifications (ISTS) Markup and Justification for Deviations (JFDs)

CTS

3.8 ELECTRICAL POWER SYSTEMS

3.8.2 AC Sources - Shutdown

LCO 3.8.1.2

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

a. One qualified circuit between the offsite transmission network and the onsite Class 1E AC electrical power distribution subsystem(s) required by LCO 3.8.10, "Distribution Systems - Shutdown," and ; 1

emergency E

b. One diesel generator (DG) capable of supplying one train of the onsite Class 1E AC electrical power distribution subsystem(s) required by LCO 3.8.10. 2

APPLICABILITY: MODES 5 and 6,
During movement of [recently] irradiated fuel assemblies. 3

ACTIONS

--NOTE--

DOC M03

LCO 3.0.3 is not applicable.

	CONDITION	REQUIRED ACTION	COMPLETION TIME
Action	A. One required offsite circuit inoperable.	------------------NOTE------------------ Enter applicable Conditions and Required Actions of LCO 3.8.10, with one required train de-energized as a result of Condition A. -- A.1 Declare affected required feature(s) with no offsite power available inoperable. <u>OR</u>	 Immediately

CTS

ACTIONS (continued)

	CONDITION	REQUIRED ACTION	COMPLETION TIME	
Action		A.2.1 ~~Suspend CORE ALTERATIONS.~~ ~~AND~~	~~Immediately~~	TSTF-471
		A.2.2 1 Suspend movement of [~~recently~~] irradiated fuel assemblies. AND	Immediately	TSTF-471 3
		A.2.3 2 Suspend operations involving positive reactivity additions that could result in loss of required SDM or boron concentration. AND	Immediately	TSTF-471
		A.2.4 3 Initiate action to restore required offsite ~~power~~ circuit to OPERABLE status.	Immediately	TSTF-471 5
Action	B. One required E DG inoperable.	B.1 ~~Suspend CORE ALTERATIONS.~~ ~~AND~~	~~Immediately~~	2 TSTF-471
		B.2 1 Suspend movement of [~~recently~~] irradiated fuel assemblies. AND	Immediately	TSTF-471 3
		B.3 2 Suspend operations involving positive reactivity additions that could result in loss of required SDM or boron concentration. AND	Immediately	TSTF-471

CTS

ACTIONS (continued)

	CONDITION	REQUIRED ACTION		COMPLETION TIME	
Action		B.~~4~~ 3	Initiate action to restore required E DG to OPERABLE status.	Immediately	TSTF -471 2

SURVEILLANCE REQUIREMENTS

	SURVEILLANCE		FREQUENCY	
4.8.1.2	SR 3.8.2.1	-----------------------------NOTE----------------------------- The following SRs are not required to be performed: SR 3.8.1.3, SR 3.8.1.~~9 through~~ 10, SR 3.8.1.11, SR 3.8.1.12, ~~13~~ ~~through~~ SR 3.8.1.13, and SR 3.8.1.~~16, and~~ 14 ~~[SR 3.8.1.18]~~. --- For AC sources required to be OPERABLE, the SRs of Specification 3.8.1, "AC Sources - Operating," except SR 3.8.1.6, SR 3.8.1.~~8~~ 9, ~~SR 3.8.1.12, SR 3.8.1.17,~~ SR 3.8.1.~~19~~ 15, ~~and~~ ~~SR 3.8.1.20,~~ are applicable.	In accordance with applicable SRs	4 4

JUSTIFICATION FOR DEVIATIONS
ITS 3.8.2, AC SOURCES - SHUTDOWN

1. These punctuation corrections have been made consistent with the Writer's Guide for the Improved Standard Technical Specifications, TSTF-GG-05-01, Section 5.1.3.

2. Changes are made (additions, deletions, and/or changes) to the ISTS that reflect the plant specific nomenclature.

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

4. The SRs have been changed to be consistent with the changes made to the Surveillance Requirements in ITS 3.8.1. In addition, ISTS SR 3.8.1.18 (ITS SR 3.8.1.6) has been deleted from the Note to SR 3.8.2.1 and added to those Surveillances not required to be met. ISTS SR 3.8.1.18 (ITS SR 3.8.1.6) is the verification that the interval between each sequenced load block is within ± 10% of design interval for each load sequencer and emergency time delay relay. The load sequencers actuate under a Safety Features Actuation System (SFAS) signal coincident with a loss of offsite power. The SFAS signal is not required to be OPERABLE in the MODES or other specified conditions listed in the Applicability of ITS 3.8.2 (as shown in ITS 3.3.5).

5. Change made to be consistent with the nomenclature in ISTS LCO 3.8.2 and Condition A.

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Improved Standard Technical Specifications (ISTS) Bases Markup and Justification for Deviations (JFDs)

B 3.8 ELECTRICAL POWER SYSTEMS

B 3.8.2 AC Sources - Shutdown

BASES

BACKGROUND

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

APPLICABLE SAFETY ANALYSES

The OPERABILITY of the minimum AC sources during MODES 5 and 6 and during movement of ~~[recently]~~ irradiated fuel assemblies ensures that: 1

a. The unit can be maintained in the shutdown or refueling condition for extended periods~~,~~ ; 2

b. Sufficient instrumentation and control capability is available for monitoring and maintaining the unit status~~,~~ ; and 2

c. Adequate AC electrical power is provided to mitigate events postulated during shutdown, such as a fuel handling accident ~~[involving handling recently irradiated fuel. Due to radioactive decay, AC electrical power is only required to mitigate fuel handling accidents involving handling recently irradiated fuel (i.e., fuel that has occupied part of a critical reactor core within the previous [x] days)]~~. 3

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 have no specific analyses in MODES 5 and 6. Worst-case bounding events are deemed not credible in MODES 5 and 6 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.

BASES

APPLICABLE SAFETY ANALYSES (continued)

During MODES 1, 2, 3, and 4 various deviations from the analysis assumptions and design requirements are allowed within the Required Actions. This allowance is in recognition that certain testing and maintenance activities must be conducted provided an acceptable level of risk is not exceeded. During MODES 5 and 6, performance of a significant number of required testing and maintenance activities is also required. In MODES 5 and 6, the activities are generally planned and administratively controlled. Relaxations from MODE 1, 2, 3, and 4 LCO requirements are acceptable during shutdown MODES based on:

a. The fact that time in an outage is limited. This is a risk prudent goal as well as a utility economic consideration. ; 2

b. Requiring appropriate compensatory measures for certain conditions. These may include administrative controls, reliance on systems that do not necessarily meet typical design requirements applied to systems credited in operating MODE analyses, or both. ; 2

c. Prudent utility consideration of the risk associated with multiple activities that could affect multiple systems, and ; 2

d. Maintaining, to the extent practical, the ability to perform required functions (even if not meeting MODE 1, 2, 3, and 4 OPERABILITY requirements) with systems assumed to function during an event.

In the event of an accident during shutdown, this LCO ensures the capability to support systems necessary to avoid immediate difficulty, assuming either a loss of all offsite power or a loss of all onsite diesel generator (DG) power. emergency E 4

- Shutdown ies

~~The~~ AC ~~s~~ources satisf~~y~~ Criterion 3 of 10 CFR 50.36(c)(2)(ii). 5

LCO

One offsite circuit capable of supplying the onsite Class 1E power distribution subsystem(s) of LCO 3.8.10, "Distribution Systems - Shutdown," ensures that all required loads are powered from offsite power. An OPERABLE DG, associated with a distribution system train required to be OPERABLE by LCO 3.8.10, ensures a diverse power source is available to provide electrical power support, assuming a loss of the offsite circuit. Together, OPERABILITY of the required offsite circuit and DG ensures the availability of sufficient AC sources to operate the unit in a safe manner and to mitigate the consequences of postulated events during shutdown (e.g., fuel handling accidents [involving ~~handling~~ recently ~~irradiated~~ fuel]). E E 4 4 1

BASES

LCO (continued)

The qualified offsite circuit must be capable of maintaining rated frequency and voltage, and accepting required loads during an accident, while connected to the ~~Engineered Safety Feature (ESF)~~ essential bus(es). 4 ~~Qualified offsite circuits are those that are described in the FSAR and are part of the licensing basis for the unit.~~ 7

~~[Offsite circuit #1 consists of Safeguards Transformer B, which is supplied from Switchyard Bus B, and is fed through breaker 52-3 powering the ESF transformer XNB01, which, in turn, powers the #1 ESF bus through its normal feeder breaker. The second offsite circuit consists of the Startup Transformer, which is normally fed from the Switchyard Bus A, and is fed through breaker PA O201 powering the ESF transformer, which, in turn, powers the #2 ESF bus through its normal feeder breaker.]~~ INSERT 1 4

The E DG must be capable of starting, accelerating to rated speed and voltage, and connecting to its respective ~~ESF~~ essential bus on detection of bus undervoltage (loss of voltage or degraded voltage). This sequence must be accomplished within [10] seconds. The E DG must be capable of accepting required shutdown loads ~~within the assumed loading sequence intervals~~ (shutdown loads are started through individual time delay relays), and must continue to operate until offsite power can be restored to the ~~ESF~~ essential buses. These capabilities are required to be met from a variety of initial conditions such as E DG in standby with the engine hot and E DG in standby at ambient conditions. 4

Proper sequencing of loads, including tripping of non-essential loads, is a required function for E DG OPERABILITY. 4

~~[In addition, proper sequencer operation is an integral part of offsite circuit OPERABILITY since its inoperability impacts on the ability to start and maintain energized loads required OPERABLE by LCO 3.8.10.]~~ 3

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

APPLICABILITY

The AC sources required to be OPERABLE in MODES 5 and 6 and during movement of ~~[recently]~~ irradiated fuel assemblies provide assurance that: 1

a. Systems to provide adequate coolant inventory makeup are available for the irradiated fuel assemblies ~~,~~ ; 2

4 INSERT 1

A qualified offsite to onsite circuit consists of either one 345 – 13.8 kV startup transformer or one main transformer and one unit auxiliary transformer with the generator links removed (i.e., in backfeed alignment), one 13.8 kV bus, one 13.8 – 4.16 kV tie transformer, and the respective circuit path, including the non-essential bus and feeder breakers, to one 4.16 kV essential bus.

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APPLICABILITY (continued)

b. Systems needed to mitigate a fuel handling accident [involving handling recently irradiated fuel (i.e., fuel that has occupied part of a critical reactor core within the previous [X] days)] are available; ; 1 2

c. Systems necessary to mitigate the effects of events that can lead to core damage during shutdown are available; and ; 2

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

The AC power requirements for MODES 1, 2, 3, and 4 are covered in LCO 3.8.1.

ACTIONS

LCO 3.0.3 is not applicable while in MODE 5 or 6. However, since irradiated fuel assembly movement can occur in MODE 1, 2, 3, or 4, 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 5 or 6, LCO 3.0.3 would not specify any action. If moving irradiated fuel assemblies while in MODE 1, 2, 3, or 4, the fuel movement is independent of reactor operations. Entering LCO 3.0.3, while in MODE 1, 2, 3, or 4 would require the unit to be shutdown unnecessarily.

A.1

If

An offsite circuit would be considered inoperable if it were not available to one required ~~ESF~~ train. ~~Although~~ two trains are required by LCO 3.8.10, 4 3 the one train with offsite power available may be capable of supporting sufficient required features to allow continuation of ~~CORE ALTERATIONS and~~ [~~recently~~] irradiated fuel movement. By the allowance of the option to TSTF -471 1 declare features inoperable with no offsite power available, appropriate restrictions will be implemented in accordance with the affected required features LCO's ACTIONS.

BASES

ACTIONS (continued)

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

With the offsite circuit not available to all required trains, the option would still exist to declare all required features inoperable. 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 [recently] irradiated fuel assemblies, and operations involving positive reactivity additions that could result in loss of required SDM (MODE 5) or boron concentration (MODE 6). Suspending positive reactivity additions that could result in failure to meet the minimum SDM or boron concentration limit is required to assure continued safe operation. Introduction of coolant inventory must be from sources that have a boron concentration greater than that what would be required in the RCS for minimum SDM or refueling boron concentration. This may result in an overall reduction in RCS boron concentration, but provides acceptable margin to maintaining subcritical operation. Introduction of temperature changes including temperature increases when operating with a positive MTC must also be evaluated to ensure they do not result in a loss of required SDM.

E 4 INSERT 2 6 TSTF-471 1 INSERT 3 6 Reactor Coolant System ( ) 6 moderator temperature coefficient ( ) 6

Suspension of these activities does not preclude completion of actions to establish a safe conservative condition. These actions minimize the probability or 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 unit safety systems.

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

Pursuant to LCO 3.0.6, the Distribution System's ACTIONS are not entered even if all AC sources to it are inoperable, resulting in de-energization. Therefore, the Required Actions of Condition A are modified by a Note to indicate that when Condition A is entered with no AC power to any required ~~ESF~~ bus, the ACTIONS for LCO 3.8.10 must be immediately entered. This Note allows Condition A to provide requirements for the loss of the offsite circuit, whether or not a train is de-energized. LCO 3.8.10 provides the appropriate restrictions for the situation involving a de-energized train.

essential 4

6 **INSERT 2**

specified in LCO 3.1.1, "Shutdown Margin (SDM),"

6 **INSERT 3**

specified in LCO 3.9.1, "Boron Concentration."

BASES

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, 3, and 4. SR 3.8.1.~~8~~ 9 is not required to be met since only one offsite circuit is required to be OPERABLE. SR 3.8.1.~~12~~ 6 and SR 3.8.1.~~19~~ 15 are not required to be met because the ~~ESF~~ Safety Features Actuation System (SFAS) actuation signal is not required to be OPERABLE. ~~SR 3.8.1.6 is not required to be met because the required OPERABLE DG(s) is not required to undergo periods of being synchronized to the offsite circuit. SR 3.8.1.9 is excepted because starting independence is not required with the DG(s) that is not required to be OPERABLE.~~ 3 4 3

This SR is modified by a Note. The reason for the Note is to preclude requiring the OPERABLE E DG(s) from being paralleled with the offsite power network or otherwise rendered inoperable during performance of SRs, and to preclude deenergizing a required 4160 V ~~ESF~~ essential bus or disconnecting a required offsite circuit during performance of SRs. With limited AC sources available, a single event could compromise both the required circuit and the E 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 E DG and offsite circuit is required to be OPERABLE. Refer to the corresponding Bases for LCO 3.8.1 for a discussion of each SR. 4 4 4 4

REFERENCES None.

JUSTIFICATION FOR DEVIATIONS
ITS 3.8.2 BASES, AC SOURCES - SHUTDOWN

1. The brackets have been removed and the proper plant specific information/value has been provided.
2. These punctuation corrections have been made consistent with the Writer's Guide for Plant-Specific Improved Technical Specifications, TSTF-GG-05-01, Section 5.1.3.
3. Changes are made to the Bases to reflect changes made to the Specification.
4. Changes are made (additions, deletions, and/or changes) to the ISTS Bases which reflect the plant specific nomenclature, number, reference, system description, analysis, or licensing basis description.
5. Changes are made to reflect the actual Specification.
6. Editorial change made for clarity and consistency.
7. The qualified offsite circuit is described in this LCO section. Therefore, a reference to a description in the UFSAR is not needed.

Specific No Significant Hazards Considerations (NSHCs)

DETERMINATION OF NO SIGNIFICANT HAZARDS CONSIDERATIONS
ITS 3.8.2, AC SOURCES - SHUTDOWN

There are no specific NSHC discussions for this Specification.

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ATTACHMENT 3

ITS 3.8.3, DIESEL FUEL OIL, LUBE OIL, AND STARTING AIR

Current Technical Specification (CTS) Markup and Discussion of Changes (DOCs)

ITS 3.8.3

A01

ITS

3/4.8 ELECTRICAL POWER SYSTEMS

3/4.8.1 A.C. SOURCES

OPERATING

LIMITING CONDITION FOR OPERATION

Add proposed LCO 3.8.3 A02

LCO 3.8.3 3.8.1.1 As a minimum, the following A.C. electrical power sources shall be OPERABLE:

a. Two qualified circuits between the offsite transmission network and the onsite Class 1E A.C. electrical power distribution system, and

b. Two separate and independent diesel generators each with:

1. A separate day fuel tank containing a minimum volume of 4000 gallons of fuel,

See ITS 3.8.1

LA01

SR 3.8.3.1 2. A separate fuel storage system containing a minimum volume of 32,000 gallons of fuel, and

3. A separate fuel transfer pump. See ITS 3.8.1

APPLICABILITY: MODES 1, 2, 3 and 4. When associated EDG is required to be OPERABLE A02

ACTION: Add proposed ACTIONS A, F, and proposed ACTIONS Note L01

a. With one offsite circuit of the above required A.C. electrical power sources inoperable, demonstrate the OPERABILITY of the remaining A.C. sources by performing Surveillance Requirement 4.8.1.1.1.a within one hour and at least once per 8 hours thereafter and by performing Surveillance Requirement 4.8.1.1.2.a.4 within 24 hours. Restore at least two offsite circuits to OPERABLE status within 72 hours or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.

b. With one diesel generator of the above required A.C. electrical power sources inoperable, demonstrate the OPERABILITY of the remaining A.C. sources by performing Surveillance Requirement 4.8.1.1.1.a within one hour and at least once per 8 hours thereafter and by performing Surveillance Requirement 4.8.1.1.2.a.4 within 24 hours. Restore at least two diesel generators to OPERABLE status within 7 days or be in HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.

See ITS 3.8.1

c. With one offsite circuit and one diesel generator of the above required A.C. electrical power sources inoperable, demonstrate the OPERABILITY of the remaining A.C. sources by performing Surveillance Requirement 4.8.1.1.1.a within one hour and at least once per 8 hours thereafter and by performing Surveillance

Add proposed ACTION B M01

Add proposed ACTIONS C and D M02

Add proposed ACTION E M03

A01

ITS

ELECTRICAL POWER SYSTEMS

ACTION (Continued)

Requirement 4.8.1.1.2.a.4 within 8 hours. Restore at least one of the inoperable sources to OPERABLE status within 12 hours or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours. With the inoperable offsite source restored, restore two diesel generators to OPERABLE status within 7 days from the time of the initial loss or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours. With the inoperable diesel generator restored, restore two offsite power sources to OPERABLE status within 72 hours from the time of the initial loss or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.

d. With two of the above required offsite A.C. circuits inoperable, demonstrate the OPERABILITY of two diesel generators by performing Surveillance Requirement 4.8.1.1.2.a.4 within 8 hours and at least once per 8 hours thereafter, unless the diesel generators are already operating; restore at least one of the inoperable offsite sources to OPERABLE status within 24 hours or be in at least HOT STANDBY within the next 6 hours. With only one offsite source restored, restore at least two offsite circuits to OPERABLE status within 72 hours from time of initial loss or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours. See ITS 3.8.1

e. With two of the above required diesel generators inoperable, demonstrate the OPERABILITY of two offsite A.C. circuits by performing Surveillance Requirement 4.8.1.1.1.a within one hour and at least once per 8 hours thereafter; restore at least one of the inoperable diesel generators to OPERABLE status within 2 hours or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours. Restore at least two diesel generators to OPERABLE status within 7 days from time of initial loss or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.

SURVEILLANCE REQUIREMENTS

4.8.1.1.1 Each of the above required qualified circuits between the offsite transmission network and the onsite Class 1E A.C. electrical power distribution system shall be:

a. Determined OPERABLE at least once per 7 days by verifying correct breaker alignments and indicated power availability, and See ITS 3.8.1

b. Demonstrated OPERABLE at least once each REFUELING INTERVAL during shutdown by transferring (manually and automatically) unit power supply to each of the offsite circuits.

4.8.1.1.2 Each diesel generator shall be demonstrated OPERABLE:

SR 3.8.3.1 a. At least once per 31 days, if Surveillance Requirement 4.8.1.1.2.c has not been performed within the previous 31 days, by: A03

DAVIS-BESSE, UNIT 1 3/4 8-2 Amendment No. ~~97, 107, 203, 206,~~ 219

ITS

A01

ELECTRICAL POWER SYSTEMS

SURVEILLANCE REQUIREMENTS (Continued)

1. Verifying the fuel level in the day fuel tank. — See ITS 3.8.1

SR 3.8.3.1 2. Verifying the fuel level in the fuel storage tank.

3. Verifying the fuel transfer pump can be started and transfers fuel from the storage system to the day tank.

4. Verifying the diesel starts and accelerates up to 900 rpm, preceded by an engine prelube and/or appropriate other warmup procedures.

5. Verifying the generator is synchronized, loaded to ≥ 1000 kw, and operates for ≥ 60 minutes. — See ITS 3.8.1

6. Verifying the diesel generator is aligned to provide standby power to the associated essential busses.

7. Verifying that the automatic load sequence timer is OPERABLE with each load sequence time within ± 10% of its required value.

b. At least once per 92 days by verifying that a sample of diesel fuel from the fuel storage tank is within the acceptable limits specified in Table 1 of ASTM D975-68 when checked for viscosity, water and sediment. — See ITS 5.5

Add proposed SR 3.8.3.3 — A04

SR 3.8.3.1 c. At least once per ~~184~~ 31 days by: — A03

1. Verifying the fuel level in the day fuel tank. — See ITS 3.8.1

SR 3.8.3.1 2. Verifying the fuel level in the fuel storage tank.

3. Verifying the fuel transfer pump can be started and transfers fuel from the storage system to the day tank.

4. Verifying the diesel starts from ambient condition and accelerates to at least 900 rpm in ≤ 10 seconds.

5. Verifying the generator is synchronized, loaded to ≥ 1000 kw, and operates for ≥ 60 minutes. — See ITS 3.8.1

6. Verifying the diesel generator is aligned to provide standby power to the associated essential busses.

7. Verifying that the automatic load sequence timer is OPERABLE with each load sequence time within ± 10% of its required value.

Add proposed SR 3.8.3.2 — M01

Add proposed SR 3.8.3.4 — M03

Add proposed SR 3.8.3.5 — M04

A01

ITS

ELECTRICAL POWER SYSTEMS

A.C. SOURCES

SHUTDOWN

LIMITING CONDITION FOR OPERATION

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

a. One qualified circuit between the offsite transmission network and the onsite Class 1E A.C. electrical power distribution system, and — See ITS 3.8.2

b. One diesel generator with:

1. Day fuel tank containing a minimum volume of 4000 gallons of fuel,

SR 3.8.3.1 2. A fuel storage system containing a minimum volume of 32,000 gallons of fuel, and

3. A fuel transfer pump. — See ITS 3.8.2

APPLICABILITY: MODES 5 and 6.

ACTION:

With less than the above minimum required A.C. electrical power sources OPERABLE, suspend all operations involving CORE ALTERATIONS or positive reactivity changes until the minimum required A.C. electrical power sources are restored to OPERABLE status. — See ITS 3.8.2

SURVEILLANCE REQUIREMENTS

4.8.1.2 The above required A.C. electrical power sources shall be demonstrated OPERABLE by the performance of each of the Surveillance Requirements of 4.8.1.1.1 and 4.8.1.1.2 except for requirements 4.8.1.1.1.b, 4.8.1.1.2.a.5, 4.8.1.1.2.a.7, 4.8.1.1.2.c.5, 4.8.1.1.2.c.7, and 4.8.1.1.2.d.2.

DISCUSSION OF CHANGES
ITS 3.8.3, DIESEL FUEL OIL, LUBE OIL, AND STARTING AIR

ADMINISTRATIVE CHANGES

A01 In the conversion of the Davis-Besse Current Technical Specifications (CTS) to the plant specific Improved Technical Specifications (ITS), certain changes (wording preferences, editorial changes, reformatting, revised numbering, etc.) are made to obtain consistency with NUREG-1430, Rev. 3.1, "Standard Technical Specifications-Babcock and Wilcox Plants" (ISTS).

These changes are designated as administrative changes and are acceptable because they do not result in technical changes to the CTS.

A02 CTS 3.8.1.1 and 3.8.1.2 states the requirements for the AC Sources during operating and shutdown, respectively. These requirements are used to form the LCO and Applicability for the ITS diesel fuel oil Specification. ITS LCO 3.8.3, in part, states that the stored diesel fuel oil shall be within limits for each required EDG. The Applicability for this requirement is when the associated EDG is required to be OPERABLE. This changes the CTS by combining the requirement for diesel fuel oil into one Specification.

This change is acceptable because the current requirements are translated into ITS form with no technical changes. Diesel fuel oil is a support system for each EDG. The CTS and ITS maintain this relationship between the EDGs and the Diesel Fuel Oil System without any changes in the technical requirements. This change is designated as administrative because it does not result in a technical change to the CTS.

A03 CTS 4.8.1.1.2.a and 4.8.1.1.2.a.2 require verifying the fuel level in the fuel storage tank every 31 days, while CTS 4.8.1.1.2.c and 4.8.1.1.2.c.2 require the same verification every 184 days. In addition, CTS 4.8.1.1.2.a includes a statement that CTS 4.8.1.1.2.a.2 is only required if CTS 4.8.1.1.2.c.2 has not been performed within the previous 31 days. ITS SR 3.8.3.1 performs the same verification on a 31 day Frequency. This changes the CTS by combining these two Surveillances into a single Surveillance with a Frequency of 31 days.

This change is acceptable because CTS 4.8.1.1.2.c.2 is duplicative of CTS 4.8.1.1.2.a.2. Based on the 31 day requirement of CTS 4.8.1.1.2.a.2, the test would be performed at a 31 day interval, not the 184 day interval of CTS 4.8.1.1.2.c.2. This change is designated as administrative because it does not result in a technical change to the CTS.

A04 CTS 4.8.1.1.2.b specifies the requirements for the properties of stored fuel oil. The technical content of CTS 4.8.1.1.2.b is being moved to ITS 5.5.12, "Diesel Fuel Oil Testing Program." A Surveillance Requirement is added (ITS SR 3.8.3.3) to clarify that the tests of the Diesel Fuel Oil Testing Program must also be completed and passed for determining OPERABILITY of the stored diesel fuel oil.

The purpose of CTS 4.8.1.1.2.b is to ensure the stored diesel fuel oil properties are consistent with the specified standard. This change simply moves the actual properties to ITS 5.5.12. Any technical changes will be addressed in the Discussion of Changes for ITS 5.5. This change is acceptable since this is a

DISCUSSION OF CHANGES
ITS 3.8.3, DIESEL FUEL OIL, LUBE OIL, AND STARTING AIR

presentation preference that maintains current requirements except for those discussed in the Discussion of Changes for ITS 5.5. This change is designated as administrative because it does not result in a technical change to the CTS.

MORE RESTRICTIVE CHANGES

M01 The CTS does not provide any EDG lube oil requirements. ITS LCO 3.8.3, in part, requires the lube oil inventory to be within limits for each required EDG. The Applicability for this requirement is when the associated EDG is required to be OPERABLE. ITS SR 3.8.3.2 requires a verification that the lube oil inventory is $\geq$ 260 gallons for each EDG. ITS 3.8.3 ACTION B provides an ACTION if the limit of ITS SR 3.8.3.2 is not met. This changes the CTS by adding a lube oil inventory requirement, and an appropriate ACTION and Surveillance Requirement.

The purpose of the lube oil inventory requirement in ITS LCO 3.8.3 and SR 3.8.3.2 is to ensure a 7-day lube oil inventory for each EDG is on site. The proposed ITS SR 3.8.3.2 value, 260 gallons, will ensure the 7 day inventory requirement is met. In addition, ITS 3.8.3 ACTION B will allow the 7 day limit to not be met for each EDG for up to 48 hours, provided sufficient lube oil inventory is available for 6 days. If the lube oil inventory is not restored within 48 hours, or if the 6 day limit is not met, then the associated EDG is required to be declared inoperable immediately. Furthermore, as stated in the ITS 3.8.3 ACTIONS note, ITS 3.8.3 ACTION B is allowed to be separately entered for each EDG. Therefore, this change is acceptable. This change is considered more restrictive because it adds a new requirement to maintain a 7 day lube oil inventory for each EDG.

M02 CTS 3/4.8.1.1 does not provide any requirements for stored diesel fuel oil total particulate level or new diesel fuel oil properties. ITS SR 3.8.3.3 requires a verification that new and stored fuel oil properties are tested and maintained within limits, as specified in the Diesel Fuel Oil Testing Program. This includes stored fuel oil total particulate level and new fuel oil properties. The addition of this SR is discussed in DOC A04. Due to this addition, two new ACTIONS have been added. ITS 3.8.3 ACTION C specifies the compensatory actions for one or more EDG with stored fuel oil total particulates not within limits. ITS 3.8.3 Required Action C.1 requires the restoration of the fuel oil total particulates to within limits in 7 days. ITS 3.8.3 ACTION D specifies the compensatory actions for one or more EDGs with new fuel oil properties not within limits. ITS 3.8.3 Required Action D.1 requires the restoration of the stored fuel oil properties to within limits within 30 days. This changes the CTS by providing explicit ACTIONS for fuel oil total particulates and new fuel oil properties limits not met.

The purpose of ITS SR 3.8.3.3 is to provide the appropriate property limits for stored and new fuel oil. This change provides explicit Required Actions and Completion Times for restoring both total particulates and stored fuel oil properties (affected by the addition of new fuel oil whose properties are not within limits) to within limits. ITS 3.8.3 ACTION C is entered as a result of a failure to meet the acceptance criterion of total particulate concentration specified in ITS 5.5.12. Normally, trending of particulate levels allows sufficient time to

DISCUSSION OF CHANGES
ITS 3.8.3, DIESEL FUEL OIL, LUBE OIL, AND STARTING AIR

correct high particulate levels prior to reaching the limit of acceptability. Poor sample procedures (bottom sampling), contaminated sampling equipment, and errors in laboratory analysis can produce failures that do not follow a trend. Since the presence of particulates does not mean failure of the fuel oil to burn properly in the diesel engine, particulate concentration is unlikely to change significantly between Surveillance Frequency intervals, and proper engine performance has been recently demonstrated (within 31 days), it is prudent to allow a brief period prior to declaring the associated EDG inoperable. The 7 day Completion Time allows for further evaluation, re-sampling and re-analysis of the EDG fuel oil. ITS 3.8.3 ACTION D is entered as a result of failure to meet the requirements specified in ITS 5.5.12.b. With the new fuel oil properties defined in the Bases for ITS SR 3.8.3.3 not within the required limits, a period of 30 days is allowed for restoring the stored fuel oil properties. This period provides sufficient time to test the stored fuel oil to determine that the new fuel oil did not cause the stored fuel oil to be outside of the required limits, or to restore the stored fuel oil properties to within limits. This restoration may involve feed and bleed procedures, filtering, or combinations of these procedures. Even if an EDG start and load was required during this time interval and the stored fuel oil properties were outside limits, there is a high likelihood that the EDG would still be capable of performing its intended function. This change is designated as more restrictive because explicit Required Actions and Completion Times are included in the Technical Specifications for stored fuel oil total particulates and new diesel fuel oil properties not within limits.

M03 The CTS does not provide any starting air receiver pressure requirements. ITS LCO 3.8.3, in part, requires the required starting air receiver pressure to be within limits for each required EDG. The Applicability for this requirement is when the associated EDG is required to be OPERABLE. ITS SR 3.8.3.4 requires verification that the required starting air receiver pressure is $\geq$ 210 psig for each EDG. ITS 3.8.3 ACTION E provides an ACTION if the limit of ITS SR 3.8.3.4 is not met. This changes the CTS by adding a starting air receiver pressure requirement, and an appropriate ACTION and Surveillance Requirement.

The purpose of the starting air receiver pressure requirement in ITS LCO 3.8.3 and SR 3.8.3.4 is to ensure starting air for five diesel air starts for each EDG. The proposed ITS SR 3.8.3.4 value, 210 psig, will ensure the five diesel air start requirement is met. In addition, ITS 3.8.3 ACTION E will allow the five diesel air start requirement to not be met for each EDG for up to 48 hours, provided the required starting air receiver pressure is sufficient for one EDG start. If the required starting air receiver pressure is not restored within 48 hours, or if the required starting air receiver pressure is not sufficient for one start, then the associated EDG is required to be declared inoperable immediately. Furthermore, as stated in the ITS 3.8.3 ACTIONS Note, ITS 3.8.3 ACTION E is allowed to be separately entered for each EDG. Therefore, this change is acceptable. This change is considered more restrictive because it adds a new requirement to maintain a starting air receiver pressure for each EDG.

M04 While CTS 4.8.1.1.2.b specifies the requirements for the properties of stored fuel oil, the CTS does not provide any specific testing requirements to check for or remove accumulated water from the fuel oil storage tank. ITS SR 3.8.3.5 requires this verification every 31 days. This changes the CTS by requiring a

DISCUSSION OF CHANGES
ITS 3.8.3, DIESEL FUEL OIL, LUBE OIL, AND STARTING AIR

new Surveillance Requirement to check for and remove accumulated water from the fuel oil storage tank.

The purpose of ITS SR 3.8.3.5 is to ensure that the environment for microbiological fouling does not exist. This change is acceptable because it provides additional assurance that accumulated water is removed on a regular basis to ensure an environment does not exist for microbiological fouling. This change is more restrictive because it adds a new Surveillance Requirement to CTS.

RELOCATED SPECIFICATIONS

None

REMOVED DETAIL CHANGES

LA01 *(Category 1 – Removing Details of System Design and System Description, Including Design Limits)* CTS LCO 3.8.1.1.b requires a "separate" fuel storage system for each required EDG. ITS LCO 3.8.3 does not state that the fuel oil storage tanks are separate between diesels. This changes the CTS by moving the details of the separate fuel storage system to the ITS Bases.

The removal of these details, which are related to system design, from the Technical Specifications, is acceptable because this type of information is not necessary to be included in the Technical Specifications to provide adequate protection of public health and safety. The ITS still retains the requirements that the required fuel storage tank contains the specified volume of diesel fuel oil. Also, this change is acceptable because the removed information will be adequately controlled in the ITS Bases. Changes to the Bases are controlled by the Technical Specifications Bases Control Program in Chapter 5. This program provides for the evaluation of changes.

LESS RESTRICTIVE CHANGES

L01 *(Category 4 – Relaxation of Required Action)* The CTS 3.8.1.1 and CTS 3.8.1.2 Actions do not provide explicit compensatory actions if the volume of fuel oil in the storage tank is less than the specified limit. Thus if the minimum indicated volume is not met, the associated EDG must be declared inoperable and CTS 3.8.1.1 Action b or the CTS 3.8.1.2 Action must be entered, as applicable. ITS 3.8.3 ACTION A allows the unit to not declare the associated EDG inoperable as long as the volume of stored fuel oil is greater than a six day limit (i.e., > 26,800 gallons). In this situation, ITS 3.8.3 Required Action A.1 allows 48 hours to restore the fuel oil volume to within limits. If this Required Action and associated Completion Time are not met or if the EDG fuel oil storage tank volume is ≤ 26,800 gallons, the associated EDG must be declared inoperable immediately (ITS 3.8.3 ACTION F). In addition, a Note has been added to the ITS 3.8.3 ACTIONS that allows separate Condition entry for each EDG. This changes the CTS by allowing each EDG not to be declared inoperable with the

DISCUSSION OF CHANGES
ITS 3.8.3, DIESEL FUEL OIL, LUBE OIL, AND STARTING AIR

fuel oil storage tank volume not within the specified Surveillance limit as long as each EDG has enough fuel oil for 6 days (> 26,800 gallons) of operation at full load.

The purpose of ITS 3.8.3 ACTION A is to allow time to restore the stored diesel fuel oil volume to within the specified limit. This change is acceptable because the Required Actions are used to establish remedial measures that must be taken in response to the degraded conditions in order to minimize risk associated with continued operation while providing time to repair inoperable features. The Required Actions are consistent with safe operation under the specified Condition, considering the OPERABLE status of the redundant systems or features. This includes the capacity and capability of remaining systems or features, reasonable time for repairs or replacement, and the low probability of a DBA occurring during the repair period. The addition of ITS 3.8.3 ACTION A will allow the associated EDG not to be declared inoperable with the stored diesel fuel oil volume not within the specified Surveillance limit as long as each EDG has enough fuel oil for 6 days of operation at full load. In this Condition, the 7 day fuel oil supply for a EDG is not available. However, the Condition is restricted to fuel oil volume reductions that maintain at least a 6 day supply. These circumstances may be caused by events such as full load operation required after an inadvertent start while at minimum required level, or feed and bleed operations, which may be necessary by increasing particulate levels or any number of other oil quality degradations. This restriction allows sufficient time for obtaining the requisite replacement volume and performing the analyses required prior to addition of fuel oil to the tank. A period of 48 hours is considered sufficient to complete restoration of the required volume prior to declaring the affected EDG inoperable. This period is acceptable based on the remaining capacity (> 6 days), the fact that procedures will be initiated to obtain replenishment, and the low probability of an event during this brief period. This change is designated as less restrictive since less stringent Required Actions are being applied in the ITS than were applied in the CTS.

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Improved Standard Technical Specifications (ISTS) Markup and Justification for Deviations (JFDs)

CTS

3.8 ELECTRICAL POWER SYSTEMS

3.8.3 Diesel Fuel Oil, Lube Oil, and Starting Air

LCO 3.8.1.1.a

LCO 3.8.3 The stored diesel fuel oil, lube oil, and starting air subsystem shall be within limits for each required diesel generator (DG). emergency E 1

APPLICABILITY: When associated DG is required to be OPERABLE. E 1

ACTIONS

DOC L01

E
-----NOTE-----
Separate Condition entry is allowed for each DG. 1

	CONDITION	REQUIRED ACTION	COMPLETION TIME	
DOC L01	A. One or more DGs with fuel level < [33,000] gal and > [28,285] gal in storage tank. E 32,000 26,800	A.1 Restore fuel oil level to within limits.	48 hours	1 2
DOC M01	B. One or more DGs with lube oil inventory < [500] gal and > [425] gal. E 260 236	B.1 Restore lube oil inventory to within limits.	48 hours	1 2
DOC M02	C. One or more DGs with stored fuel oil total particulates not within limit. E	C.1 Restore fuel oil total particulates to within limits.	7 days	1
DOC M02	D. One or more DGs with new fuel oil properties not within limits. E	D.1 Restore stored fuel oil properties to within limits.	30 days	1
DOC M03	E. One or more DGs with starting air receiver pressure < [225] psig and ≥ [125] psig. E required 139	E.1 Restore starting air receiver pressure to ≥ [225] psig. 210	48 hours	1 4 2

ACTIONS (continued)

	CONDITION	REQUIRED ACTION	COMPLETION TIME	
DOC L01	F. Required Action and associated Completion Time of Condition A, B, C, D, or E not met. OR One or more E DGs with diesel fuel oil, lube oil, or starting air subsystem not within limits for reasons other than Condition A, B, C, D, or E.	F.1 Declare associated E DG inoperable.	Immediately	1 3 1

SURVEILLANCE REQUIREMENTS

	SURVEILLANCE		FREQUENCY	
3.8.1.1.b.2, 4.8.1.1.2.a.2, 4.8.1.1.2.c.2, 3.8.1.2	SR 3.8.3.1	Verify each fuel oil storage tank contains ≥ ~~[33,000]~~ 32,000 gal of fuel.	31 days	2
DOC M01	SR 3.8.3.2	Verify lube oil inventory for each EDG is ≥ ~~[500]~~ 260 gal.	31 days	5 2
DOC A04	SR 3.8.3.3	Verify fuel oil properties of new and stored fuel oil are tested in accordance with, and maintained within the limits of, the Diesel Fuel Oil Testing Program.	In accordance with the Diesel Fuel Oil Testing Program	
DOC M03	SR 3.8.3.4	Verify each required E DG air start receiver pressure is ≥ ~~[225]~~ 210 psig.	31 days	4 1 2
DOC M04	SR 3.8.3.5	Check for and remove accumulated water from each fuel oil storage tank.	~~[~~31~~]~~ days	2

JUSTIFICATION FOR DEVIATIONS
ITS 3.8.3, DIESEL FUEL OIL, LUBE OIL, AND STARTING AIR

1. Changes are made (additions, deletions, and/or changes) to the ISTS, which reflect the plant specific nomenclature.

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

3. These corrections have been made consistent with the Writer's Guide for the Improved Standard Technical Specifications, TSTF-GG-05-01, Section 4.1.6.i.5.ii.

4. The Davis-Besse design includes two redundant starting air receivers per emergency diesel generator (EDG). Each starting air receiver provides sufficient air for five start attempts. Therefore, ITS 3.8.3 Condition C has been modified to only specify the "required" starting air receiver. This change is consistent with the use of the word required in the ISTS, as stated in the Writer's Guide for Plant-Specific Improved Technical Specifications, TSTF-GG-05-01, Section 4.1.3.b.

5. The lube oil inventory value provided in ISTS SR 3.8.3.2 is for each EDG, as stated in ISTS 3.8.3 Condition B. Therefore, the clarifying phrase "for each EDG" has been added.

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Improved Standard Technical Specifications (ISTS) Bases Markup and Justification for Deviations (JFDs)

B 3.8 ELECTRICAL POWER SYSTEMS

B 3.8.3 Diesel Fuel Oil, Lube Oil, and Starting Air

BASES

emergency E S

BACKGROUND

Each diesel generator (DG) is provided with [a] storage tank having a fuel oil capacity sufficient to operate that diesel for a period of 7 days while the DG is supplying maximum post loss of coolant accident load demand discussed in the FSAR, Section [9.5.4.2] (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 1 2 1

E U 8.3.1 E

the a submersed inside

Fuel oil is transferred from storage tank to day tank by [either of two] transfer pumps [associated with] each storage tank. [Redundancy of pumps and piping precludes the failure of one pump, or the rupture of any pipe, valve or tank to result in the loss of more than one DG. All outside tanks, pumps, and piping are located underground.] 1

Each storage tank is installed above grade elevation.

E

While Davis-Besse is not committed to this Regulatory Guide.

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) addresses the recommended fuel oil practices as supplemented by ANSI N195 (Ref. 3). The fuel oil properties governed by these SRs are the water and sediment content, the kinematic viscosity, specific gravity (or API gravity), and impurity level. 1 1

E E

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 of continuous operation.] This supply is sufficient to allow the operator to replenish lube oil from outside sources. 1 1 2

normally

E

two air start receivers per subsystem, and each air start receiver has

Each DG has an air start system with adequate capacity for five successive start attempts on the DG without recharging the air start receiver[s]. 1

E

BASES

Section Section

APPLICABLE SAFETY ANALYSES

U s E

The initial conditions of Design Basis Accident (DBA) and transient analyses in the FSAR, Chapter [6] (Ref. 4) and Chapter [15] (Ref. 5), assume Engineered Safety Feature (ESF) systems are OPERABLE. The DGs are designed to provide sufficient capacity, capability, redundancy, and reliability to ensure the availability of necessary power to ESF systems so that fuel, Reactor Coolant System, and containment design limits are not exceeded. These limits are discussed in more detail in the Bases for Section 3.2, Power Distribution Limits; Section 3.4, Reactor Coolant System (RCS); and Section 3.6, Containment Systems. 1 2 1

Since diesel fuel oil, lube oil, and the air start 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 have sufficient supply for 7 days of full load operation. It is also required to meet specific standards for quality. Additionally, sufficient lube oil supply must be available to ensure the capability to operate at full load for 7 days. This requirement, in conjunction with an ability to obtain replacement supplies within 7 days, supports the availability of DGs required to shut down the reactor and to maintain it in a safe condition for an anticipated operational occurrence (AOO) or a postulated DBA with loss of offsite power. DG day tank fuel requirements, as well as transfer capability from the storage tank to the day tank, are addressed in LCO 3.8.1, "AC Sources - Operating," and LCO 3.8.2, "AC Sources - Shutdown." E E 1 1

sub E

The starting air system is required to have a minimum capacity for five successive DG start attempts without recharging the air start receivers. Thus, only one of the two air start receivers for each EDG is required to be OPERABLE. 1 3

APPLICABILITY

The AC sources (LCO 3.8.1 and LCO 3.8.2) are required to ensure the availability of the required power to shut down the reactor and maintain it in a safe shutdown condition after an AOO or a postulated DBA. Since stored diesel fuel oil, lube oil, and the starting air subsystem support LCO 3.8.1 and LCO 3.8.2, stored diesel fuel oil, lube oil, and starting air are required to be within limits when the associated DG is required to be OPERABLE. E 1

ACTIONS

The ACTIONS Table is modified by a Note indicating that separate Condition entry is allowed for each DG. This is acceptable, since the Required Actions for each Condition provide appropriate compensatory actions for each inoperable DG subsystem. Complying with the Required Actions for one inoperable DG subsystem may allow for continued operation, and subsequent inoperable DG subsystem(s) are governed by separate Condition entry and application of associated Required Actions. E E 1 1

BASES

ACTIONS (continued)

A.1 n E

In this Condition, the 7 day fuel oil supply for a DG is not available. 1
However, the Condition is restricted to fuel oil level reductions, that maintain at least a 6 day supply. These circumstances may be caused by events, such as full load operation required after an inadvertent start while at minimum required level, or feed and bleed operations which may be necessitated by increasing particulate levels or any number of other oil quality degradations. This restriction allows sufficient time for obtaining the requisite replacement volume and performing the analyses required prior to addition of fuel oil to the tank. A period of 48 hours is considered sufficient to complete restoration of the required level prior to declaring
E the DG inoperable. This period is acceptable based on the remaining 1
capacity (~~>~~ 6 days), the fact that procedures will be initiated to obtain 6
≥ replenishment, and the low probability of an event during this brief period.

B.1 260

With lube oil inventory < ~~500~~ gal, sufficient lube oil to support 7 days of 3
E continuous DG operation at full load conditions may not be available. 1
However, the Condition is restricted to lube oil volume reductions that maintain at least a 6 day supply. This restriction allows sufficient time to obtain the requisite replacement volume. A period of 48 hours is considered sufficient to complete restoration of the required volume prior
E to declaring the DG inoperable. This period is acceptable based on the 1
remaining capacity (~~>~~ 6 days), the low rate of usage, the fact that 6
≥ procedures will be initiated to obtain replenishment, and the low probability of an event during this brief period.

C.1

This Condition is entered as a result of a failure to meet the acceptance
3 criterion of SR 3.8.3.~~5~~. Normally, trending of particulate levels allows 4
sufficient time to correct high particulate levels prior to reaching the limit of acceptability. Poor sample procedures (bottom sampling), contaminated sampling equipment, and errors in laboratory analysis can produce failures that do not follow a trend. Since the presence of

BASES

ACTIONS (continued)

particulates does not mean failure of the fuel oil to burn properly in the diesel engine, particulate concentration is unlikely to change significantly between Surveillance Frequency intervals, and proper engine performance has been recently demonstrated (within 31 days), it is prudent to allow a brief period prior to declaring the associated E DG inoperable. The 7 day Completion Time allows for further evaluation, resampling, and re-analysis of the E DG fuel oil. 1 1

D.1

If test results for the that are not required to be obtained prior to addition of the new fuel oil to the storage tanks are 3

~~With~~ the new fuel oil properties defined in the Bases for SR 3.8.3.~~4~~ not within the required limits, a period of 30 days is allowed for restoring the stored fuel oil properties. This period provides sufficient time to test the stored fuel oil to determine that the new fuel oil, when mixed with previously stored fuel oil, remains acceptable, or to restore the stored fuel oil properties. This restoration may involve feed and bleed procedures, filtering, or combinations of these procedures. Even if a n E DG start and load was required during this time interval and the fuel oil properties were outside limits, there is a high likelihood that the E DG would still be capable of performing its intended function. 5 4 1 1

E.1

210 in the required air start receiver

With starting air receiver pressure < ~~[225]~~ psig, sufficient capacity for five successive E DG start attempts does not exist. However, as long as the receiver pressure is ≥ 139 ~~> [125]~~ psig, there is adequate capacity for at least one start attempt, and the E DG can be considered OPERABLE while the air receiver pressure is restored to the required limit. A period of 48 hours is considered sufficient to complete restoration to the required pressure prior to declaring the E DG inoperable. This period is acceptable based on the remaining air start capacity, the fact that most E DG starts are accomplished on the first attempt, and the low probability of an event during this brief period. 2 3 2 1

F.1

With a Required Action and associated Completion Time not met, or one or more E DGs with fuel oil, lube oil, or starting air subsystem not within limits for reasons other than addressed by Conditions A through E, the associated E DG may be incapable of performing its intended function and must be immediately declared inoperable. 1

BASES

SURVEILLANCE REQUIREMENTS

SR 3.8.3.1

Credit for the minimum required level in the associated day tank (4000 gallons per SR 3.8.1.4) is being taken to support the 7 days of EDG operation.

E

This SR provides verification that there is an adequate inventory of fuel oil in the storage tanks to support each DG's operation for 7 days at full load. The 7 day period is sufficient time to place the unit in a safe shutdown condition and to bring in replenishment fuel from an offsite location. 1

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

SR 3.8.3.2

This Surveillance ensures that sufficient lube oil inventory is available to support at least 7 days of full load operation for each DG. The ~~[500]~~ 260 gal requirement is based on the DG manufacturer consumption values for the run time of the DG. Implicit in this SR is the requirement to verify the capability to transfer the lube oil from its storage location to the DG, when the DG lube oil sump does not hold adequate inventory for 7 days of full load operation without the level reaching the manufacturer recommended minimum level. 2 1

E

A 31 day Frequency is adequate to ensure that a sufficient lube oil supply is onsite, since DG starts and run time are closely monitored by the unit staff. 1

E

SR 3.8.3.3

The tests listed below are a means of determining whether new fuel oil is of the appropriate grade and has not been contaminated with substances that would have an immediate, detrimental impact on diesel engine combustion. If results from these tests are within acceptable limits, the fuel oil may be added to the storage tanks without concern for contaminating the entire volume of fuel oil in the storage tanks. These tests are to be conducted prior to adding the new fuel to the storage tank(s), but in no case is the time between receipt of new fuel and conducting the tests to exceed 31 days. The tests, limits, and applicable ASTM Standards are as follows:

a. Sample the new fuel oil in accordance with ASTM D4057-~~[ ]~~ 95 (Ref. 6)~~.~~ ; 2 8

BASES

SURVEILLANCE REQUIREMENTS (continued)

06

b. Verify in accordance with the tests specified in ASTM D975-[/] (Ref. 6) that the sample has an absolute specific gravity at 60/60°F of ≥ ~~0.83~~ and ~~≥ 0.89~~ or an API gravity at 60°F of ≥ ~~27~~° and ≤ ~~39~~° when tested in accordance with ASTM D1298-[/] (Ref. 6), a kinematic viscosity at 40°C of ≥ 1.9 centistokes and ≤ 4.1 centistokes, and a flash point of ≥ 125°F, and 2 4 2 8

0.825 ≤ 0.876 85 30 40 ;

c. Verify that the new fuel oil has a clear and bright appearance with proper color when tested in accordance with ASTM D4176-[/] or a water and sediment content within limits when tested in accordance with [ASTM D~~2709~~-[ ]] (Ref. 6). 86 2 2

the test specified in 975-06

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

Within 31 days following the initial new fuel oil sample, the fuel oil is analyzed to establish that the other properties specified in Table 1 of ASTM D975-[/] (Ref. 7) are met for new fuel oil when tested in accordance with ASTM D975-[/] (Ref. 6), except that the analysis for sulfur may be performed in accordance with ~~ASTM D1552-[ ],~~ ~~ASTM D2622-[ ], or~~ ASTM D4294-[/] (Ref. 6). The 31 day period is acceptable because the fuel oil properties of interest, even if they were not within stated limits, would not have an immediate effect on DG operation. This Surveillance ensures the availability of high quality fuel oil for the DGs. 2 1 1

06 90 E E

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

Particulate concentrations should be determined in accordance with ASTM D~~5452~~-[ ] (Ref. 6). ~~This method involves a gravimetric determination of~~ total particulate concentration in the fuel oil ~~and~~ has a limit of 10 mg/l. ~~It is acceptable to obtain a field sample for subsequent laboratory testing in lieu of field testing.~~ ~~[For those designs in which the total stored fuel oil volume is contained in two or more interconnected tanks, each tank must be considered and tested separately.]~~ 2 7 7 1

2276-88 The

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

BASES

SURVEILLANCE REQUIREMENTS (continued)

SR 3.8.3.4

E This Surveillance ensures that, without the aid of the refill compressor, sufficient air start capacity for each DG is available. The system design requirements provide for a minimum of [five] engine start cycles without recharging. [A start cycle is defined by the DG vendor, but usually is measured in terms of time (seconds of cranking) or engine cranking speed.] The pressure specified in this SR is intended to reflect the lowest value at which the [five] starts can be accomplished. 1 1 2 2 3

for each air start receiver

using only one of the two air start receivers for each EDG

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

SR 3.8.3.5

Microbiological fouling is a major cause of fuel oil degradation. There are numerous bacteria that can grow in fuel oil and cause fouling, but all must have a water environment in order to survive. Removal of water from the fuel storage tanks once every [31] days eliminates the necessary environment for bacterial survival. This is the most effective means of controlling microbiological fouling. In addition, it eliminates the potential for water entrainment in the fuel oil during DG operation. Water may come from any of several sources, including condensation, ground water, rain water, contaminated fuel oil, and from breakdown of the fuel oil by bacteria. Frequent checking for and removal of accumulated water minimizes fouling and provides data regarding the watertight integrity of the fuel oil system. The Surveillance Frequencies are established by Regulatory Guide 1.137 (Ref. 2). This SR is for preventive maintenance. The presence of water does not necessarily represent failure of this SR, provided the accumulated water is removed during performance of the Surveillance. E

BASES

REFERENCES

1. U FSAR, Section ~~[9.5.4.2]~~ 8.3.1. (1) (2)
2. Regulatory Guide 1.137.
3. ANSI N195-1976, Appendix B.
4. U FSAR, ~~Chapter~~ Section [6]. (1) (2)
5. U FSAR, ~~Chapter~~ Section [15]. (1) (2)
6. ASTM Standards: D4057-[95]; D975-[06]; D1298-[85]; D4176-[86]; ~~[D2709-[ ];]~~ ~~[D1552-[ ]; D2622-[ ];]~~ D4294-[90]; D~~5452-[ ]~~ 2276-88. (2)
7. ASTM Standards, D975-[06], Table 1. (2)

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JUSTIFICATION FOR DEVIATIONS
ITS 3.8.3 BASES, DIESEL FUEL OIL, LUBE OIL, AND STARTING AIR

1. Changes are made (additions, deletions, and/or changes) to the ISTS Bases which reflect the plant specific nomenclature, number, reference, system description, analysis, or licensing basis description.
2. The brackets have been removed and the proper plant specific information/value has been provided.
3. Changes made to be consistent with changes made to the Specifications.
4. Typographical error corrected.
5. Editorial change made for clarity.
6. Changes made to be consistent with the Specification.
7. ASTM D2276-88 already provides these methods and allowances. Therefore, it is not necessary to include the statements.
8. These punctuation corrections have been made consistent with the Writer's Guide for the Improved Standard Technical Specifications, TSTF-GG-05-01, Section 5.1.3.

Specific No Significant Hazards Considerations (NSHCs)

DETERMINATION OF NO SIGNIFICANT HAZARDS CONSIDERATIONS
ITS 3.8.3, DIESEL FUEL OIL, LUBE OIL, AND STARTING AIR

There are no specific NSHC discussions for this Specification.

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ATTACHMENT 4

ITS 3.8.4, DC SOURCES - OPERATING

Current Technical Specification (CTS) Markup and Discussion of Changes (DOCs)

ITS 3.8.4

A01

ITS

ELECTRICAL POWER SYSTEMS

D.C. DISTRIBUTION - OPERATING

LIMITING CONDITION FOR OPERATION

electrical power sources

LA01

See ITS 3.8.9

LCO 3.8.4

3.8.2.3 The following D.C. bus trains shall be energized and OPERABLE with disconnect switches between bus trains open:

See ITS 3.8.9

LA01

TRAIN "A" consisting of 250/125-volt D.C. MCC 1, 125-volt D.C. station batteries 1P and 1N and 2 full capacity chargers.

See ITS 3.8.9

LA01

TRAIN "B" consisting of 250/125-volt D.C. MCC 2, 125-volt D.C. station batteries 2P and 2N and 2 full capacity chargers.

APPLICABILITY: MODES 1, 2, 3 and 4.

ACTION:

a. With only one 125-volt D.C. bus of a 250/125 volt D.C. MCC OPERABLE, restore the inoperable bus to OPERABLE status within 2 hours or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.

See ITS 3.8.9

L02

ACTION A, ACTION B

b. With only one 125-volt D.C. battery or only one charger of one MCC OPERABLE, restore the inoperable battery or charger to OPERABLE status within 2 hours or be in at least HOT STANDBY

L01

ACTION C

within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.

SURVEILLANCE REQUIREMENTS

4.8.2.3.1 Each D.C. bus train shall be determined OPERABLE and energized with disconnect switches open between redundant busses at least once per 7 days by verifying correct disconnect switch/breaker alignment, indicated power availability from the charger and battery, and voltage on the bus of greater than or equal to 125 volts D.C.

See ITS 3.8.9

4.8.2.3.2 Each 125-volt battery and charger shall be demonstrated OPERABLE:

a. At least once per 7 days by:

1. Verifying that the parameters in Table 4.8-1 meet the Category A limits, and

See ITS 3.8.6

ITS 3.8.4

A01

ITS

ELECTRICAL POWER SYSTEMS

SURVEILLANCE REQUIREMENTS (Continued)

SR 3.8.4.1 2. Verifying total battery terminal voltage is greater than or equal to 129 volts on float charge. minimum established float voltage LA02

b. At least once per 92 days and within 7 days after a battery discharge (battery terminal voltage below 110 volts), or battery overcharge (battery terminal voltage above 150 volts), by:

1. Verifying that the parameters in Table 4.8-1 meet the Category B limits, See ITS 3.8.6

2. Verifying that there is no visible corrosion at either terminals or connectors, or the connection resistance of these items is less than 150 x 10^{-6} ohms, and

3. Verifying that the average electrolyte temperature of every sixth connected cell is above 60°F.

L03 L04

SR 3.8.4.2 c. At least once per 18 months by verifying that the battery charger will supply at least 475 amperes at a minimum of 130 volts for at least 8 hours; and at least once each REFUELING INTERVAL by verifying that: established float voltage Add proposed 2nd option for SR 3.8.4.2

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

2. The cell-to-cell and terminal connections are clean, tight and coated with anti-corrosion material, and See ITS 3.8.6

3. The resistance of each cell-to-cell and terminal connection is less than or equal to 150 x 10^{-6} ohms.

L05

SR 3.8.4.3 d. At least once each REFUELING INTERVAL, during shutdown, by verifying that the battery capacity is adequate to supply and maintain in OPERABLE status all of the actual or simulated emergency loads for the design duty cycle when the battery is subjected to a battery service test. ~~Once per 60 months,~~ a modified performance discharge test may be performed in lieu of the battery service test. L06

e. Verify battery capacity is ≥ 80% of the manufacturer's rating when subjected to a performance discharge test or modified performance discharge test:

1. At least once per 60 months, during shutdown, when the battery shows no signs of degradation, and has not reached 85% of service life.

2. At least once per 12 months, during shutdown, when the battery shows signs of degradation, or has reached 85% of service life with < 100% of the manufacturer's rated capacity. See ITS 3.8.6

3. At least once per 24 months, during shutdown, when the battery has reached 85% of service life with ≥ 100% of the manufacturer's rated capacity.

DISCUSSION OF CHANGES
ITS 3.8.4, DC SOURCES - OPERATING

ADMINISTRATIVE CHANGES

A01 In the conversion of the Davis-Besse Current Technical Specifications (CTS) to the plant specific Improved Technical Specifications (ITS), certain changes (wording preferences, editorial changes, reformatting, revised numbering, etc.) are made to obtain consistency with NUREG-1430, Rev. 3.1, "Standard Technical Specifications-Babcock and Wilcox Plants" (ISTS).

These changes are designated as administrative changes and are acceptable because they do not result in technical changes to the CTS.

MORE RESTRICTIVE CHANGES

None

RELOCATED SPECIFICATIONS

None

REMOVED DETAIL CHANGES

LA01 *(Category 1 – Removing Details of System Design and System Description, Including Design Limits)* CTS 3.8.2.3 states that the DC bus trains shall be energized and OPERABLE with tie breakers between bus trains open. The details of what constitutes Train A and Train B are also listed. Train A consists of 250/125-volt DC MCC1, 125-volt DC station batteries 1P and 1N and 2 full capacity chargers. Train B consists of 250/125-volt DC MCC2, 125-volt DC station batteries 2P and 2N and 2 full capacity chargers. ITS LCO 3.8.4 requires the Train 1 and Train 2 DC electrical power sources to be OPERABLE. This changes the CTS by moving the details of the components of the DC Sources (battery and charger) from the CTS to the Bases. The 250/125-volt DC MCC buses are part of the Distribution System Specification (ITS 3.8.9) and all aspect of the buses are addressed in ITS 3.8.9.

The removal of these details, which are related to system design, from the Technical Specifications, is acceptable because this type of information is not necessary to be included in the Technical Specifications to provide adequate protection of public health and safety. The ITS still retains the OPERABILITY statement for the Train 1 and Train 2 DC electrical power sources. Also, this change is acceptable because the removed information will be adequately controlled in the ITS Bases. Changes to the Bases are controlled by the Technical Specification Bases Control Program in Chapter 5. This program is designated as a less restrictive removal of detail change because information relating to system design is being removed from the Technical Specifications.

LA02 *(Category 1 – Removing Details of System Design and System Description, Including Design Limits)* CTS 4.8.2.3.2.a.2 requires the total battery terminal voltage to be greater than or equal to 129 volts on float charge. ITS SR 3.8.4.1

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DISCUSSION OF CHANGES
ITS 3.8.4, DC SOURCES - OPERATING

requires the verification that the battery terminal voltage is greater than or equal to the minimum established float voltage. This changes the CTS by moving the specific value of the minimum established float voltage (129 V) from the CTS to the Bases.

The removal of this value, which is related to system design, from the Technical Specifications, is acceptable because this type of information is not necessary to be included in the Technical Specifications to provide adequate protection of public health and safety. The ITS still retains the requirement that the battery terminal voltage be greater than or equal to the minimum established float voltage. Also, this change is acceptable because the removed information will be adequately controlled in the ITS Bases. Changes to the Bases are controlled by the Technical Specification Bases Control Program in Chapter 5. This program is designated as a less restrictive removal of detail change because information relating to system design is being removed from the Technical Specifications.

LESS RESTRICTIVE CHANGES

L01 *(Category 4 – Relaxation of Required Action)* CTS 3.8.2.3 Action b states, in part, that with only one charger of one MCC OPERABLE, restore the inoperable charger to OPERABLE status within 2 hours. ITS 3.8.4 ACTION A has been added and covers the condition of one or two Train 1 or Train 2 battery chargers inoperable. ITS 3.8.4 Required Action A.1 requires the restoration of the battery terminal voltage to greater than or equal to the minimum established float voltage within 2 hours. ITS 3.8.4 Required Action A.2 requires the verification that the battery float current is $\leq$ 2 amps once per 12 hours and ITS 3.8.4 Required Action A.3 requires the restoration of the battery charger to OPERABLE status within 7 days. This changes the CTS by extending the time one or two battery chargers in one train may be inoperable.

The purpose of CTS 3.8.2.3 is to ensure that the Train 1 and Train 2 DC Sources are capable of supplying the associated loads during a design bases accident. This change is acceptable because the Required Actions are used to establish remedial measures that must be taken in response to the degraded conditions in order to minimize risk associated with continued operation while providing time to repair inoperable features. This includes the capacity and capability of remaining systems or features, a reasonable time for repairs or replacement, and the low probability of a DBA occurring during the repair period. The proposed ITS 3.8.4 ACTION A provides a 7 day restoration time for one train (i.e., Train 1 or Train 2) with one or two inoperable battery chargers. However, this time is contingent on a focused and tiered approach to assuring adequate battery capacity is maintained. The first priority for the operator is to minimize the battery discharge, which is required to be terminated within 2 hours (ITS Required Actions A.1). Presuming that the battery discharge (if occurring) can be terminated and that the DC bus remains energized (as required by a separate LCO), there is a reasonable basis for extending the restoration time for one or two inoperable chargers beyond the 2 hour limit of ITS 3.8.4 Required Action A.1. The second tiered action proposes 12 hours to establish that the battery has sufficient capacity to perform its assumed duty cycle (which may involve some recharging of lost capacity that occurred during the initial hours). Given the choice of a unit

DISCUSSION OF CHANGES
ITS 3.8.4, DC SOURCES - OPERATING

shutdown in this condition (as currently required) versus a 12 hour determination (at the end of which it is reasonable to assume the battery can be shown to have its assumed capacity) followed by a 7 day restoration period, this is an acceptable relaxation. Since the focus of this allowance is that battery capacity be preserved and assured, the means of accomplishing this may be to utilize the spare battery charger that could be employed within the initial 2 hours, while in other cases it may be the degraded inservice charger that can continue to float the battery. Furthermore, the remaining DC source is fully OPERABLE during this extended time period and can still perform the assumed safety function. This change is designated as less restrictive because less stringent Required Actions are being applied in the ITS than were applied in the CTS.

L02 *(Category 4 – Relaxation of Required Action)* CTS 3.8.2.3 Action b states that one of the required 125 VDC batteries or chargers for an MCC may be inoperable and provides 2 hours for the inoperable battery or charger to be restored to OPERABLE status. ITS 3.8.4 ACTION B provides the actions for one DC electrical power source inoperable for reasons other than those covered by ITS 3.8.4 ACTION A. Thus ITS 3.8.4 ACTION B covers one or two batteries inoperable in one train and covers both batteries and chargers in one train concurrently inoperable. The required DC electrical power source must be restored to OPERABLE status within 2 hours. This changes the CTS by allowing more than one battery or charger in the same train to be inoperable concurrently.

This change is acceptable because the Required Actions are used to establish remedial measures that must be taken in response to the degraded conditions in order to minimize risk associated with continued operation while providing time to repair inoperable features. The Required Actions are consistent with safe operation under the specified Condition, considering the OPERABLE status of the redundant systems or features. This includes the capacity and capability of remaining systems or features, a reasonable time for repairs or replacement, and the low probability of a DBA occurring during the repair period. This change allows more than one battery or charger on the same train to be inoperable at the same time. This is allowed since the remaining DC electrical power source (i.e., train) remains OPERABLE and is fully redundant to the inoperable train. The remaining DC source can still perform the assumed safety function. This change is designated as less restrictive because less stringent Required Actions are being applied in the ITS than were applied in the CTS.

L03 *(Category 6 – Relaxation Of Surveillance Requirement Acceptance Criteria)* CTS 4.8.2.3.2.c requires that the battery charger supply 475 amperes at a minimum of 130 volts for at least 8 hours. ITS SR 3.8.4.2 requires the verification that each battery charger will supply $\geq$ 475 amps at greater than or equal to the minimum established float voltage for $\geq$ 8 hours. This changes the CTS by deleting the actual value for the minimum voltage for the test.

The purpose of CTS 4.8.2.3.2.c is to help ensure the effectiveness of the battery chargers to perform their intended function. This change is acceptable because the relaxed Surveillance Requirement acceptance criterion is not necessary for verification that the equipment used to meet the LCO can perform its required functions. This changes the CTS by deleting the actual voltage limit and replaces it with the minimum established float voltage limit. This change is

DISCUSSION OF CHANGES
ITS 3.8.4, DC SOURCES - OPERATING

acceptable since the proposed value will continue to ensure that the battery chargers remain OPERABLE to perform their specified safety function. For the battery chargers to supply 475 amps as required by ITS SR 3.8.4.2, they must be at a higher voltage than the battery. This change is designated as less restrictive because less stringent Surveillance Requirements are being applied in the ITS than were applied in the CTS.

L04 *(Category 6 – Relaxation of Surveillance Requirements Acceptance Criteria)* CTS 4.8.2.3.2.c provides a test for the 125 V battery chargers. ITS SR 3.8.4.2 includes a similar test. In addition, the SR provides an alternative test method. This method requires a verification that each required battery charger can recharge the battery to the fully charged state within 12 hours while supplying the largest combined demands of the various continuous steady state loads, after a battery discharge to the bounding design basis event discharge state. This changes the CTS by allowing an alternate test that is not currently allowed.

The purpose of CTS 4.8.2.3.2.c is to verify the required 125 V battery chargers can recharge their respective batteries following a loss of offsite power event. This change is acceptable because the relaxed Surveillance Requirement acceptance criteria are adequate to verify the equipment used to meet the LCO can perform its required functions. The alternate test provides an acceptable method for determining charger capability by actually recharging a discharged battery within 12 hours while supplying the required loads. This change is designated as less restrictive because less stringent Surveillance Requirements are being applied in the ITS than were applied in the CTS.

L05 *(Category 10 – Deletion of Surveillance Requirement Shutdown Performance Requirements)* CTS 4.8.2.3.2.d contains a requirement to perform the battery capacity test "during shutdown." ITS SR 3.8.4.3 requires a similar Surveillance, and includes a Note that states the Surveillance shall not be performed in MODE 1, 2, 3, or 4. The Note also states that credit may be taken for unplanned events that satisfy the SR. This changes the CTS by allowing the Surveillance to be performed in the operating MODES, provided that it is an unplanned event that satisfies the requirements of the SR.

The purpose of CTS 4.8.2.3.2.d is to confirm the OPERABILITY of the batteries. This change is acceptable because the proposed Surveillance Frequency provides an acceptable level of equipment reliability. The proposed Surveillance does not include the restriction on unit conditions at all times. It allows the unit to credit an unplanned event for satisfying the Surveillance, provided the necessary data is obtained. Furthermore, the proposed Surveillance Note still restricts planned performance of the Surveillance to MODES other than MODES 1, 2, 3, and 4. The control of the unit conditions appropriate to perform the test 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 Specification Surveillances that do not dictate unit conditions for the Surveillance. This change is designated as less restrictive because the Surveillance may be performed at plant conditions other than shutdown.

DISCUSSION OF CHANGES
ITS 3.8.4, DC SOURCES - OPERATING

L06 *(Category 6 – Relaxation of Surveillance Requirements Acceptance Criteria)* CTS 4.8.2.3.2 d requires verification of the station battery capacity when the battery is subjected to a service test. The CTS allows substitution of a modified performance discharge test for this service test once per 60 months. ITS SR 3.8.4.3 requires a similar battery capacity test. The SR is modified by Note 1, which allows the modified performance discharge test in SR 3.8.6.6 to be performed in lieu of the service test in SR 3.8.4.3. This changes the CTS by allowing a modified performance discharge test to be substituted for a service test all the time, instead of the current once per 60 months.

This change is acceptable because it has been determined that the relaxed Surveillance Requirement acceptance criteria are not necessary for verification that the equipment used to meet the LCO can perform its required functions. The 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). As stated in the Bases for ITS SR 3.8.6.6, the battery terminal voltage for the modified performance discharge test must 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. This modified test has been shown to be as effective in determining battery capacity as the standard service test. This change is designated as less restrictive because less stringent Surveillance Requirements are being applied in the ITS than were applied in the CTS.

Improved Standard Technical Specifications (ISTS) Markup and Justification for Deviations (JFDs)

CTS

3.8 ELECTRICAL POWER SYSTEMS

3.8.4 DC Sources - Operating

LCO 3.8.2.3 LCO 3.8.4 The Train [A] 1 and Train [B] 2 DC electrical power ~~subsystems~~ sources shall be OPERABLE. 6 7

APPLICABILITY: MODES 1, 2, 3, and 4.

ACTIONS

	CONDITION	REQUIRED ACTION		COMPLETION TIME	
Action b	A. One ~~[or two]~~ required battery charger~~[s on one train]~~ inoperable.	A.1	Restore battery terminal voltage to greater than or equal to the minimum established float voltage.	2 hours	8 1
		AND			
		A.2	Verify battery float current ≤ ~~[2]~~ amps.	Once per ~~[12]~~ hours	1
		AND			
		A.3	Restore required battery charger~~[s]~~ (s) to OPERABLE status.	7 days	8 4
	~~[B. One [or two] batter[y][ies on one train] inoperable.~~	~~B.1~~	~~Restore batter[y][ies] to OPERABLE status.~~	~~[2] hours]~~	2
Action b	~~C~~ B. One DC electrical power ~~subsystem~~ source inoperable for reasons other than Condition A ~~[or B]~~.	~~C~~ B.1	Restore DC electrical power ~~subsystem~~ source to OPERABLE status.	~~[2]~~ hours	2 1 7 1
Action b	~~D~~ C. Required Action and Associated Completion Time not met.	~~D~~ C.1	Be in MODE 3.	6 hours	2
		AND			
		~~D~~ C.2	Be in MODE 5.	36 hours	2

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CTS

DC Sources - Operating
3.8.4

SURVEILLANCE REQUIREMENTS

CTS		SURVEILLANCE	FREQUENCY	
4.8.2.3.2.a.2	SR 3.8.4.1	Verify battery terminal voltage is greater than or equal to the minimum established float voltage.	7 days	
4.8.2.3.2.c	SR 3.8.4.2	Verify each required battery charger supplies ≥ ~~[400]~~ 475 amps at greater than or equal to the minimum established float voltage for ≥ [8] hours. OR Verify each required battery charger can recharge the battery to the fully charged state within ~~[24]~~ 12 hours while supplying the largest combined demands of the various continuous steady state loads, after a battery discharge to the bounding design basis event discharge state.	[18] months	8 1 1 8 1
4.8.2.3.2.d	SR 3.8.4.3	------------------------------NOTES------------------------------ 1. The modified performance discharge test in SR 3.8.6.6 may be performed in lieu of SR 3.8.4.3. 2. This Surveillance shall not ~~normally~~ be performed in MODE 1, 2, 3, or 4. ~~However, portions of the Surveillance may be performed to reestablish OPERABILITY provided an assessment determines the safety of the plant is maintained or enhanced.~~ Credit may be taken for unplanned events that satisfy this SR. -- Verify battery capacity is adequate to supply, and maintain in OPERABLE status, the required actual or simulated emergency loads for the design duty cycle when subjected to a battery service test.	~~[18]~~ 24 months	5 5 1 3

JUSTIFICATION FOR DEVIATIONS
ITS 3.8.4, DC SOURCES - OPERATING

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

2. The bracketed ISTS 3.8.4 ACTION B has been deleted since it is not necessary. ISTS 3.8.4 ACTION C (ITS 3.8.4 ACTION B) covers the condition of an inoperable battery. Due to this deletion, the subsequent ACTIONS have been renumbered.

3. Editorial change for clarity.

4. Typographical error corrected.

5. No portions of the battery service test can be performed in MODE 1, 2, 3, or 4 without making the battery inoperable. Furthermore, the battery service test is not performed in steps, where only part of the test can be performed. Therefore, this part of the Note has been deleted.

6. Changes are made to reflect the plant specific nomenclature.

7. The title of ISTS 3.8.4 is "DC Sources – Operating". Therefore, ISTS LCO 3.8.4 has been changed to be consistent with the title. The ITS LCO 3.8.4 now requires DC electrical power "sources" to be OPERABLE in lieu of "subsystems." This terminology is also consistent with ISTS 3.8.1, which provides the requirements for AC "sources," not "subsystems".

8. For Davis-Besse, each DC electrical power source includes three 125 VDC battery chargers, two normally in service (preferred) and one spare. If the spare charger is substituted for one of the two preferred battery chargers, then the requirements of independence and redundancy between sources is maintained. Therefore, ISTS 3.8.4 Condition A and Required Action A.3, and SR 3.8.4.2 have been modified to only specify the "required" battery chargers. This change is consistent with the use of the word required in the ISTS, as stated in the Writer's Guide for Plant-Specific Improved Technical Specifications, TSTF-GG-05-01, Section 4.1.3.b.

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Improved Standard Technical Specifications (ISTS) Bases Markup and Justification for Deviations (JFDs)

B 3.8 ELECTRICAL POWER SYSTEMS

B 3.8.4 DC Sources - Operating

BASES

BACKGROUND

The station DC electrical power system provides the AC emergency power system with control power. It also provides both motive and control power to selected safety related equipment and preferred AC vital bus power (via inverters). As required by 10 CFR 50, Appendix A, GDC 17 (Ref. 1), the DC electrical power system is designed to have sufficient independence, redundancy, and testability to perform its safety functions, assuming a single failure. The DC electrical power system also conforms to the recommendations of Regulatory Guide 1.6 (Ref. 2) and IEEE-308 (Ref. 3).

sources 8

The [125/250] VDC electrical power system consists of two independent and redundant safety related Class 1E DC electrical power ~~subsystems~~ ([Train ~~A~~ and Train ~~B~~]). Each ~~subsystem~~ consists of [two] 125 VDC batteries ~~[(each battery [50]% capacity)]~~, ~~the associated~~ battery charger~~[s]~~ for each battery, and all the associated control equipment and interconnecting cabling.

2 1 source one 8 1

[The 250 VDC source is obtained by use of the two 125 VDC batteries connected in series. Additionally, there is [one] spare battery charger per ~~subsystem~~, which provides backup service in the event that ~~the~~ preferred battery charger is out of service. If the spare battery charger is substituted for one of ~~the~~ preferred battery chargers, then the requirements of independence and redundancy between ~~subsystems~~ are maintained.]

one of the two 1 train 8 s the two 2 sources 8 1 1

During normal operation, the [125/250] VDC load is 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 load is automatically powered from the station batteries.

1 2 sources 8

The [Train ~~A~~ and Train ~~B~~] DC electrical power ~~subsystems~~ provide the control power for its associated Class 1E AC power load group, [4.16] kV switchgear, and [480] V load centers. The DC electrical power ~~subsystems~~ also provide DC electrical power to the inverters, which in turn power the AC vital buses.

1 sources 8 120 V electrical

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

BASES

BACKGROUND (continued)

set of ies
Each 125/250 VDC battery is separately housed in a ventilated room apart from its charger and distribution centers. Each subsystem is located in an area separated physically and electrically from the other subsystem 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. 8

source source source source sources

U Each battery has adequate storage capacity to meet the duty cycle(s) discussed in the FSAR, Chapter [8] (Ref 4). The battery is designed with additional capacity above that required by the design duty cycle to allow for temperature variations and other factors. 8 1

Section

1 2 sources 8

The batteries for Train A and Train B 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. 3

The battery cells are of flooded lead acid construction with a nominal specific gravity of [1.215]. ~~This specific gravity corresponds to an open circuit battery voltage of approximately 120 V for a [58] cell battery (i.e., cell voltage of [2.065] volts per cell (Vpc)). The open circuit voltage is the voltage maintained when there is no charging or discharging. Once fully charged with its open circuit voltage ≥ [2.065] Vpc, the battery cell will maintain its capacity for [30] days without further charging per manufacturer's instructions.~~ Optimal long term performance however, is obtained by maintaining a float voltage [2.20] to 2.25] Vpc. This provides adequate over-potential, which limits the formation of lead sulfate and self discharge. ~~The nominal float voltage of [2.22] Vpc corresponds to a total float voltage output of [128.8] V for a [58] cell battery as discussed in the FSAR, Chapter [8] (Ref. 4).~~ 1 4

17 1

4

1 2 source

Each Train A and Train B DC electrical power subsystem battery charger has ample power output capacity for the steady state operation of connected loads required during normal operation, while at the same time maintaining its battery bank fully charged. Each battery charger also has sufficient excess capacity to restore the battery from the design minimum charge to its fully charged state within [24] hours while supplying normal steady state loads discussed in the FSAR, Chapter [8] (Ref. 4). 8

12 2

U Section 8 1

BASES

BACKGROUND (continued)

The battery charger is normally in the float-charge mode. Float-charge is the condition in which the charger is supplying the connected loads and the battery cells are receiving adequate current to optimally charge the battery. This assures the internal losses of a battery are overcome and the battery is maintained in a fully charged state.

When desired, the charger can be placed in the equalize mode. The equalize mode is at a higher voltage than the float mode and charging current is correspondingly higher. The battery charger is operated in the equalize mode after a battery discharge or for routine maintenance. Following a battery discharge, the battery recharge characteristic accepts current at the current limit of the battery charger (if the discharge was significant, e.g., following a battery service test) until the battery terminal voltage approaches the charger voltage setpoint. Charging current then reduces exponentially during the remainder of the recharge cycle. Lead-calcium batteries have nominal recharge efficiencies of greater than 95%, so once at least 105% of the ampere-hours discharged have been returned, the battery capacity would be restored to the same condition as it was prior to the discharge. This can be monitored by direct observation of the exponentially decaying charging current or by evaluating the amp-hours discharged from the battery and amp-hours returned to the battery. 2

APPLICABLE SAFETY ANALYSES

The initial conditions of Design Basis Accident (DBA) and transient analyses in the UFSAR, ~~Chapter~~ Section [6] (Ref. 5) and ~~Chapter~~ Section [15] (Ref. 6), assume that Engineered Safety Features (ESF) systems are OPERABLE. The DC electrical power system provides normal and emergency DC electrical power for the EDGs, emergency auxiliaries, and control and switching during all MODES of operation. 8 1 8 8

The OPERABILITY of the DC sources is consistent with the initial assumptions of the accident analyses and is based upon meeting the design basis of the unit. This includes maintaining the 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 7

b. A worst-case single failure.

The DC ~~s~~Sources - Operating satisf~~y~~ies Criterion 3 of 10 CFR 50.36(c)(2)(ii). 2

BASES

LCO

sources (Train 1 and Train2) train

The DC electrical power ~~subsystems~~, each ~~subsystem~~ consisting of [two] batteries, battery charger [for each battery] and the corresponding control equipment and interconnecting cabling supplying power to the associated bus within the train 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 train DC electrical power ~~subsystem~~ does not prevent the minimum safety function from being performed (Ref. 4). one 8 1 8 1 source 8

An OPERABLE DC electrical power ~~subsystem~~ requires ~~all required~~ batteries and ~~respective~~ charger[s] to be operating and connected to the associated DC bus(es). one source two per battery 8

APPLICABILITY

The DC electrical power sources are required to be OPERABLE in MODES 1, 2, 3, and 4 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 ; 7

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

The DC electrical power requirements for MODES 5 and 6 are addressed in the Bases for LCO 3.8.5, "DC Sources - Shutdown." source 8

ACTIONS

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

Condition A represents one train with one [or two] battery chargers inoperable ~~[(e.g., the voltage limit of SR 3.8.4.1 is not maintained)]~~. The ACTIONS provide a tiered response that focuses on returning the battery to the fully charged state and restoring a fully qualified charger to OPERABLE status in a reasonable time period. Required Action A.1 requires that the battery terminal voltage be restored to greater than or equal to the minimum established float voltage within 2 hours. This time provides for returning the inoperable charger to OPERABLE status or providing an alternate means of restoring battery terminal voltage to greater than or equal to the minimum established float voltage. Restoring the battery terminal voltage to greater than or equal to the minimum established float voltage provides good assurance that, within [12] hours, the battery will be restored to its fully charged condition (Required Action A.2) from any discharge that might have occurred due to the charger inoperability. required 1 3 2 1

BASES

ACTIONS (continued)

-----REVIEWER'S NOTE-----
A plant that cannot meet the 12 hour Completion Time due to an inherent battery charging characteristic can propose an alternate time equal to 2 hours plus the time experienced to accomplish the exponential charging current portion of the battery charge profile following the service test (SR 3.8.4.3). 5

A discharged battery having terminal voltage of at least the minimum established float voltage indicates that the battery is on the exponential charging current portion (the second part) of its recharge cycle. The time to return a battery to its fully charged state under this condition is simply a function of the amount of the previous discharge and the recharge characteristic of the battery. Thus there is good assurance of fully recharging the battery within [12] hours, avoiding a premature shutdown with its own attendant risk. 1

If established battery terminal float voltage cannot be restored to greater than or equal to the minimum established float voltage within 2 hours, and the charger is not operating in the current-limiting mode, a faulty charger is indicated. A faulty charger that is incapable of maintaining established battery terminal float voltage does not provide assurance that it can revert to and operate properly in the current limit mode that is necessary during the recovery period following a battery discharge event that the DC system is designed for.

If the charger is operating in the current limit mode after 2 hours that is an indication that the battery is partially discharged and its capacity margins will be reduced. The time to return the battery to its fully charged condition in this case is a function of the battery charger capacity, the amount of loads on the associated DC system, the amount of the previous discharge, and the recharge characteristic of the battery. The charge time can be extensive, and there is not adequate assurance that it can be recharged within [12] hours (Required Action A.2). 1

Required Action A.2 requires that the battery float current be verified as less than or equal to [2] amps. This indicates that, if the battery had been discharged as the result of the inoperable battery charger, it has now been fully recharged. If at the expiration of the initial [12] hour period the battery float current is not less than or equal to [2] amps this indicates there may be additional battery problems and the battery must be declared inoperable. 1 1

BASES

ACTIONS (continued)

required

Required Action A.3 limits the restoration time for the inoperable battery charger to 7 days. This action is applicable if an alternate means of restoring battery terminal voltage to greater than or equal to the minimum established float voltage has been used (e.g., balance of plant non-Class 1E battery charger). The 7 day Completion Time reflects a reasonable time to effect restoration of the qualified battery charger to OPERABLE status. 3 9

, use of an inoperable, but functional Class 1E battery charger

~~B.1~~

~~------REVIEWER'S NOTE------~~
~~The 2 hour Completion Times of Required Actions B.1 and C.1 are in brackets. Any licensee wishing to request a longer Completion Time will need to demonstrate that the longer Completion Time is appropriate for the plant in accordance with the guidance in Regulatory Guide (RG) 1.177, "An Approach for Plant-Specific, Risk-Informed Decisionmaking: Technical Specifications."~~
~~------~~

~~Condition B represents one train with one [or two] batter[y][ies] inoperable. With one [or two] batter[y][ies] inoperable, the DC bus is being supplied by the OPERABLE battery charger[s]. Any event that results in a loss of the AC bus supporting the battery charger[s] will also result in loss of DC to that train. Recovery of the AC bus, especially if it is due to a loss of offsite power, will be hampered by the fact that many of the components necessary for the recovery (e.g., diesel generator control and field flash, AC load shed and diesel generator output circuit breakers, etc.) likely rely upon the batter[y][ies]. In addition the energization transients of any DC loads that are beyond the capability of the battery charger[s] and normally require the assistance of the batter[y][ies] will not be able to be brought online. The [2] hour limit allows sufficient time to effect restoration of an inoperable battery given that the majority of the conditions that lead to battery inoperability (e.g., loss of battery charger, battery cell voltage less than [2.07] V, etc.) are identified in Specifications 3.8.4, 3.8.5, and 3.8.6 together with additional specific Completion Times.~~ 3

BASES

ACTIONS (continued)

B ~~C~~.1 3

Condition B ~~C~~ represents one train with a loss of ability to completely respond to an event, and a potential loss of ability to remain energized during normal operation. It is therefore, imperative that the operator's attention focus on stabilizing the unit, minimizing the potential for complete loss of DC power to the affected train. The 2 hour limit is consistent with the allowed time for an inoperable DC distribution system train. 3

If one of the required DC electrical power sources ~~subsystems~~ is inoperable for reasons other than Condition A ~~or/B~~ (e.g., one or both batteries in a train inoperable ~~inoperable battery charger and associated inoperable battery~~), the remaining DC 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 sources ~~subsystems~~ to mitigate a worst case accident, continued power operation should not exceed 2 hours. The 2 hour Completion Time is based on Regulatory Guide 1.93 (Ref. 7) and reflects a reasonable time to assess unit status as a function of the inoperable DC electrical power source ~~subsystem~~ and, if the DC electrical power source ~~subsystem~~ is not restored to OPERABLE status, to prepare to effect an orderly and safe unit shutdown. 8 3 8 8

C ~~D~~.1 and C ~~D~~.2 3

If the inoperable DC electrical power source ~~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 6 hours and to MODE 5 within 36 hours. The allowed Completion Times are reasonable, based on operating experience, to reach the required unit conditions from full power conditions in an orderly manner and without challenging plant systems. The Completion Time to bring the unit to MODE 5 is consistent with the time required in Regulatory Guide 1.93 (Ref. 7). 8

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BASES

SURVEILLANCE REQUIREMENTS

SR 3.8.4.1

Verifying battery terminal voltage while on float charge helps to ensure the effectiveness of the battery chargers, which support 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 while supplying the continuous steady state loads of the associated DC ~~subsystem~~ source. On float charge, battery cells will receive adequate current to optimally charge the battery. The voltage requirements are based on the nominal design voltage of the battery and are consistent with the minimum float voltage established by the battery manufacturer (~~[2.20] Vpc or [127.6]~~ 129 V at the battery terminals). This voltage maintains the battery plates in a condition that supports maintaining the grid life (expected to be approximately 20 years). The 7 day Frequency is consistent with manufacturer recommendations and IEEE-450 (Ref. 8).

8 1

SR 3.8.4.2

This SR verifies the ~~design~~ capacity of the required battery chargers. According to Regulatory Guide 1.32 (Ref. 9), the battery charger supply is recommended 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 ensure that these requirements can be satisfied.

3

This SR provides two options. One option requires that each battery charger be capable of supplying ~~[400]~~ 475 amps at the minimum established float voltage for [8] hours. The ampere requirements are ~~based on~~ also well within the output rating of the chargers. The voltage requirements are based on the charger voltage level after a response to a loss of AC power. The time period ~~if~~ is sufficient for the charger temperature to have stabilized and to have been maintained for at least ~~[2]~~ 8 hours.

1 8 6 1

The other option requires that each required battery charger be capable of recharging the battery after a service test coincident with supplying the largest ~~coincident~~ combined demands of the various continuous steady state loads (irrespective of the status of the plant during which these demands occur). This level of loading may not normally be available following the battery service test and will need to be supplemented with additional

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BASES

SURVEILLANCE REQUIREMENTS (continued)

loads. The duration for this test may be longer than the charger sizing criteria since the battery recharge is affected by float voltage, temperature, and the exponential decay in charging current. The battery is recharged when the measured charging current is ≤ [2] amps. 1

The Surveillance Frequency is acceptable, given the unit conditions required to perform the test and the other administrative controls existing to ensure adequate charger performance during these [18 month] 1 intervals. ~~In addition, this Frequency is intended to be consistent with expected fuel cycle lengths.~~ 8

SR 3.8.4.3

A battery service test is a special test of the battery capability, as found, to satisfy the design requirements (battery duty cycle) of the DC electrical power system. The discharge rate and test length should correspond to the design duty cycle requirements as specified in Reference 4.

24

The Surveillance Frequency of [~~18~~ months] is consistent with the recommendations of Regulatory Guide 1.32 (Ref. 9) and Regulatory Guide 1.129 (Ref. 10), 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]. 1

which is currently at

24

This SR is modified by two Notes. Note 1 allows the performance of a modified performance discharge test in lieu of a service test.

The reason for Note 2 is that performing the Surveillance would perturb the electrical distribution system and challenge safety systems. ~~This restriction from normally performing the Surveillance in MODE 1 or 2 is further amplified to allow portions of the Surveillance to be performed for the purpose of reestablishing OPERABILITY (e.g., post work testing following corrective maintenance, corrective modification, deficient or incomplete surveillance testing, and other unanticipated OPERABILITY concerns) provided an assessment determines plant safety is maintained or enhanced. This assessment shall, as a minimum, consider the potential outcomes and transients associated with a failed partial Surveillance, a successful partial Surveillance, and a perturbation of the offsite or onsite system when they are tied together or operated~~ 3

BASES

SURVEILLANCE REQUIREMENTS (continued)

~~independently for the partial Surveillance; as well as the operator procedures available to cope with these outcomes. These shall be measured against the avoided risk of a plant shutdown and startup to determine that plant safety is maintained or enhanced when portions of the Surveillance are performed in MODE 1 or 2. Risk insights or deterministic methods may be used for the assessment.~~ Credit may be taken for unplanned event s that satisfy this SR. 3 6

REFERENCES

1. 10 CFR 50, Appendix A, GDC 17.
2. Regulatory Guide 1.6, March 10, 1971.
3. IEEE-308-[197~~8~~] 1 1
4. U FSAR, ~~Chapter~~ Section [8].
5. U FSAR, ~~Chapter~~ Section [6].
6. U FSAR, ~~Chapter~~ Section [15]. 8 1
7. Regulatory Guide 1.93, December 1974.
8. IEEE-450-[1995]. 1
9. Regulatory Guide 1.32, ~~February 1977~~ August 1972. 8
10. Regulatory Guide 1.129, December 1974.

JUSTIFICATION FOR DEVIATIONS
ITS 3.8.4 BASES, DC SOURCES - OPERATING

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

2. Changes are made to be consistent with the Specification.

3. Changes are made to the Bases to reflect changes to the Specification.

4. The battery design values have been deleted, since they are more specific than necessary and are not required to provide sufficient background for this Specification. Furthermore, the batteries are not maintained on open circuit. Thus, these statements are deleted.

5. The Reviewer's Note is deleted because it is not intended to be included in the plant specific ITS submittal.

6. Grammatical/editorial/spelling error corrected.

7. These punctuation corrections have been made consistent with the Writer's Guide for the Improved Standard Technical Specifications, TSTF-GG-05-01, Section 5.1.3.

8. Changes are made (additions, deletions, and/or changes) to the ISTS Bases which reflect the plant specific nomenclature, number, reference, system description, analysis, or licensing basis description.

9. Another example has been provided.

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Specific No Significant Hazards Considerations (NSHCs)

DETERMINATION OF NO SIGNIFICANT HAZARDS CONSIDERATIONS
ITS 3.8.4, DC SOURCES - OPERATING

There are no specific NSHC discussions for this Specification.

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ATTACHMENT 5

ITS 3.8.5, DC SOURCES - SHUTDOWN

Current Technical Specification (CTS) Markup and Discussion of Changes (DOCs)

A01

ITS

ELECTRICAL POWER SYSTEMS

D.C. DISTRIBUTION - SHUTDOWN

LIMITING CONDITION FOR OPERATION

LA01

power source shall be

One

LCO 3.8.5 3.8.2.4 As a minimum, the following D.C. electrical equipment and bus shall be energized and OPERABLE:

to support one train of the DC Electrical Power Distribution System required by LCO 3.8.10, "Distribution Systems – Shutdown" M01

1 - 250/125-volt D.C. MCC, and See ITS 3.8.10

2 - 125-volt battery banks and chargers supplying the above D.C. MCC. LA01

APPLICABILITY: MODES 5 and 6. During movement of irradiated fuel assemblies M01

ACTION: Add proposed ACTION Note M01

With less than the above complement of D.C. equipment and bus OPERABLE, establish CONTAINMENT INTEGRITY within 8 hours.

Add proposed ACTION A L01

SURVEILLANCE REQUIREMENTS

4.8.2.4.1 The above required 250/125-volt D.C. MCC shall be determined OPERABLE and energized at least once per 7 days by verifying correct disconnect switch/breaker alignment, indicated power availability from the charger and battery, and voltage on the bus of greater than or equal to 125 volts D.C. See ITS 3.8.10

SR 3.8.5.1 4.8.2.4.2 The above required 125-volt battery banks and chargers shall be demonstrated OPERABLE per Surveillance Requirement 4.8.2.3.2.

Add proposed Note to SR 3.8.5.1 L02

DISCUSSION OF CHANGES
ITS 3.8.5, DC SOURCES - SHUTDOWN

ADMINISTRATIVE CHANGES

A01 In the conversion of the Davis-Besse Current Technical Specifications (CTS) to the plant specific Improved Technical Specifications (ITS), certain changes (wording preferences, editorial changes, reformatting, revised numbering, etc.) are made to obtain consistency with NUREG-1430, Rev. 3.1, "Standard Technical Specifications-Babcock and Wilcox Plants" (ISTS).

These changes are designated as administrative changes and are acceptable because they do not result in technical changes to the CTS.

MORE RESTRICTIVE CHANGES

M01 CTS 4.8.2.4 is applicable in MODES 5 and 6. ITS 3.8.5 is applicable in MODE 5 and 6 and during movement of irradiated fuel assemblies. A Note has been added to the ACTIONS which states that LCO 3.0.3 is not applicable. This changes the CTS by adding the Applicability of during movement of irradiated fuel assemblies and adds the Note to the ACTIONS stating that LCO 3.0.3 is not applicable.

This change is acceptable because the proposed requirements are necessary to ensure the DC electrical power source is OPERABLE to support equipment required to be OPERABLE during movement of irradiated fuel assemblies. Movement of fuel normally occurs during MODES 5 and 6, however, it can also occur outside of containment in other plant MODES (MODES 1, 2, 3, and 4) or other conditions (i.e., reactor defueled). This Specification is needed to ensure the appropriate distribution system requirements are specified during fuel handling and ensure the appropriate actions are taken (i.e., stop fuel movement) when the minimum electrical supply is not available (See DOC L01 for the changes to the Required Actions). This change adds a clarification Note stating that LCO 3.0.3 is not applicable. If moving irradiated fuel assemblies while in MODES 5 or 6, LCO 3.0.3 is not applicable and would not specify any action. If moving irradiated fuel assemblies while in MODES 1, 2, 3, or 4, the fuel movement is independent of reactor operations and the inability to suspend movement in accordance with the ITS 3.8.5 Required Actions would not be sufficient reason to require a reactor shutdown. This Note has been added for clarification and is necessary since defaulting to LCO 3.0.3 would require the reactor to be shutdown, but would not require suspension of the activities with a potential for releasing radioactive materials. This change is designated as more restrictive because the ITS requires the equipment to be OPERABLE during movement of irradiated fuel assemblies both inside and outside of the containment, not only when in MODES 5 and 6.

RELOCATED SPECIFICATIONS

None

DISCUSSION OF CHANGES
ITS 3.8.5, DC SOURCES - SHUTDOWN

REMOVED DETAIL CHANGES

LA01 *(Category 1 – Removing Details of System Design and System Description, Including Design Limits)* CTS 3.8.2.4 states that as a minimum, the following DC electrical equipment and bus shall be energized and OPERABLE. It lists one – 250/125-volt DC MCC, and one 125-volt battery banks and chargers supplying the above DC MCC. ITS LCO 3.8.5 requires One Train 1 or Train 2 DC electrical power source to be OPERABLE. This changes the CTS by moving the details of the components of the DC Sources (battery and charger) from the CTS to the Bases. The 250/125-volt DC MCC buses are part of the Distribution System Specification (ITS 3.8.10) and all aspect of the buses are addressed in ITS 3.8.10.

The removal of these details, which are related to system design, from the Technical Specifications, is acceptable because this type of information is not necessary to be included in the Technical Specifications to provide adequate protection of public health and safety. The ITS still retains the OPERABILITY statement for the Train 1 or Train 2 DC electrical power source. Also, this change is acceptable because the removed information will be adequately controlled in the ITS Bases. Changes to the Bases are controlled by the Technical Specification Bases Control Program in Chapter 5. This change is designated as a less restrictive removal of detail change because information relating to system design is being removed from the Technical Specifications.

LESS RESTRICTIVE CHANGES

L01 *(Category 4 – Relaxation of Required Action)* With less than the minimum complement of DC sources OPERABLE, CTS 3.8.2.4 Action requires the establishment of containment integrity within 8 hours. ITS 3.8.5 ACTION A requires suspending movement of irradiated fuel assemblies, suspending operations involving a positive reactivity addition that could result in the loss of required SDM or boron concentration, and the initiation of actions to restore the required DC electrical power source to OPERABLE status. This changes the CTS by replacing the existing Required Action to restore containment integrity.

The purpose of the CTS 3.8.2.4 Action is to isolate the containment to minimize any release from the plant if an event were to occur during shutdown conditions with no DC Sources OPERABLE. This change is acceptable because the Required Actions are used to establish remedial measures that must be taken in response to the degraded conditions in order to minimize risk associated with continued operation while providing time to repair inoperable features. The proposed Required Actions require the suspension of movement of irradiated fuel assemblies, suspension of operations involving a positive reactivity additions that could result in the loss of required SDM or boron concentration, and the initiation of actions to restore required DC electrical power source to OPERABLE status. Suspending the movement of irradiated fuel assemblies will prevent a fuel handling accident from occurring and suspending positive reactivity additions that could result in failure to meet the minimum SDM or boron concentration limit will ensure the reactor remains subcritical. The actions to restore the required DC electrical power source to OPERABLE status will ensure the plant is placed in

DISCUSSION OF CHANGES
ITS 3.8.5, DC SOURCES - SHUTDOWN

compliance with the LCO in an expeditious manner. The proposed actions will immediately minimize the potential for any accident releases outside of the containment and are considered acceptable in lieu of the current action to restore containment integrity within 8 hours. The actions may be considered somewhat more restrictive since immediate action is required, however, is classified as less restrictive since the current actions to restore containment integrity have been deleted. This change is designated as less restrictive because less stringent Required Actions are being applied in the ITS than were applied in the CTS.

L02 *(Category 7 – Relaxation Of Surveillance Frequency, Non-24 Month Type Change)* CTS 4.8.2.4.2 requires the demonstration of the OPERABILITY of the 125 VDC battery banks and chargers in accordance with the Surveillance Requirements of CTS 4.8.2.3.2. ITS SR 3.8.5.1 requires SR 3.8.4.1, SR 3.8.4.2, and SR 3.8.4.3 to be applicable. However, a Note has been added that states ITS SR 3.8.4.3 does not have to be performed. This changes the CTS by allowing a certain SR not to be performed. Changes to the Surveillances of CTS 4.8.2.3.2 are discussed in the Discussion of Changes for ITS 3.8.4, "DC Sources - Operating."

The purpose of the ITS SR 3.8.5.1 Note is to ensure that required equipment is not made inoperable by testing when the equipment is the only OPERABLE equipment available to support unit operations. This change is acceptable because it has been determined that the relaxed Surveillance Requirement acceptance criteria are not necessary for verification that the equipment used to meet the LCO can perform its required functions. ITS SR 3.8.4.3 is the battery capacity test. The performance of SR 3.8.4.3 involves tests that would cause the only required OPERABLE Train 1 or Train 2 DC electrical power source to be rendered inoperable. This condition presents a significant risk if an event were to occur during the test. The NRC has previously provided Surveillance exceptions in the Davis-Besse 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, ITS SR 3.8.5.1 has a Note that excludes performance requirements of any Surveillance that would require the required OPERABLE DC electrical power source to be rendered inoperable. This allowance does not take exception to the requirement for the DC electrical power source to be capable of performing the particular function, but just to the requirement to demonstrate that capability while that source of power is being relied on to support meeting the LCO. This change is designated as less restrictive because less stringent Surveillance Requirements are being applied in the ITS than were applied in the CTS.

Improved Standard Technical Specifications (ISTS) Markup and Justification for Deviations (JFDs)

CTS

3.8 ELECTRICAL POWER SYSTEMS

3.8.5 DC Sources - Shutdown

LCO 3.8.5 [DC electrical power subsystem shall be OPERABLE to support the DC electrical power distribution subsystem(s) required by LCO 3.8.10, "Distribution Systems - Shutdown."] 1

source

INSERT 1

3.8.2.4 [One DC electrical power subsystem shall be OPERABLE.] 2

Train 1 or Train 2

------------------------------REVIEWER'S NOTE------------------------------
The second option above applies for plants having a pre-ITS licensing basis (CTS) for electrical power requirements during shutdown conditions that required only one DC electrical power subsystem to be OPERABLE. Action A and the bracketed optional wording in Condition B are also eliminated for this case. The first option above is adopted for plants that have a CTS requiring the same level of DC electrical power subsystem support as is required for power operating conditions. 1

APPLICABILITY: MODES 5 and 6,
During movement of [recently] irradiated fuel assemblies. 3

ACTIONS

---NOTE---
DOC M01 LCO 3.0.3 is not applicable.

CONDITION	REQUIRED ACTION		COMPLETION TIME
[A. One [or two] battery charger[s on one train] inoperable. AND The redundant train battery and charger[s] OPERABLE.	A.1	Restore battery terminal voltage to greater than or equal to the minimum established float voltage.	2 hours
	AND		
	A.2	Verify battery float current ≤ [2] amps.	Once per [12] hours
	AND		

1

CTS

2 **INSERT 1**

LCO 3.8.2.4 to support one train of the DC Electrical Power Distribution System required by LCO 3.8.10, "Distribution System – Shutdown."

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ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
	A.3 Restore battery charger[s] to OPERABLE status.	7 days]
Action B. A source One [or more] required DC electrical power subsystem[s] inoperable [for reasons other than Condition A. OR Required Action and associated Completion Time of Condition A not met].	B.1 Declare affected required feature(s) inoperable. OR	Immediately
	B.2.1 Suspend CORE ALTERATIONS. AND	Immediately
	B.2.2 A.1 Suspend movement of [recently] irradiated fuel assemblies.	Immediately
	AND	
	B.2.3 A.2 Suspend operations involving positive reactivity additions that could result in loss of required SDM or boron concentration.	Immediately
	AND	
	B.2.4 A.3 Initiate action to restore required DC electrical power subsystems to OPERABLE status. source	Immediately

4 6 TSTF-471 4 1 TSTF-471 3 4 1 TSTF-471 4 1 TSTF-471 6

CTS

SURVEILLANCE REQUIREMENTS

	SURVEILLANCE	FREQUENCY	
4.8.2.4.2	SR 3.8.5.1 is ------------------------------NOTE------------------------------ The following SR~~s~~ ~~are~~ not required to be performed: ~~SR 3.8.4.2 and~~ SR 3.8.4.3. --- the For DC source~~s~~ required to be OPERABLE, the following SRs are applicable: SR 3.8.4.1 SR 3.8.4.2 SR 3.8.4.3	In accordance with applicable SRs	5 2

JUSTIFICATION FOR DEVIATIONS
ITS 3.8.5, DC SOURCES - SHUTDOWN

1. The bracketed optional ISTS LCO 3.8.5 and "Reviewers Note" have been deleted since the current licensing basis only requires one DC electrical power subsystem to be OPERABLE. ISTS 3.8.5 ACTION A has been deleted since only one required DC electrical power subsystem is specified in the LCO. This allowance is only acceptable if the first option of the LCO is used. The subsequent Condition and Required Actions have been renumbered and modified, as applicable.

2. The second option of ISTS LCO 3.8.5 is not specific as to what the DC electrical power subsystem must be powering. The LCO has been modified to require the Train 1 or Train 2 125 VDC electrical power source to be powering a DC distribution train required OPERABLE by LCO 3.8.10. Also, ISTS SR 3.8.5.1 has been modified to be consistent with the LCO (only one DC Source is required to be OPERABLE).

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

4. ISTS 3.8.5 Required Action B.1 provides an option to declare affected required feature(s) inoperable with one or more required DC electrical power subsystems inoperable. The ISTS Bases states that this is acceptable because the remaining train with DC power available may be capable of supporting sufficient features to allow continued fuel movement. Thus this Required Action assumes two DC power sources are required by the LCO. This option has been deleted since only one Train 1 or Train 2 125 VDC electrical power source is required to be OPERABLE by the LCO. Subsequent Required Actions have been renumbered and modified, as applicable.

5. The allowance to not perform SR 3.8.4.2 has been deleted. The Davis-Besse design includes three battery chargers per train. Therefore, the battery charger SR can be performed without making the train inoperable for the entire duration of the test.

6. The proper plant specific nomenclature has been provided.

Improved Standard Technical Specifications (ISTS) Bases Markup and Justification for Deviations (JFDs)

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 (DBA) and transient analyses in the U FSAR, ~~Chapter~~ Section [6] (Ref. 1) and ~~Chapter~~ Section [15] (Ref. 2), assume that Engineered Safety Feature S (ESF) systems are OPERABLE. The DC electrical power system provides normal and emergency DC electrical power for the E DGs, emergency auxiliaries, and control and switching during all MODES of operation. 2 1 2

The OPERABILITY of the DC ~~subsystems~~ sources 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 5 and 6 and during movement of ~~[recently]~~ irradiated fuel assemblies ensures that: 1

a. The unit can be maintained in the shutdown or refueling condition for extended periods; 2

b. Sufficient instrumentation and control capability is available for monitoring and maintaining the unit status ~~,~~ ; and 2

c. Adequate DC electrical power is provided to mitigate events postulated during shutdown, such as a fuel handling accident ~~[involving handling recently irradiated fuel. Due to radioactive decay, DC electrical power is only required to mitigate fuel handling accidents involving handling recently irradiated fuel (i.e., fuel that has occupied part of a critical reactor core within the previous [X] days)]~~. 1

In general, when the unit is shut down, the Technical Specifications requirements ensure that the unit has the capability to mitigate the consequences of postulated accidents. However, assuming a single failure and concurrent loss of all offsite or all onsite power is not required. The rationale for this is based on the fact that many DBAs that are analyzed in MODES ~~[~~1, 2, 3, and 4~~]~~ have no specific analyses in 1

BASES

APPLICABLE SAFETY ANALYSES (continued)

MODES [5 and 6] 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. 1

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 DBAs 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.

- Shutdown ies

The DC ~~sources~~ satisf~~y~~ Criterion 3 of 10 CFR 50.36(c)(2)(ii). 5

LCO

One train of sources

~~T~~he DC electrical power [subsystems,] [each required] [the required] [subsystem] consisting of two batteries, one battery charger per battery, and the corresponding control equipment and interconnecting cabling within the train, [are] [is] required to be OPERABLE to support [required] [one] train[s] of the distribution systems [required OPERABLE by LCO 3.8.10, "Distribution Systems - Shutdown."] This 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 [involving handling recently irradiated fuel]). 1

BASES

APPLICABILITY

The DC electrical power sources required to be OPERABLE in MODES 5 and 6 and during movement of [recently] irradiated fuel assemblies, provide assurance that: 5 1

a. Required features to provide adequate coolant inventory makeup are available for the irradiated fuel assemblies in the core; 3

b. Required features needed to mitigate a fuel handling accident [involving handling recently irradiated fuel (i.e., fuel that has occupied part of a critical reactor core within the previous [X] days)] are available; 1 3

c. Required features necessary to mitigate the effects of events that can lead to core damage during shutdown are available; and 2

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, 3, and 4 are covered in LCO 3.8.4.

ACTIONS

LCO 3.0.3 is not applicable while in MODE 5 or 6. However, since irradiated fuel assembly movement can occur in MODE 1, 2, 3, or 4, 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 5 or 6, LCO 3.0.3 would not specify any action. If moving irradiated fuel assemblies while in MODE 1, 2, 3, or 4, the fuel movement is independent of reactor operations. Entering LCO 3.0.3, while in MODE 1, 2, 3, or 4 would require the unit to be shutdown unnecessarily.

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

-----------------------------------REVIEWER'S NOTE-----------------------------------
ACTION A is included only when plant-specific implementation of LCO 3.8.5 includes the potential to require both trains of the DC System to be OPERABLE. If plant-specific implementation results in LCO 3.8.5 requiring only one train of the DC System to be OPERABLE, then ACTION A is omitted and ACTION B is renumbered as ACTION A. 4

BASES

ACTIONS (continued)

Condition A represents one train with one [or two] battery chargers inoperable (e.g., the voltage limit of SR 3.8.4.1 is not maintained). The ACTIONS provide a tiered response that focuses on returning the battery to the fully charged state and restoring a fully qualified charger to OPERABLE status in a reasonable time period. Required Action A.1 requires that the battery terminal voltage be restored to greater than or equal to the minimum established float voltage within 2 hours. This time provides for returning the inoperable charger to OPERABLE status or providing an alternate means of restoring battery terminal voltage to greater than or equal to the minimum established float voltage. Restoring the battery terminal voltage to greater than or equal to the minimum established float voltage provides good assurance that, within [12] hours, the battery will be restored to its fully charged condition (Required Action A.2) from any discharge that might have occurred due to the charger inoperability. 5

-----------------------------------REVIEWER'S NOTE-----------------------------------

A plant that cannot meet the 12 hour Completion Time due to an inherent battery charging characteristic can propose an alternate time equal to 2 hours plus the time experienced to accomplish the exponential charging current portion of the battery charge profile following the service test (SR 3.8.4.3). 4

A discharged battery having terminal voltage of at least the minimum established float voltage indicates that the battery is on the exponential charging current portion (the second part) of its recharge cycle. The time to return a battery to its fully charged state under this condition is simply a function of the amount of the previous discharge and the recharge characteristic of the battery. Thus there is good assurance of fully recharging the battery within [12] hours, avoiding a premature shutdown with its own attendant risk. 5

If established battery terminal float voltage cannot be restored to greater than or equal to the minimum established float voltage within 2 hours, and the charger is not operating in the current-limiting modes, a faulty charger is indicated. A faulty charger that is incapable of maintaining established battery terminal float voltage does not provide assurance that it can revert to and operate properly in the current limit modes that is necessary during the recovery period following a battery discharge event that the DC system is designed for.

ACTIONS (continued)

If the charger is operating in the current limit mode after 2 hours that is an indication that the battery is partially discharged and its capacity margins will be reduced. The time to return the battery to its fully charged condition in this case is a function of the battery charger capacity, the amount of loads on the associated DC system, the amount of the previous discharge, and the recharge characteristic of the battery. The charge time can be extensive, and there is not adequate assurance that it can be recharged within [12] hours (Required Action A.2).

Required Action A.2 requires that the battery float current be verified as less than or equal to [2] amps. This indicates that, if the battery had been discharged as the result of the inoperable battery charger, it has now been fully recharged. If at the expiration of the initial [12] hour period the battery float current is not less than or equal to [2] amps this indicates there may be additional battery problems and the battery must be declared inoperable. 5

Required Action A.3 limits the restoration time for the inoperable battery charger to 7 days. This action is applicable if an alternate means of restoring battery terminal voltage to greater than or equal to the minimum established float voltage has been used (e.g., balance of plant non-Class 1E battery charger). The 7 day Completion Time reflects a reasonable time to effect restoration of the qualified battery charger to OPERABLE status.

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

~~B.1, B.2.1, B.2.2, B.2.3, and B.2.4~~ 5 TSTF-471

~~[If two trains are required by LCO 3.8.10, the remaining train with DC power available may be capable of supporting sufficient systems to allow continuation of CORE ALTERATIONS and [recently] irradiated fuel movement]. By allowing the option to declare required features inoperable with the associated DC power source(s) inoperable, appropriate restrictions will be implemented in accordance with the affected required features LCO 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 ~~[recently]~~ irradiated fuel assemblies, and operations involving positive reactivity additions that could result in TSTF-471 INSERT 1 5 TSTF-471 1

2 **INSERT 1**

With the required train of DC electrical power sources inoperable, the minimum required DC electrical power source is not available. Therefore, suspension of

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BASES

ACTIONS (continued)

is required 6

loss of required SDM (MODE 5) or boron concentration (MODE 6)[]. 1
Suspending positive reactivity additions that could result in failure to meet the minimum SDM or boron concentration limit is required to assure continued safe operation. Introduction of coolant inventory must be from sources that have a boron concentration greater than ~~that~~ what would be required in the Reactor Coolant System (RCS) for minimum SDM or refueling boron concentration. 6 6
This may result in an overall reduction in RCS boron concentration, but provides acceptable margin to maintaining subcritical operation. Introduction of temperature changes including temperature increases when operating with a positive Moderator Temperature Coefficient (MTC) must also be evaluated to ensure they do not result in a loss of required SDM. 6

Suspension of these activities shall not preclude completion of actions to establish a safe conservative condition. These actions minimize probability of the occurrence of postulated events. It is further required to immediately initiate action to restore the required DC electrical power source ~~subsystem[s]~~ and to continue this action until restoration is accomplished in order to provide the necessary DC electrical power to the unit safety systems. 5

The Completion Time of immediately is consistent with the required times for actions requiring prompt attention. The restoration of the required DC electrical power source ~~subsystems~~ should be completed as quickly as possible in order to minimize the time during which the unit safety systems may be without sufficient power. 5

SURVEILLANCE REQUIREMENTS

SR 3.8.5.1

SR 3.8.5.1 requires performance of all Surveillances required by SR 3.8.4.1 through SR 3.8.4.3. Therefore, see the corresponding Bases for LCO 3.8.4 for a discussion of each SR.

This SR is modified by a Note. The reason for the Note is to preclude requiring the OPERABLE 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 still be capable of being met, but actual performance is not required.

REFERENCES

1. UFSAR, ~~Chapter~~ Section [6]. 2 1
2. UFSAR, ~~Chapter~~ Section [15]. 2 1

JUSTIFICATION FOR DEVIATIONS
ITS 3.8.5 BASES, DC SOURCES - SHUTDOWN

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

2. Changes are made (additions, deletions, and/or changes) to the ISTS Bases which reflect the plant specific nomenclature, number, reference, system description, analysis, or licensing basis description.

3. These punctuation corrections have been made consistent with the Writer's Guide for the Improved Standard Technical Specifications, TSTF-GG-05-01, Section 5.1.3.

4. The Reviewer's Note has been deleted. This information is for the NRC reviewer to be keyed in to what is needed to meet this requirement. This is not meant to be retained in the final version of the plant specific submittal.

5. Changes are made to reflect the Specifications.

6. Typographical/grammatical error corrected.

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Specific No Significant Hazards Considerations (NSHCs)

DETERMINATION OF NO SIGNIFICANT HAZARDS CONSIDERATIONS
ITS 3.8.5, DC SOURCES - SHUTDOWN

There are no specific NSHC discussions for this Specification.

ATTACHMENT 6

ITS 3.8.6, BATTERY PARAMETERS

Current Technical Specification (CTS) Markup and Discussion of Changes (DOCs)

ITS 3.8.6

A01

ITS

ELECTRICAL POWER SYSTEMS

D.C. DISTRIBUTION - OPERATING

LIMITING CONDITION FOR OPERATION

Add proposed LCO 3.8.6

A02

3.8.2.3 The following D.C. bus trains shall be energized and OPERABLE with disconnect switches between bus trains open:

TRAIN "A" consisting of 250/125-volt D.C. MCC 1, 125-volt D.C. station batteries 1P and 1N and 2 full capacity chargers.

TRAIN "B" consisting of 250/125-volt D.C. MCC 2, 125-volt D.C. station batteries 2P and 2N and 2 full capacity chargers.

See ITS 3.8.4 and ITS 3.8.9

APPLICABILITY: MODES 1, 2, 3 and 4.

A02

ACTION:

a. With only one 125-volt D.C. bus of a 250/125 volt D.C. MCC OPERABLE, restore the inoperable bus to OPERABLE status within 2 hours or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.

See ITS 3.8.9

b. With only one 125-volt D.C. battery or only one charger of one MCC OPERABLE, restore the inoperable battery or charger to OPERABLE status within 2 hours or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.

See ITS 3.8.4

SURVEILLANCE REQUIREMENTS

4.8.2.3.1 Each D.C. bus train shall be determined OPERABLE and energized with disconnect switches open between redundant busses at least once per 7 days by verifying correct disconnect switch/breaker alignment, indicated power availability from the charger and battery, and voltage on the bus of greater than or equal to 125 volts D.C.

See ITS 3.8.9

4.8.2.3.2 Each 125-volt battery and charger shall be demonstrated OPERABLE:

See ITS 3.8.4

SR 3.8.6.2 a. At least once per ~~7~~ days by:

31 days for voltage

L01

1. Verifying that the parameters in Table 4.8-1 meet the Category A limits, and

L05

L06

Add proposed SR 3.8.6.1

M01

ITS 3.8.6

A01

ITS

ELECTRICAL POWER SYSTEMS

SURVEILLANCE REQUIREMENTS (Continued)

2. Verifying total battery terminal voltage is greater than or equal to 129 volts on float charge. — See ITS 3.8.4 — M02

SR 3.8.6.3, SR 3.8.6.4, SR 3.8.6.5 — b. At least once per 92 days ~~and within 7 days after a battery discharge (battery terminal voltage below 110 volts), or battery overcharge (battery terminal voltage above 150 volts)~~, by: — 31 days for electrolyte level; 31 days for electrolyte temperature — L02

SR 3.8.6.3, SR 3.8.6.5 — 1. Verifying that the parameters in Table 4.8-1 meet the Category B limits, — L06

~~2. Verifying that there is no visible corrosion at either terminals or connectors, or the connection resistance of these items is less than 150 x 10^{-6} ohms, and~~ — L03

SR 3.8.6.4 — 3. Verifying that the average electrolyte temperature of every ~~sixth connected~~ pilot cell is ~~above 60°F~~ greater than or equal to minimum established design limits — L04 — LA01

c. At least once per 18 months by verifying that the battery charger will supply at least 475 amperes at a minimum of 130 volts for at least 8 hours; and at least once each REFUELING INTERVAL by verifying that: — See ITS 3.8.4

~~1. The cells, cell plates and battery racks show no visual indication of physical damage or abnormal deterioration,~~

~~2. The cell-to-cell and terminal connections are clean, tight and coated with anti-corrosion material, and~~

~~3. The resistance of each cell-to-cell and terminal connection is less than or equal to 150 x 10^{-6} ohms.~~ — L03

d. At least once each REFUELING INTERVAL, during shutdown, by verifying that the battery capacity is adequate to supply and maintain in OPERABLE status all of the actual or simulated emergency loads for the design duty cycle when the battery is subjected to a battery service test. Once per 60 months, a modified performance discharge test may be performed in lieu of the battery service test. — See ITS 3.8.4

SR 3.8.6.6 — e. Verify battery capacity is ≥ 80% of the manufacturer's rating when subjected to a performance discharge test or modified performance discharge test:

1. At least once per 60 months, during shutdown, when the battery shows no signs of degradation, and has not reached 85% of service life. — L10

2. At least once per 12 months, during shutdown, when the battery shows signs of degradation, or has reached 85% of service life with < 100% of the manufacturer's rated capacity. — L10

3. At least once per 24 months, during shutdown, when the battery has reached 85% of service life with ≥ 100% of the manufacturer's rated capacity. — L10

ITS 3.8.6

A01

ITS

TABLE 4.8-1

BATTERY SURVEILLANCE REQUIREMENTS

L08

L08

	Parameter	CATEGORY A(1)	CATEGORY B(2)	
		Limits for each designated pilot cell	Limits for each connected cell	Allowable(3) value for each connected cell
SR 3.8.6.3	Electrolyte Level	>Minimum level indication mark, and ≤ ¼" above maximum level indication mark(d)	>Minimum level indication mark, and ≤ ¼" above maximum level indication mark(d)	Above top of plates, and not overflowing (greater than or equal to minimum established design limits)
SR 3.8.6.2, SR 3.8.6.5	Float Voltage (L07)	≥2.13 volts (> 2.07) SR 3.8.6.2	≥2.13 volts(b)	>2.07 volts SR 3.8.6.5
	Specific Gravity(a)	≥1.200(c)	≥1.195	Not more than .020 below the average of all connected cells
			Average of all connected cells >1.205	Average of all connected cells >1.195(c)

L07

L06

(a) Corrected for electrolyte temperature and level. If the level is between the high and low marks and the temperature corrected specific gravity is within the manufacturer's nominal specific gravity range, it is not necessary to correct for level. L06

(b) Corrected for average electrolyte temperature. L07

(c) Or battery charging current, following a service, performance discharge, or modified performance discharge test, is less than two amps, when on a float charge. L06

(d) It is acceptable for the electrolyte level to temporarily increase above the specified maximum during equalizing charges provided it is not overflowing. L08

(1) For any Category A parameter(s) outside the limit(s) shown, the battery may be considered OPERABLE provided that within 24 hours all the Category B measurements are taken and found to be within their allowable values, and provided all parameter(s) are restored to within limits within the next 6 days.

(2) For any Category B parameter(s) outside the limit(s) shown, the battery may be considered OPERABLE provided that they are within their allowable values and provided the parameter(s) are restored to within limits within 7 days.

(3) Any Category B parameter not within its allowable value indicates an inoperable battery.

Add proposed ACTIONS A, B, C, D, E, and F (L09)

ITS 3.8.6

A01

ITS

ELECTRICAL POWER SYSTEMS

D.C. DISTRIBUTION - SHUTDOWN

LIMITING CONDITION FOR OPERATION

Add proposed LCO 3.8.6

A02

3.8.2.4 As a minimum, the following D.C. electrical equipment and bus shall be energized and OPERABLE:

1 - 250/125-volt D.C. MCC, and

See ITS 3.8.10

2 - 125-volt battery banks and chargers supplying the above D.C. MCC.

See ITS 3.8.5

APPLICABILITY: MODES 5 and 6.

A02

ACTION:

With less than the above complement of D.C. equipment and bus OPERABLE, establish CONTAINMENT INTEGRITY within 8 hours.

See ITS 3.8.5 and ITS 3.8.10

SURVEILLANCE REQUIREMENTS

4.8.2.4.1 The above required 250/125-volt D.C. MCC shall be determined OPERABLE and energized at least once per 7 days by verifying correct disconnect switch/breaker alignment, indicated power availability from the charger and battery, and voltage on the bus of greater than or equal to 125 volts D.C.

See ITS 3.8.10

4.8.2.4.2 The above required 125-volt battery banks and chargers shall be demonstrated OPERABLE per Surveillance Requirement 4.8.2.3.2.

See CTS Markup Pages 1 of 4, 2 of 4, and 3 of 4 (i.e., previous 3 pages)

DISCUSSION OF CHANGES
ITS 3.8.6, BATTERY PARAMETERS

ADMINISTRATIVE CHANGES

A01 In the conversion of the Davis-Besse Current Technical Specifications (CTS) to the plant specific Improved Technical Specifications (ITS), certain changes (wording preferences, editorial changes, reformatting, revised numbering, etc.) are made to obtain consistency with NUREG-1430, Rev. 3.1, "Standard Technical Specifications-Babcock and Wilcox Plants" (ISTS).

These changes are designated as administrative changes and are acceptable because they do not result in technical changes to the CTS.

A02 CTS 3.8.2.3, in part, requires the Train A and B batteries to be OPERABLE during MODES 1, 2, 3, and 4. CTS 3.8.2.4, in part, requires the Train A or B batteries to be OPERABLE during MODES 5 and 6. ITS LCO 3.8.6 requires the battery parameters for Train 1 and 2 batteries to be within limits. ITS 3.8.6, which only covers the requirements for battery parameters, is applicable when the associated DC electrical power sources are required to be OPERABLE. This changes the CTS by combining the requirements for the Train 1 and Train 2 battery parameters into one Specification and replacing the actual MODES with the phrase "When associated DC electrical power sources are required to be OPERABLE."

The purpose of ITS 3.8.6 is to cover the battery parameter requirements for the Trains 1 and 2 batteries in one Specification. This change combines the CTS 3.8.2.3 and 3.8.2.4 requirements for the Train A and Train B battery parameters into one Specification. There are no technical changes as a result of this change since it simply converts the Specifications into the format of the ITS. The proposed Applicability ensures the battery parameter requirements are met when the associated battery is required to be OPERABLE. Any technical changes to the battery parameters are discussed below. Any changes to the LCO and Applicability of the Train A and Train B batteries are discussed in the Discussion of Changes for ITS 3.8.4 and 3.8.5. This change is designated as administrative because it does not result in technical changes to the CTS.

MORE RESTRICTIVE CHANGES

M01 CTS 4.8.2.3.2 specifies the Surveillances for the Train A and Train B batteries while the unit is operating and CTS 4.8.2.4.2 specifies the Surveillances for the Train A and Train B batteries during shutdown. ITS 3.8.6 includes a new Surveillance. ITS SR 3.8.6.1 requires the verification every 7 days that each battery float current is $\leq$ 2 amps. This changes the CTS by adding an explicit Surveillance for battery float current.

The purpose of SR 3.8.6.1 is to assist in the determination of the state of charge of the battery to assure the battery can provide the required current and voltage to meet the design requirements. The specified float current is based on the float current that is indicative of a charged battery. This Surveillance is consistent with IEEE 450-1995. This change is acceptable since the Surveillance is necessary to help ensure the batteries remain OPERABLE. This change is designated as more restrictive because an explicit Surveillance Requirement has been added.

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DISCUSSION OF CHANGES
ITS 3.8.6, BATTERY PARAMETERS

M02 CTS 4.8.2.3.2.b.1 and the Category B limits in Table 4.8-1, in part, require verification that electrolyte level of each battery connected cell be within limit every 92 days. CTS 4.8.2.3.2.b.3 requires the electrolyte temperature of every sixth connected cell be verified within limit every 92 days. ITS SR 3.8.6.3 requires verification of each battery connected cell electrolyte level is greater than or equal to the established limit every 31 days. ITS SR 3.8.6.4 requires verifications of each pilot cell temperature is within limits every 31 days. This changes the CTS by increasing the frequency of performance of the Surveillances from 92 days to 31 days.

The purpose of CTS 4.8.2.3.2.b.1 and the Category B limits in Table 4.8-1 is to ensure the electrolyte level is within the specified limit to ensure the battery plates suffer no physical damage and maintains adequate electron transfer capability. The purpose of CTS 4.8.2.3.2.b.3 is to ensure the battery can provide the required current and voltage to meet design limits. The applicable IEEE 450-1995 standard recommends a Surveillance Frequency of 31 days. The change is acceptable since it will help ensure the battery plates will not suffer physical damage and maintain adequate electron transfer capability and to ensure the battery can provide the required current and voltage to meet design limits. This change is designated as more restrictive because the Surveillance Requirement Frequency has been increased.

RELOCATED SPECIFICATIONS

None

REMOVED DETAIL CHANGES

LA01 *(Type 1 – Removing Details of System Design and System Description, Including Design Limits)* CTS 4.8.2.3.2 requires the average electrolyte temperature to be above 60°F. ITS SR 3.8.6.4 specifies the limit to be greater than or equal to the minimum established design limits. This changes the CTS by relocating the actual value of electrolyte temperature to the ITS Bases.

The removal of these details, which are related to system design, from the Technical Specifications, is acceptable because this type of information is not necessary to be included in the Technical Specifications to provide adequate protection of public health and safety. The ITS still retains the requirement that the battery cell temperature be greater than or equal to the minimum established design limits. Also, this change is acceptable because the removed information will be adequately controlled in the ITS Bases. Changes to the Bases are controlled by the Technical Specifications Bases Control Program in Chapter 5. This change is designated as a less restrictive removal of detail change because information relating to system design is being removed from the Technical Specifications.

DISCUSSION OF CHANGES
ITS 3.8.6, BATTERY PARAMETERS

LESS RESTRICTIVE CHANGES

L01 *(Category 7 – Relaxation Of Surveillance Frequency, Non-24 Month Type Change)* CTS 4.8.2.3.2.a.1 requires the verification that the pilot cell voltage is greater than or equal to the specified limit every 7 days. ITS SR 3.8.6.2 requires the verification of each pilot battery cell voltage every 31 days. This changes the CTS by extending the Surveillance interval for verification of pilot cell voltage from 7 days to 31 days.

The purpose of CTS 4.8.2.3.2.a.1 is to ensure the cell float voltages are equal to or greater than the short term absolute minimum voltage. This change extends the Surveillance Frequency from 7 days to 31 days for verification of pilot cell voltage. This change is acceptable because the new Surveillance Frequency provides an acceptable level of equipment reliability, and is consistent with the Frequency recommended in IEEE-450, 1995. This change is also acceptable since ITS 5.5.16, "Battery Monitoring and Maintenance Program," has been added which requires actions to be taken to restore battery cells with float voltage < 2.13 V. This program will help ensure the cell voltage will not approach the ITS SR 3.8.6.2 limit of 2.07 V. This change is designated as less restrictive because Surveillances will be performed less frequently under the ITS than under the CTS.

L02 *(Category 7 – Relaxation Of Surveillance Frequency, Non-24 Month Type Change)* CTS 4.8.2.3.2.b, in part, requires the performance of several Surveillances within 7 days after a battery discharge (battery terminal voltage below 110 volts), or battery overcharge (battery terminal voltage above 150 volts). ITS 3.8.6 does not require these Surveillances to be performed after a battery discharge or overcharge. This changes the CTS by not including a specific Surveillance Requirement to perform these tests after a discharge or overcharge.

The purpose of the CTS 4.8.2.3.2.b Frequency is to ensure the battery remains OPERABLE after a severe battery discharge or overcharge. This change is acceptable because the proposed Surveillance Requirement Frequencies continue to ensure that it provides an acceptable level of equipment reliability. CTS 4.8.2.3.2.b, in part, requires the performance of several Surveillances within 7 days after severe battery discharge or battery overcharge. CTS 4.8.2.3.2.b.1 requires a verification that electrolyte level, float voltage, and specific gravity are within the specified limits. CTS 4.8.2.3.2.b.2 requires verification that there is no visible corrosion at either terminals or connectors, or the connections resistance are within limits. CTS 4.8.2.3.2.b.3 requires verification of average electrolyte temperature. CTS 4.8.2.3.2.b.2 is not required to be performed because corrosion rates and connection resistance are not believed to be immediately and significantly affected by a severe discharge or overcharge condition. ITS SR 3.8.6.1 requires verification that each battery float current is ≤ 2 amps every 7 days. The float current requirements are based on the float current indicative of a charged battery. Therefore, this Surveillance will detect a discharge condition of the battery. In addition, ITS 5.5.16, "Battery Monitoring and Maintenance Program," requires a program for battery maintenance based on the recommendations of IEEE 450-1995. The requirement to perform these battery preventative maintenance activities are consistent with IEEE 450-1995,

DISCUSSION OF CHANGES
ITS 3.8.6, BATTERY PARAMETERS

and as such, will be maintained in the Davis-Besse procedures implementing ITS 5.5.16. This change is designated as less restrictive because Surveillances will be performed less frequently under the ITS than under the CTS.

L03 *(Category 5 – Deletion of Surveillance Requirement)* CTS 4.8.2.3.2.b.2 requires verification that there is no visible corrosion at either terminals or connectors, or the connection resistance of these items is less than 150 x 10^{-6} ohms. CTS 4.8.2.3.2.c, in part, requires verification that the cells, cell plates and battery racks show no visual indication of physical damage or abnormal deterioration, the cell-to-cell and terminal connections are clean, tight and coated with anti-corrosion material, and the resistance of each cell-to-cell and terminal connection is less than or equal to 150 x 10^{-6} ohms. ITS 3.8.6 does not include these requirements for battery inspections, the removal of visible corrosion, and the verification that the cell-to-cell and terminal connections are clean, tight, and coated with anti-corrosion material. This changes the CTS by deleting the explicit battery requirements from the Technical Specifications.

The purpose of CTS 4.8.2.3.2.b.2 and CTS 4.8.2.3.2.c, for the Train 1 and Train 2 batteries, is to ensure that the proper preventative maintenance type of battery activities are performed. In accordance with ITS SR 3.0.1, when any SR is not met, the LCO is not met. This is based on the premise that SRs represent the minimum acceptable requirements for OPERABILITY of the required equipment. However, the failure to meet these specific Surveillances do not necessarily mean that the equipment is not capable of performing its safety function. When the Train 1 and Train 2 batteries are capable of meeting ITS SR 3.8.4.1, the battery terminal voltage verification and ITS SR 3.8.4.3, the battery capacity test, they are considered to be able to meet their safety function. The Surveillances that are proposed to be deleted are considered preventative maintenance type activities and are not considered the minimum acceptable requirements for OPERABILITY of the batteries. This change is acceptable because the SR requirements proposed in ITS 3.8.4 continue to ensure that the batteries are maintained consistent with the safety analyses and licensing basis. In addition, ITS 5.5.16, "Battery Monitoring and Maintenance Program," requires a program for battery maintenance based on the recommendations of IEEE 450-1995. The requirement to perform these battery preventative maintenance activities are consistent with IEEE 450-1995, and as such, will be maintained in the Davis-Besse procedures implementing ITS 5.5.16. This change is designated as less restrictive because Surveillances which are required in the CTS will not be required in the ITS.

L04 *(Category 6 - Relaxation of Surveillance Requirement Acceptance Criteria)* CTS 4.8.2.3.2.b.3 requires the average electrolyte temperature of every sixth connected cell to be verified within limit. ITS SR 3.8.6.4 requires verification that each pilot cell temperature is within limits. This changes the CTS by monitoring the pilot cells instead of the every sixth connected cell.

The purpose of CTS 4.8.2.3.2.b.3 is to ensure the battery can provide the required current and voltage to meet design limits. This change is acceptable because the relaxed Surveillance Requirement acceptance criteria are sufficient for verification that the parameters meet the LCO. The change is acceptable because it will help ensure the battery can provide the required current and

DISCUSSION OF CHANGES
ITS 3.8.6, BATTERY PARAMETERS

voltage to meet design limits. This change is designated as less restrictive because less stringent Surveillance Requirements are being applied in the ITS than were applied in the CTS.

L05 *(Category 5 – Deletion of Surveillance Requirement)* CTS 4.8.2.3.2.a.1 requires verification that the electrolyte level of each pilot cell is greater than the minimum level indication mark and < 1/4 inch above the maximum level indication mark every 7 days. ITS 3.8.6 does not include this requirement. This changes the CTS by deleting the requirement to monitor pilot cell electrolyte level every 7 days.

The purpose of CTS 4.8.2.3.2.a.1 is to ensure the battery pilot cells contain sufficient electrolyte level for electron transfer capability. This change is acceptable because the deleted Surveillance Requirement is not necessary to verify that the equipment used to meet the LCO can perform its required functions. Thus, appropriate equipment continues to be tested in a manner and at a Frequency necessary to give confidence that the equipment can perform its assumed safety function. While the pilot cell Surveillance has been deleted, another Surveillance is included which help to ensure the batteries will function as designed. ITS SR 3.8.6.3 requires the verification that each battery connected cell electrolyte level is greater than or equal to minimum established design limits every 31 days. The Frequency for verification of electrolyte level in CTS 4.8.2.3.2.b.1, for each connected cell, has been increased from every 92 days to every 31 days as discussed in DOC M02. This Surveillance give a better indication of the overall battery condition, since all connected cells are being checked. This change is designated as less restrictive because a Surveillance which is required in the CTS will not be required in the ITS.

L06 *(Category 5 – Deletion of Surveillance Requirement)* CTS 4.8.2.3.2.a.1 requires the verification that the pilot cell specific gravity is within limit (the Category A limits of Table 4.8-1 as modified by footnote (c)) and CTS 4.8.2.3.2.b.1 requires the verification that the connected cell specific gravity is within limit (the Category B limits of Table 4.8-1). As indicated in Table 4.8-1 (footnote (a)) the specific gravity limit must be corrected for electrolyte temperature and level. ITS 3.8.6 does not include these Surveillances. This changes the CTS by deleting these Surveillances.

The purpose of CTS 4.8.2.3.2.a.1 and 4.8.2.3.2.b.1, the specific gravity verifications, is to ensure the state of charge of each cell. This change is acceptable because the deleted Surveillance Requirements are not necessary to verify that the equipment used to meet the LCO can perform its required functions. Thus, appropriate equipment continues to be tested in a manner and at a Frequency necessary to give confidence that the equipment can perform its assumed safety function. While the specified Surveillances have been deleted, another Surveillance is included that helps to ensure the batteries will function as designed. ITS SR 3.8.6.1 (discussed in DOC M01) requires the verification that each battery float current is $\leq$ 2 amps every 7 days. IEEE 450-1995, Section 4.5 states that the most accurate indicator of return to full charge is a stabilized charging or float current. Specific gravity readings may not be accurate when the battery is on charge following a discharge. This Surveillance (SR 3.8.6.1) gives a better indication of the overall battery condition. This change is designated as

DISCUSSION OF CHANGES
ITS 3.8.6, BATTERY PARAMETERS

less restrictive because Surveillances which are required in the CTS will not be required in the ITS.

L07 *(Category 6 – Relaxation Of Surveillance Requirement Acceptance Criteria)* The Category A limits in Table 4.8-1 for the pilot cell voltage is ≥ 2.13 V. The Category B limits in Table 4.8-1 for each connected cell voltage is ≥ 2.13 V corrected for average electrolyte temperature and the Allowable Value for each connected cell voltage is > 2.07V. ITS SR 3.8.6.2 requires the verification of each pilot cell voltage is > 2.07 V and ITS SR 3.8.6.5 requires the verification that each battery connected cell voltage is > 2.07 V. This changes the CTS by reducing the acceptance criteria for pilot cell and battery connected cell voltage limits from ≥ 2.13 V to > 2.07 V.

The purpose of the proposed Surveillance limit in ITS SR 3.8.6.2 and SR 3.8.6.5 is to ensure the cell voltages are greater than or equal to the short term absolute minimum voltage. This change is acceptable because the relaxed Surveillance Requirement acceptance criteria are not necessary for verification that the equipment used to meet the LCO can perform its required functions. At this proposed lower voltage the cell can still perform its function. The battery is considered OPERABLE when the battery voltage on float is greater than or equal to the minimum establish voltage of ITS SR 3.8.4.1. This change is acceptable since ITS 5.5.16, "Battery Monitoring and Maintenance Program," has been added and requires actions to be taken to restore battery cells with float voltage < 2.13 V. This program will help ensure the cell voltage will not approach the limit of 2.07 V and that the minimum established voltage of ITS SR 3.8.4.1 is maintained. This change is designated as less restrictive because less stringent Surveillance Requirements are being applied in the ITS than were applied in the CTS.

L08 *(Category 6 – Relaxation Of Surveillance Requirement Acceptance Criteria)* The Categories A and B electrolyte level limit in Table 4.8-1 for each pilot cell and each connected cell is > minimum level indication mark, and ≤ 1/4 inch above maximum level indication mark. Footnote (d) to the Table states it is acceptable for the electrolyte level to temporarily increase above the specified maximum during equalizing charges provided it is not overflowing. In addition, the Category B electrolyte level Allowable Value for each connected cell (which includes the pilot cells) is above the top of plates, and not overflowing. ITS SR 3.8.6.3 requires the verification that the electrolyte level for each connected cell is greater than or equal to minimum established design limits. This changes the CTS by deleting the specific value for the lower electrolyte level limit and deletes the upper electrolyte level limit requirement.

The purpose of the proposed Surveillance limit in ITS SR 3.8.6.3 is to ensure the battery plates do not suffer physical damage and maintain adequate electron transfer capability. This change is acceptable because the relaxed Surveillance Requirement acceptance criteria are not necessary for verification that the equipment used to meet the LCO can perform its required functions. This changes the CTS by deleting the specific value for the lower electrolyte level limit and replacing it with the minimum established design limit and deleting the upper electrolyte level limit requirement. This change is acceptable since the proposed level will continue to ensure that the battery and the cells remain OPERABLE to

DISCUSSION OF CHANGES
ITS 3.8.6, BATTERY PARAMETERS

perform its specified safety function. This change is acceptable since ITS 5.5.16, "Battery Monitoring and Maintenance Program," has been added and requires actions to be taken to restore electrolyte level when it falls below a specified value. This program will help ensure the electrolyte level will not approach the specified design limit. This change is designated as less restrictive because less stringent Surveillance Requirements are being applied in the ITS than were applied in the CTS.

L09 *(Category 4 – Relaxation of Required Action)* CTS Table 4.8-1 Footnote (1) specifies compensatory actions for when Category A parameters are not within limit. The compensatory action allows the battery to be considered OPERABLE as long as all Category B measurements are taken and found to be within their allowable values, and provided all parameter(s) are restored to within limits within the next 6 days. CTS Table 4.8-1 Footnote (2) specifies compensatory actions for when Category B parameters are not within limit. The compensatory action allows the battery to be considered OPERABLE provided that they are within their allowable values and provided the parameter(s) are restored to within limits within 7 days. CTS Table 4.8-1 Footnote (3) states that any Category B parameter not within its allowable value indicates an inoperable battery. In lieu of immediately declaring the associated battery inoperable, the ITS 3.8.6 ACTIONS provide compensatory actions for when battery parameters are not within limits that may be taken prior to declaring the associated battery inoperable. This changes the CTS by adding compensatory actions specifically designed for battery parameters.

The purpose of the ITS 3.8.6 ACTIONS is to allow a certain amount of time to restore battery parameters to within limits before declaring the associated battery inoperable. This change is acceptable because the Required Actions are used to establish remedial measures that must be taken in response to the degraded conditions in order to minimize risk associated with continued operation while providing time to repair inoperable features. The Required Actions are consistent with safe operation under the specified Condition, considering the OPERABLE status of the redundant systems or features. This includes the capacity and capability of remaining systems or features, a reasonable time for repairs or replacement, and the low probability of a DBA occurring during the repair period. ACTIONS have been added to allow a short time period to restore parameters to within limits. The ACTIONS are to be taken on a per battery basis as noted in the ACTIONS Note. ITS 3.8.6 ACTION A covers the condition of one or more batteries with one or more battery cells float voltage less than the specified limit. ITS 3.8.6 ACTION A requires the performance of SR 3.8.4.1 in 2 hours, the performance of SR 3.8.6.1 within 2 hours, and restoration of the affected cell voltage to within limits within 24 hours. ITS 3.8.6 ACTION B covers the condition of one or more batteries with float current not within the specified limit. ITS 3.8.6 ACTION B requires the performance of SR 3.8.4.1 in 2 hours and restoration of the battery float current to within limits within 12 hours. ITS 3.8.6 ACTION C covers the condition of one or more batteries with one or more cells electrolyte level less than minimum established design limits. ITS 3.8.6 ACTION C requires the restoration of electrolyte level to above top of plates within 8 hours, verification that there is no evidence of leakage within 12 hours, and restoration of electrolyte level to greater than or equal to the minimum established design limits within 31 days. ITS 3.8.6 ACTION D covers the condition of one or more

DISCUSSION OF CHANGES
ITS 3.8.6, BATTERY PARAMETERS

batteries with pilot cell electrolyte temperature less than the minimum established design limits. ITS 3.8.6 ACTION D requires the restoration of battery pilot cell temperature to greater than or equal to minimum established design limits within 12 hours. ITS 3.8.6 ACTION E covers the condition of batteries in redundant trains with battery parameters not within limits. ITS 3.8.6 ACTION E requires restoration of the battery parameters for battery in one train to within limits within 2 hours. ITS 3.8.6 ACTION F covers the condition when a Required Action and associated Completion Time of any of the above ACTIONS could not be met, or if one or more batteries with one or more battery cells float voltage and float current are not within limits, or if ITS SR 3.8.6.6 is not met. ITS 3.8.6 ACTION F requires the immediate declaration that the associated battery is inoperable. The allowances are considered acceptable since only a short time is allowed to exist with battery parameters not within limits. In addition, when redundant batteries have battery parameters not within limit, only 2 hours is allowed to restore at least one redundant train before declaring the battery inoperable. This change is designated as less restrictive because less stringent Required Actions are being applied in the ITS than were applied in the CTS.

L10 *(Category 10 – Deletion of Surveillance Requirement Shutdown Performance Requirements)* CTS 4.8.2.3.2.e.1, 4.8.2.3.2.e.2, and 4.8.2.3.2.e.3 contain a requirement to perform the battery performance discharge or modified performance discharge test "during shutdown." ITS SR 3.8.6.6 requires a similar test, and includes a Note that states the Surveillance shall not be performed in MODE 1, 2, 3, or 4. The Note also states that credit may be taken for unplanned events that satisfy this SR. This changes the CTS by allowing the Surveillances to be performed in the operating MODES, provided that it is an unplanned event that satisfies the requirements of the SR.

The purpose of CTS 4.8.2.3.2.e.1, 4.8.2.3.2.e.2, and 4.8.2.3.2.e.3 is to confirm the OPERABILITY of the batteries. This change is acceptable because the proposed Surveillance Frequency provides an acceptable level of equipment reliability. The proposed Surveillance does not include the restriction on unit conditions at all times. It allows the unit to credit an unplanned event for satisfying the Surveillance, provided the necessary data is obtained. Furthermore, the proposed Surveillance Note still restricts planned performance of the Surveillance to MODES other than MODES 1, 2, 3, and 4. The control of the unit conditions appropriate to perform the test 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 Specification Surveillances that do not dictate unit conditions for the Surveillance. This change is designated as less restrictive because the Surveillance may be performed during plant conditions other than shutdown.

Improved Standard Technical Specifications (ISTS) Markup and Justification for Deviations (JFDs)

CTS

3.8 ELECTRICAL POWER SYSTEMS

3.8.6 Battery Parameters

~~---REVIEWER'S NOTE---
Licensee's must implement a program, as specified in Specification 5.5.17, to monitor battery parameters that is based on the recommendations of IEEE Standard 450-1995, "IEEE Recommended Practice For Maintenance, Testing, And Replacement Of Vented Lead-Acid Batteries For Stationary Applications."~~ 1

DOC A02 LCO 3.8.6 Battery parameters for the Train [A] 1 and Train [B] 2 batteries shall be within limits. 5

DOC A02 APPLICABILITY: When associated DC electrical power ~~subsystems~~ sources are required to be OPERABLE. 5

ACTIONS

Table 4.8-1 footnotes (1), (2), and (2)

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

CONDITION	REQUIRED ACTION	COMPLETION TIME
Table 4.8-1 footnotes (1), (2), and (3) A. One [or ~~two~~ more] batter[y][ies] ~~on one train~~] with one or more battery cells float voltage ~~[≤]~~ ≤ [2.07] V.	A.1 Perform SR 3.8.4.1	2 hours (2)
	AND	
	A.2 Perform SR 3.8.6.1.	2 hours (3)
	AND	
	A.3 Restore affected cell voltage ~~[≥]~~ > [2.07] V.	24 hours (3)
Table 4.8-1 footnotes (1), (2), and (3) B. One [or ~~two~~ more] batter[y][ies] ~~on one train~~] with float current > [2] amps.	B.1 Perform SR 3.8.4.1.	2 hours (2)
	AND	(3)
	B.2 Restore battery float current to ≤ [2] amps.	[12] hours (3)

CTS

ACTIONS (continued)

CTS	CONDITION	REQUIRED ACTION		COMPLETION TIME	
	---------------NOTE------------- Required Action C.2 shall be completed if electrolyte level was below the top of plates. -------------------------------------	-------------------NOTE------------------- Required Actions C.1 and C.2 are only applicable if electrolyte level was below the top of plates. --			
Table 4.8-1 footnotes (1), (2), and (3)	C. One [or ~~two~~ more] batter[y][ies on ~~one~~ train] with one or more cells electrolyte level less than minimum established design limits.	C.1	Restore electrolyte level to above top of plates.	8 hours	2
		AND			
		C.2	Verify no evidence of leakage.	12 hours	
		AND			
		C.3	Restore electrolyte level to greater than or equal to minimum established design limits.	31 days	
Table 4.8-1 footnotes (1), (2), and (3)	D. One [or ~~two~~ more] batter[y][ies on ~~one~~ train] with pilot cell electrolyte temperature less than minimum established design limits.	D.1	Restore battery pilot cell temperature to greater than or equal to minimum established design limits.	12 hours	2
Table 4.8-1 footnotes (1), (2), and (3)	E. One ~~or~~ more batteries in redundant trains with battery parameters not within limits.	E.1	Restore battery parameters for batteries in one train to within limits.	2 hours	2

CTS

ACTIONS (continued)

	CONDITION	REQUIRED ACTION	COMPLETION TIME	
Table 4.8-1 footnotes (1), (2), and (3)	F. Required Action and associated Completion Time of Condition A, B, C, D, or E not met. OR more One [or ~~two~~] batter[y][ies ~~on one train~~] with one or more battery cells float voltage ≤ [2.07] V and float current > [2] amps. OR SR 3.8.6.6 not met.	F.1 Declare associated battery inoperable.	Immediately	2 3 4

SURVEILLANCE REQUIREMENTS

	SURVEILLANCE		FREQUENCY	
DOC M01	SR 3.8.6.1	-----------------------------NOTE----------------------------- Not required to be met when battery terminal voltage is less than the minimum established float voltage of SR 3.8.4.1. --- Verify each battery float current is ≤ [2] amps.	7 days	3
4.8.2.3.2.a.1, Table 4.8-1	SR 3.8.6.2	Verify each battery pilot cell voltage is ≥ [2.07] V.	31 days	3
4.8.2.3.2.b.1, Table 4.8-1	SR 3.8.6.3	Verify each battery connected cell electrolyte level is greater than or equal to minimum established design limits.	31 days	
4.8.2.3.2.b.3	SR 3.8.6.4	Verify each battery pilot cell temperature is greater than or equal to minimum established design limits.	31 days	

CTS

SURVEILLANCE REQUIREMENTS (continued)

CTS		SURVEILLANCE	FREQUENCY	
4.8.2.3.2.b.1, Table 4.8-1	SR 3.8.6.5	Verify each battery connected cell voltage is ≥ [2.07] V. >	92 days	3
4.8.2.3.2.e	SR 3.8.6.6	------------------------------NOTE------------------------------ This Surveillance shall not be performed in MODE 1, 2, 3, or 4. ~~However, portions of the Surveillance may be performed to reestablish OPERABILITY provided an assessment determines the safety of the plant is maintained or enhanced.~~ Credit may be taken for unplanned events that satisfy this SR. --		6
		Verify battery capacity is ≥ [80%] of the manufacturer's rating when subjected to a performance discharge test or a modified performance discharge test.	60 months AND 12 months when battery shows degradation, or has reached [85]% of the expected life with capacity < 100% of manufacturer's rating AND 24 months when battery has reached [85]% of the expected life with capacity ≥ 100% of manufacturer's rating	3 3 3

JUSTIFICATION FOR DEVIATIONS
ITS 3.8.6, BATTERY PARAMETERS

1. The "Reviewer Note" has been deleted since it is not intended to be retained in the plant specific ITS submittal.

2. ISTS 3.8.6 Conditions A, B, C, D, E, and F have been modified to allow batteries in two trains to have battery parameters not within limits. ITS 3.8.6 ACTION E will ensure that if batteries in redundant trains have battery parameters not within limits, the restoration time is properly limited consistent with the intent of the ISTS 3.8.6 ACTIONS.

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

4. ISTS SR 3.8.6.6 requires a battery performance discharge or modified performance discharge test to be performed and provides acceptance criteria. However, no ACTION is provided in the ISTS 3.8.6 ACTIONS for when this SR is not met. Thus in the ISTS, LCO 3.0.3 would have to be entered. To preclude an LCO 3.0.3 entry, ISTS 3.8.6 Condition F has been modified to cover the case when SR 3.8.6.6 is not met. ACTION F will require the associated battery to be declared inoperable. This is also consistent with the current licensing basis.

5. Changes are made to reflect plant specific nomenclature.

6. This allowance has been deleted consistent with TSTF-360, Rev. 1. This TSTF was previously approved and was incorporated into NUREG-1430, Rev. 2. However, this portion of the TSTF was inadvertently not incorporated.

Improved Standard Technical Specifications (ISTS) Bases Markup and Justification for Deviations (JFDs)

B 3.8 ELECTRICAL POWER SYSTEMS

B 3.8.6 Battery Parameters

BASES

BACKGROUND

This LCO delineates the limits on battery float current as well as electrolyte temperature, level, and float voltage for the DC power subsystem batteries. A discussion of these batteries and their OPERABILITY requirements is provided in the Bases for LCO 3.8.4, "DC Sources - Operating," and LCO 3.8.5, "DC Sources - Shutdown." In addition to the limitations of this Specification, the [licensee controlled program] also implements a program specified in Specification 5.5.[17] for monitoring various battery parameters that is based on the recommendations of IEEE Standard 450-1995, "IEEE Recommended Practice For Maintenance, Testing, And Replacement Of Vented Lead-Acid Batteries For Stationary Applications" (Ref. 1).

cell, source, electrical, 16, Battery Monitoring and Maintenance Program, 1, 2, 6

The battery cells are of flooded lead acid construction with a nominal specific gravity of [1.215]. This specific gravity corresponds to an open circuit battery voltage of approximately 120 V for [58] cell battery (i.e., cell voltage of [2.065] volts per cell (Vpc)). The open circuit voltage is the voltage maintained when there is no charging or discharging. Once fully charged with its open circuit voltage ≥ [2.065] Vpc, the battery cell will maintain its capacity for [30] days without further charging per manufacturer's instructions. Optimal long term performance ~~however,~~ is obtained by maintaining a float voltage [2.20] to 2.25] Vpc. This provides adequate over-potential which limits the formation of lead sulfate and self discharge. The nominal float voltage of [2.22] Vpc corresponds to a total float voltage output of [128.8] V for a [58] cell battery as discussed in the FSAR, Chapter [8] (Ref. 2).

2.17, 2, 3, 2, 3

APPLICABLE SAFETY ANALYSES

The initial conditions of Design Basis Accident (DBA) and transient analyses in the ~~FSAR, Chapter [6]~~ (Ref. [3]) and ~~Chapter [15]~~ (Ref. [4]), assume Engineered Safety Feature 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.

UFSAR, Section 6, 2, Section 15, 3, S, E, 4, 2, 4, 4

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

The specific Applicable Safety Analyses for the DC Electrical Power System are provided in the Bases for LCO 3.8.4 and LCO 3.8.5.

5

BASES

APPLICABLE SAFETY ANALYSES (continued)

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

b. A ~~worst~~-case single failure.

5

Battery parameters satisfy Criterion 3 of 10 CFR 50.36(c)(2)(ii).

LCO

Battery parameters must remain within acceptable limits to ensure availability of the required DC power to shut down the reactor and maintain it in a safe condition after an anticipated operational occurrence or a postulated DBA. Battery parameter limits are conservatively established, allowing continued DC ~~electrical~~ Power ~~system~~ function even with limits not met. Additional preventative maintenance, testing, and monitoring performed in accordance with the ~~[licensee controlled program]~~ Battery Monitoring and Maintenance Program is conducted as specified in Specification 5.5.~~[17]~~ 16. 1 2 6

APPLICABILITY

The battery parameters are required solely for the support of the associated DC electrical power ~~subsystems~~ sources. Therefore, battery parameter limits are only required when the DC electrical power source is required to be OPERABLE. Refer to the Applicability discussion in Bases for LCO 3.8.4 and LCO 3.8.5. 6 1

ACTIONS

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

With one or more cells in one or more batteries ~~in one train~~ ~~<~~ ≤ [2.07] V, the battery cell is degraded. Within 2 hours, verification of the required battery charger OPERABILITY is ~~made~~ required by monitoring the battery terminal voltage (SR 3.8.4.1) and verification of the overall battery state of charge is required by monitoring the battery float charge current (SR 3.8.6.1). This assures that there is still sufficient battery capacity to perform the intended function. Therefore, the affected battery is not required to be considered inoperable solely as a result of one or more cells in one or more batteries ~~<~~ ≤ [2.07] V, and continued operation is permitted for a limited period up to 24 hours. 6 2 8 2

Since the Required Actions only specify "perform," a failure of SR 3.8.4.1 or SR 3.8.6.1 acceptance criteria does not result in this Required Action not met. However, if one of the SRs is failed the appropriate Condition(s), depending on the cause of the failures, is entered. If SR 3.8.6.1 is failed then there is not assurance that there is still sufficient battery capacity to perform the intended function and the battery must be declared inoperable immediately.

BASES

ACTIONS (continued)

B.1 and B.2

One or more batteries ~~in one train~~ with float current > [2] amps indicates that a partial discharge of the battery capacity has occurred. This may be due to a temporary loss of a battery charger or possibly due to one or more battery cells in a low voltage condition reflecting some loss of capacity. Within 2 hours , verification of the required battery charger OPERABILITY is required ~~made~~ by monitoring the battery terminal voltage. If the terminal voltage is found to be less than the minimum established float voltage there are two possibilities, the battery charger is inoperable or is operating in the current limit mode. ~~Condition A addresses charger inoperability.~~ If the charger is operating in the current limit mode after 2 hours , that is an indication that the battery has been substantially discharged and likely cannot perform its required design functions. The time to return the battery to its fully charged condition in this case is a function of the battery charger capacity, the amount of loads on the associated DC system, the amount of the previous discharge, and the recharge characteristic of the battery. The charge time can be extensive, and there is not adequate assurance that it can be recharged within [12] hours (Required Action B.2). The battery must therefore be declared inoperable. 6 2 8 1 8 2

If the float voltage is found to be satisfactory ~~but there are one or more battery cells with float voltage less than [2.07] V, the associated "OR" statement in Condition F is applicable and the battery must be declared inoperable immediately. If float voltage is satisfactory and there are no cells less than [2.07] V~~ there is good assurance that, within [12] hours, the battery will be restored to its fully charged condition (Required Action B.2) from any discharge that might have occurred due to a temporary loss of the battery charger. 1 2

~~-----------------------------------REVIEWER'S NOTE-----------------------------------~~
~~A plant that cannot meet the 12 hour Completion Time due to an inherent battery charging characteristic can propose an alternate time equal to 2 hours plus the time experienced to accomplish the exponential charging current portion of the battery charge profile following the service test (SR 3.8.4.3).~~ 7
~~---~~

BASES

ACTIONS (continued)

A discharged battery with float voltage (the charger setpoint) across its terminals indicates that the battery is on the exponential charging current portion (the second part) of its recharge cycle. The time to return a battery to its fully charged state under this condition is simply a function of the amount of the previous discharge and the recharge characteristic of the battery. Thus there is good assurance of fully recharging the battery within [12] hours, avoiding a premature shutdown with its own attendant risk. 2

If the condition is due to one or more cells in a low voltage condition but still greater than [2.07] V and float voltage is found to be satisfactory, this is not an indication of a substantially discharged battery and [12] hours is a reasonable time prior to declaring the battery inoperable. 2 8

Since Required Action B.1 only specifies "perform," a failure of SR 3.8.4.1 acceptance criteria does not result in the Required Action not met. However, if SR 3.8.4.1 is failed, the appropriate Condition(s), depending on the cause of the failure, is entered.

<u>C.1, C.2, and C.3</u>

With one or more batteries ~~in one train~~ with one or more cells electrolyte level above the top of the plates, but below the minimum established design limits, the battery still retains sufficient capacity to perform the intended function. Therefore, the affected battery is not required to be considered inoperable solely as a result of electrolyte level not met. Within 31 days the minimum established design limits for electrolyte level must be re-established. 6

With electrolyte level below the top of the plates there is a potential for dryout and plate degradation. Required Actions C.1 and C.2 address this potential (as well as provisions in Specification 5.5.16 ~~[17]~~, "Battery Monitoring and Maintenance Program~~)~~"). They are modified by a Note that indicates they are only applicable if electrolyte level is below the top of the plates. ~~Within 8 hours~~, level is required to be restored to above the top of the plates. The Required Action C.2 requirement to verify that there is no leakage by visual inspection and the Specification 5.5.16 ~~[17]~~.b ~~item~~ requirement to initiate action to equalize and test in accordance with manufacturer's recommendation are taken from Annex D of IEEE Standard 450-1995. They are performed following the restoration of the electrolyte level to above the top of the plates. Based on the results of the manufacturer's recommended testing the batter[y][ies] may have to be declared inoperable and the affected cell[s] replaced. 6 8 2

BASES

ACTIONS (continued)

D.1

With one or more batteries ~~in one train~~ with pilot cell temperature less than the minimum established design limits, 12 hours is allowed to restore the temperature to within limits. A low electrolyte temperature limits the current and power available. Since the battery is sized with margin, while battery capacity is degraded, sufficient capacity exists to perform the intended function and the affected battery is not required to be considered inoperable solely as a result of the pilot cell temperature not met. 6

E.1

With ~~one or more~~ batteries in redundant trains with battery parameters not within limits there is not sufficient assurance that battery capacity has not been affected to the degree that the batteries can still perform their required function, given that redundant batteries are involved. With redundant batteries involved this potential could result in a total loss of function on multiple systems that rely upon the batteries. The longer Completion Times specified for battery parameters on non-redundant batteries not within limits are therefore not appropriate, and the parameters must be restored to within limits on at least one train within 2 hours. 6

F.1

With one or more batteries with any battery parameter outside the allowances of the Required Actions for Condition A, B, C, D, or E, or failure of SR 3.8.6.6, sufficient capacity to supply the maximum expected load requirement is not assured and the corresponding battery must be declared inoperable. 6 Additionally, discovering one or more batteries in one train with one or more battery cells float voltage less than [2.07] V and float current greater than [2] amps indicates that the battery capacity may not be sufficient to perform the intended functions. The battery must therefore be declared inoperable immediately. 2

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BASES

SURVEILLANCE REQUIREMENTS

SR 3.8.6.1

Verifying battery float current while on float charge is used to determine the state of charge of the battery. 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 charged state. The float current requirements are based on the float current indicative of a charged battery. Use of float current to determine the state of charge of the battery is consistent with IEEE-450 (Ref. 1). The 7 day Frequency is 4
more conservative than the recommendations of ~~consistent with~~ IEEE-450 (Ref. 1).

This SR is modified by a Note that states the float current requirement is not required to be met when battery terminal voltage is less than the minimum established float voltage of SR 3.8.4.1. When this float voltage is not maintained the Required Actions of LCO 3.8.4 ACTION A are being taken, which provide the necessary and appropriate verifications of the battery condition. Furthermore, the float current limit of ~~[~~2~~]~~ amps is 2
established based on the nominal float voltage value and is not directly applicable when this voltage is not maintained.

SR 3.8.6.2 and SR 3.8.6.5

Optimal long term battery performance is obtained by maintaining a float voltage greater than or equal to the minimum established design limits provided by the battery manufacturer, which corresponds to ~~[130.5] V~~ 130.2 V at 2
the battery terminals, or ~~[2.25]~~ 2.17 Vpc. This provides adequate over-potential, which limits the formation of lead sulfate and self discharge, which could eventually render the battery inoperable. Float voltages in this range or less, but greater than ~~[~~2.07~~]~~ Vpc, are addressed in 2
Specification 5.5.~~[17]~~ 16. SRs 3.8.6.2 and 3.8.6.5 require verification that the 6
cell float voltages are ~~equal to or~~ greater than the short term absolute 6
minimum voltage of ~~[~~2.07~~]~~ V. The Frequen~~cy~~ies for cell voltage verification 2 8
every 31 days for pilot cell and 92 days for each connected cell ~~is~~ are 8
consistent with IEEE-450 (Ref. 1).

SR 3.8.6.3

The limit specified for electrolyte level ensures that the plates suffer no physical damage and maintains adequate electron transfer capability. The Frequency is consistent with IEEE-450 (Ref. 1).

BASES

SURVEILLANCE REQUIREMENTS (continued)

SR 3.8.6.4

60

This Surveillance verifies that the pilot cell temperature is greater than or equal to the minimum established design limit (i.e., [40]°F). Pilot cell electrolyte temperature is maintained above this temperature to assure the battery can provide the required current and voltage to meet the design requirements. Temperatures lower than assumed in battery sizing calculations act to inhibit or reduce battery capacity. The Frequency is consistent with IEEE-450 (Ref. 1). 2

SR 3.8.6.6

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.

Either the battery performance discharge test or the modified performance discharge test is acceptable for satisfying SR 3.8.6.6; however, only the modified performance discharge test may be used to satisfy the battery service test requirements of SR 3.8.4.3.

A modified 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. 4

performance discharge

as specified in IEEE-450 (Ref. 1)

It may consist of just two rates; for instance the one minute rate for the battery or the largest current load of the duty cycle, followed by the test rate employed for the performance test, both of which envelope the duty cycle of the service test. Since the ampere-hours removed by a 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 must 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. 8

discharge

modified

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BASES

SURVEILLANCE REQUIREMENTS (continued)

The acceptance criteria for this Surveillance are consistent with IEEE-450 (Ref. 1) and IEEE-485 (Ref. 5). These references recommend that the battery be replaced if its capacity is below 80% of the manufacturer's rating. A capacity of 80% shows that the battery rate of deterioration is increasing, even if there is ample capacity to meet the load requirements. Furthermore, the battery is sized to meet the assumed duty cycle loads when the battery design capacity reaches this [80]% limit. 4 2

The Surveillance 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 ratings. Degradation is indicated, according to IEEE-450 (Ref. 1), when the battery capacity ~~drops by more than 10% relative to its capacity on the previous performance test or when it is~~ 90% of ~~≥ [10%]~~ below the manufacturer's rating. These Frequencies are consistent with the recommendations in IEEE-450 (Ref. 1). 1 2

This SR is modified by a Note. The reason for the Note is that performing the Surveillance would perturb the electrical distribution system and challenge safety systems. ~~This restriction from normally performing the Surveillance in MODE 1 or 2 is further amplified to allow portions of the Surveillance to be performed for the purpose of reestablishing OPERABILITY (e.g., post work testing following corrective maintenance, corrective modification, deficient or incomplete surveillance testing, and other unanticipated OPERABILITY concerns) provided an assessment determines plant safety is maintained or enhanced. This assessment shall, as a minimum, consider the potential outcomes and transients associated with a failed partial Surveillance, a successful partial Surveillance, and a perturbation of the offsite or onsite system when they are tied together or operated independently for the partial Surveillance; as well as the operator procedures available to cope with these outcomes. These shall be measured against the avoided risk of a plant shutdown and startup to determine that plant safety is maintained or enhanced when portions of the Surveillance are performed in MODE 1 or 2. Risk insights or deterministic methods may be used for the assessment. Credit may be taken for unplanned events that satisfy this SR.~~ 9

BASES

REFERENCES

1. IEEE-450-[1995]. (2)
2. ~~FSAR, Chapter [8].~~ (4)
3. U FSAR, ~~Chapter [6]~~ Section 6. (4) (2)
4. U FSAR, ~~Chapter [15]~~ Section 15. (4) (2)
5. IEEE-485-[1983], June 1983. (4) (2)

JUSTIFICATION FOR DEVIATIONS
ITS 3.8.6 BASES, BATTERY PARAMETERS

1. Changes are made to reflect the Specification.

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

3. These battery design values have been deleted because they are more specific than necessary and are not required to provide sufficient background for this Specification. Furthermore, the batteries are not maintained on open circuit. Thus, these statements are deleted.

4. Changes are made (additions, deletions, and/or changes) to the ISTS Bases which reflect the plant specific nomenclature, number, reference, system description, analysis, or licensing basis description.

5. ISTS 3.8.6 is applicable when associated DC electrical power subsystems are required to be OPERABLE. The DC electrical power subsystems are required to be OPERABLE in MODES 1, 2, 3, and 4 (ISTS 3.8.4) and in MODES 5 and 6 and during movement of irradiated fuel assemblies (ISTS 3.8.5). The Applicable Safety Analyses Bases only discusses accident analyses related to MODES 1, 2, 3, and 4; it does not discuss events in MODES 5 and 6 and during movement of irradiated fuel assemblies. Therefore, for completeness, the Applicable Safety Analyses for MODES 5 and 6 and during movement of irradiated fuel assemblies needs to be discussed. However, in lieu of adding this large description from the ISTS 3.8.5 Bases, the MODES 1, 2, 3, and 4 description has been deleted and in its place a statement has been added referencing the Applicable Safety Analyses Bases for ITS 3.8.4 and ITS 3.8.5. This is consistent with the manner in which similar information in one ISTS Bases is referenced in another ISTS Bases (e.g., the ISTS 3.8.5 Background Bases references ISTS 3.8.4 Background Bases).

6. Changes are made to reflect those changes made to the Specifications.

7. The "Reviewer's Note" has been deleted since it is not intended to be included in the plant specific ITS submittals.

8. Grammatical/editorial/spelling error corrected.

9. This allowance has been deleted consistent with TSTF-360, Rev. 1. This TSTF was previously approved and was incorporated into NUREG-1430, Rev. 2. However, this portion of the TSTF was inadvertently not incorporated.

Specific No Significant Hazards Considerations (NSHCs)

DETERMINATION OF NO SIGNIFICANT HAZARDS CONSIDERATIONS
ITS 3.8.6, BATTERY PARAMETERS

There are no specific NSHC discussions for this Specification.

ATTACHMENT 7

ITS 3.8.7, INVERTERS - OPERATING

Current Technical Specification (CTS) Markup and Discussion of Changes (DOCs)

ITS

Add proposed ITS 3.8.7

M01

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DISCUSSION OF CHANGES
ITS 3.8.7, INVERTERS - OPERATING

ADMINISTRATIVE CHANGES

None

MORE RESTRICTIVE CHANGES

M01 The CTS does not have any requirement for inverters to be OPERABLE in MODES 1, 2, 3, and 4. ITS 3.8.7 requires the Train 1 and Train 2 inverters to be OPERABLE in MODES 1, 2, 3, and 4. This changes the CTS by incorporating the requirements of ITS 3.8.7.

The safety related function of the Train 1 and Train 2 inverters is to provide an uninterruptible power supply for the 120 VAC vital buses. This change is acceptable because the safety analyses assume that the loads supported by the 120 VAC vital buses have an uninterruptible supply of AC electrical power even if the 4.16 kV essential buses are de-energized. This change is designated as more restrictive because it adds new requirements to the CTS.

RELOCATED SPECIFICATIONS

None

REMOVED DETAIL CHANGES

None

LESS RESTRICTIVE CHANGES

None

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Improved Standard Technical Specifications (ISTS) Markup and Justification for Deviations (JFDs)

CTS

3.8 ELECTRICAL POWER SYSTEMS

3.8.7 Inverters - Operating

DOC M01 LCO 3.8.7 The [required] Train [A] 1 and Train [B] 2 inverters shall be OPERABLE. 1

--NOTE--
[[One/two] inverter[s] may be disconnected from [its/their] associated DC bus for ≤ 24 hours to perform an equalizing charge on [its/their] associated [common] battery provided:

a. The associated AC vital bus(es) [is/are] energized from [its/their] [Class 1E constant voltage source transformers] [inverter using internal AC source] and 2

b. All other AC vital buses are energized from their associated OPERABLE inverters.]

DOC M01 APPLICABILITY: MODES 1, 2, 3, and 4.

ACTIONS

	CONDITION	REQUIRED ACTION	COMPLETION TIME	
DOC M01	A. One [required] inverter inoperable.	A.1 --------------NOTE-------------- Enter applicable Conditions and Required Actions of LCO 3.8.9, "Distribution Systems - Operating" with any 120 VAC vital bus de-energized. -------------------------------------		1 3
		Restore inverter to OPERABLE status.	24 hour S	7
	INSERT 1			6
DOC M01	[B] C. Required Action and associated Completion Time not met.	[B] C.1 Be in MODE 3.	6 hours	6
		AND		
		[B] C.2 Be in MODE 5.	36 hours	6

6 **INSERT 1**

DOC M01	B. Two inverters in one train inoperable.	B.1 Restore one inverter to OPERABLE status.	8 hours

CTS

SURVEILLANCE REQUIREMENTS

	SURVEILLANCE		FREQUENCY
DOC M01	SR 3.8.7.1	Verify correct inverter voltage, [frequency,] and alignment to [required] AC vital bus[es].	7 days

, for each inverter,

the associated

120 V

4

3

5

JUSTIFICATION FOR DEVIATIONS
ITS 3.8.7, INVERTERS - OPERATING

1. The word "required" has been deleted from the LCO and Condition A since all Train 1 and Train 2 inverters are required.

2. This allowance of the ISTS LCO 3.8.7 Note has been deleted because Davis-Besse does not need to disconnect the 120 VAC vital bus during an equalizing charge.

3. Changes made to be consistent with changes made in another Specification.

4. The brackets are removed and the proper plant specific information/value is provided.

5. The SR has been modified to reflect that each inverter must have proper voltage, frequency, and alignment to its associated 120 VAC vital bus.

6. ITS 3.8.7 Condition B has been added to allow two inverters on the same train to be inoperable for up to 8 hours. The Davis-Besse design incorporates two 120 VAC inverters on each train. As written, ISTS 3.8.7 requires entry into LCO 3.0.3 when two inverters in the same train are inoperable since no ACTION exists for when more than one inverter is inoperable. The inoperability of two inverters in the same train does not place the unit outside of its design basis because the other train remains OPERABLE to support engineered safety features operation. Therefore, entry into LCO 3.0.3 is not necessary in this condition. An allowed outage time of 8 hours has been selected to be consistent with the allowed outage time in ITS 3.8.9 for two inoperable 120 VAC buses in the same train. In addition, the subsequent ACTION has been renumbered.

7. Typographical error corrected.

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Improved Standard Technical Specifications (ISTS) Bases Markup and Justification for Deviations (JFDs)

B 3.8 ELECTRICAL POWER SYSTEMS

B 3.8.7 Inverters - Operating

BASES

BACKGROUND

120 V
each
associated 120 VAC
inverter
INSERT 1
Section 8.3

The inverters are the preferred source of power for the AC vital buses because of the stability and reliability they achieve. The function of the inverter is to provide AC electrical power to the vital bus. The inverters can be powered from an internal AC source/rectifier or from the station battery. The station battery provides an uninterruptible power source for the instrumentation and controls for the Reactor Protection System (RPS) and the Engineered Safety Feature Actuation System (ESFAS). Specific details on inverters and their operating characteristics are found in FSAR, Chapter [8] (Ref. 1). s U 1 2

APPLICABLE SAFETY ANALYSES

Section 15
UFSAR, Section 6

The initial conditions of Design Basis Accident (DBA) and transient analyses in the FSAR, Chapter [6] (Ref. 2) and Chapter [14] (Ref. 3), assume Engineered Safety Feature systems are OPERABLE. The inverters are designed to provide the required capacity, capability, redundancy, and reliability to ensure the availability of necessary power to the RPS and ESFAS instrumentation and controls so that the fuel, Reactor Coolant System, and containment design limits are not exceeded. These limits are discussed in more detail in the Bases for Section 3.2, Power Distribution Limits; Section 3.4, Reactor Coolant System (RCS); and Section 3.6, Containment Systems. s 2 1 1

The OPERABILITY of the inverters is consistent with the initial assumptions of the accident analyses and is based on meeting the design basis of the unit. This includes maintaining required AC vital buses OPERABLE during accident conditions in the event of: 120 V 1

a. An assumed loss of all offsite AC electrical power or all onsite AC electrical power, and : 3

b. A worst-case single failure.

electrical power

Inverters are a part of the distribution system and, as such, satisfy Criterion 3 of 10 CFR 50.36(c)(2)(ii). 1

LCO

120 V

The inverters ensure the availability of AC electrical power for the systems instrumentation required to shut down the reactor and maintain it in a safe condition after an anticipated operational occurrence (AOO) or a postulated DBA. 1

1 **INSERT 1**

Four rectifiers are provided to supply normal DC power to the four essential inverters. Each rectifier output is connected in parallel with the DC panel reserve supply to the inverter. The output voltage of the rectifier is maintained higher than the station battery voltage, which reverse-biases a coupling diode to prevent current flow from the reserve supply, and to prevent back-feeding of the DC system. The failure of the rectifier AC source and/or of the rectifier itself will forward bias the coupling diode, and cause the battery and/or battery charger to become the DC source to the essential inverter with no power interruption.

BASES

LCO (continued)

Maintaining the required inverters OPERABLE ensures that the redundancy incorporated into the design of the RPS and [E]SFAS instrumentation and controls is maintained. The four inverters [(two per train)] ensure an uninterruptible supply of AC electrical power to the AC vital buses even if the 4.16 kV safety buses are de-energized. 1 2 1

120 V

essential

120 VAC

OPERABLE inverters require the associated vital bus to be powered by the inverter with output voltage and frequency within tolerances, and power input to the inverter from a [125 VDC] station battery. Alternatively, power supply may be from an internal AC source via rectifier as long as the station battery is available as the uninterruptible power supply. 1 2 1 1

or battery charger

~~This LCO is modified by a Note that allows [one/two] inverters to be disconnected from a [common] battery for ≥ 24 hours, if the vital bus(es) is powered from a [Class 1E constant voltage transformer or inverter using internal AC source] during the period and all other inverters are operable. This allows an equalizing charge to be placed on one battery. If the inverters were not disconnected, the resulting voltage condition might damage the inverter[s]. These provisions minimize the loss of equipment that would occur in the event of a loss of offsite power. The 24 hour time period for the allowance minimizes the time during which a loss of offsite power could result in the loss of equipment energized from the affected AC vital bus while taking into consideration the time required to perform an equalizing charge on the battery bank.~~ 4

~~The intent of this Note is to limit the number of inverters that may be disconnected. Only those inverters associated with the single battery undergoing an equalizing charge may be disconnected. All other inverters must be aligned to their associated batteries, regardless of the number of inverters or unit design.~~

APPLICABILITY

The inverters are required to be OPERABLE in MODES 1, 2, 3, and 4 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 ; 3

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

Inverter requirements for MODES 5 and 6 are covered in the Bases for LCO 3.8.8, "Inverters - Shutdown." 5

and other conditions in which inverters are required

BASES

ACTIONS

A.1

Train 1 or Train 2 4

120 V

With a required inverter inoperable, its associated AC vital bus becomes inoperable until it is [manually] re-energized from its [Class 1E constant voltage source transformer or inverter using internal AC source]. 1

unless 2

INSERT 2 1

6 For this reason, a Note has been included in Condition A requiring entry into the Conditions and Required Actions of LCO 3.8.9, "Distribution Systems - Operating." This ensures the vital bus is re-energized within 2 hours. Required Action A.1 allows 24 hours to fix the inoperable inverter and return it to service. The 24 hour limit is based upon engineering judgment, taking into consideration the time required to repair an inverter and the additional risk to which the unit is exposed because of the inverter inoperability. This has to be balanced against the risk of an immediate shutdown, along with the potential challenges to safety systems such a shutdown might entail. When the AC vital bus is powered from its constant voltage source, it is relying upon interruptible AC electrical power sources (offsite and onsite). The uninterruptible inverter source to the AC vital buses is the preferred source for powering instrumentation trip setpoint devices. 1

that proper action for a de-energized 120 VAC

. taken 1

6 ¶

120 V

Class 1E

transformer

120 V

INSERT 3 4

C C

B.1 and B.2 6

Train 1 or Train 2 inverters 5

If the inoperable devices or components 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 6 hours and to MODE 5 within 36 hours. The allowed Completion Times are reasonable, based on operating experience, to reach the required unit conditions from full power conditions in an orderly manner and without challenging plant systems.

SURVEILLANCE REQUIREMENTS

SR 3.8.7.1

This Surveillance verifies that the inverters are functioning properly with all required circuit breakers closed and AC vital buses energized from the inverter. The verification of proper voltage and frequency output ensures that the required power is readily available for the instrumentation of the RPS and ESFAS 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.

120 V 1

4 associated

120 V 1

Each inverter may be connected to its associated rectifier as long as the battery is available as the uninterruptible power supply. 1

1 INSERT 2

LCO 3.8.9, "Distribution Systems-Operating," addresses this action however, pursuant to LCO 3.0.6, this action would not have to be entered even if the 120 VAC vital bus were de-energized.

4 INSERT 3

B.1

With two inverters in the same train inoperable, the remaining inverters are capable of supporting the minimum safety functions necessary to shut down the reactor and maintain it in a safe condition, assuming no single failure. The overall reliability is reduced, however, because a single failure in one of the two remaining inverters could result in the minimum ESF functions not being supported. Therefore, one of the inverters must be restored to OPERABLE status within 8 hours.

The 8 hour Completion Time is consistent with that allowed for an inoperable train of 120 VAC vital buses.

BASES

REFERENCES

U

1. FSAR, ~~Chapter [8]~~ Section 8.3.
2. FSAR, ~~Chapter [6]~~ Section 6.
3. FSAR, ~~Chapter [14]~~ Section 15.

1 2

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JUSTIFICATION FOR DEVIATIONS
ITS 3.8.7 BASES, INVERTERS - OPERATING

1. Changes are made (additions, deletions, and/or changes) to the ISTS Bases which reflect the plant specific nomenclature, number, reference, system description, analysis, or licensing basis description.

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

3. These punctuation corrections have been made consistent with the Writer's Guide for the Improved Standard Technical Specifications, TSTF-GG-05-01, Section 5.1.3.

4. Changes are made to reflect those changes made to the ISTS.

5. Changes are made to be consistent with the Specifications.

6. Editorial correction made.

Specific No Significant Hazards Considerations (NSHCs)

DETERMINATION OF NO SIGNIFICANT HAZARDS CONSIDERATIONS
ITS 3.8.7, INVERTERS - OPERATING

There are no specific NSHC discussions for this Specification.

ATTACHMENT 8

ITS 3.8.8, INVERTERS - SHUTDOWN

Current Technical Specification (CTS) Markup and Discussion of Changes (DOCs)

ITS

Add proposed ITS 3.8.8

M01

DISCUSSION OF CHANGES
ITS 3.8.8, INVERTERS - SHUTDOWN

ADMINISTRATIVE CHANGES

None

MORE RESTRICTIVE CHANGES

M01 The CTS does not have any requirement for inverters to be OPERABLE in MODES 5 and 6, and during movement of irradiated fuel assemblies. ITS 3.8.8 requires one inverter to be OPERABLE to support the 120 VAC vital electrical distribution subsystem required by LCO 3.8.10, "Distribution Systems-Shutdown." This changes the CTS by incorporating the requirements of ITS 3.8.8

The safety related function of the Train 1 and Train 2 inverters is to provide an uninterruptible power supply for the 120 VAC vital buses. This change is acceptable because this ensures one 120 VAC vital bus has an uninterruptible supply of AC electrical power even if the associated 4.16 kV essential bus is de-energized. This change is designated as more restrictive because it adds new requirements to the CTS.

RELOCATED SPECIFICATIONS

None

REMOVED DETAIL CHANGES

None

LESS RESTRICTIVE CHANGES

None

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Improved Standard Technical Specifications (ISTS) Markup and Justification for Deviations (JFDs)

CTS 8

3.9 ELECTRICAL POWER SYSTEMS 5

3.8.8 Inverters - Shutdown

DOC M01 LCO 3.8.8

~~[Inverters 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."]~~ 1

[One] inverter[s] shall be OPERABLE[.] to support the 120 VAC vital electrical distribution subsystem required by LCO 3.8.10, "Distribution Systems-Shutdown." 2

~~-----REVIEWER'S NOTE-----
This second option above applies for plants having a pre-ITS licensing basis (CTS) for electrical power requirements during shutdown conditions that required only [one] inverter to be OPERABLE. The "[or more]" optional wording in Condition A is also eliminated for this case. The first option above is adopted for plants that have a CTS requiring the same level of DC electrical power subsystem/inverter support as is required for power operating conditions.~~ 1

APPLICABILITY: MODES 5 and 6,
During movement of ~~[recently]~~ irradiated fuel assemblies. 3

ACTIONS

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

CONDITION	REQUIRED ACTION	COMPLETION TIME
DOC M01 A. One ~~[or more]~~ [required] inverter~~s~~ inoperable.	~~A.1 Declare affected required feature(s) inoperable.~~	~~Immediately~~ 1
	~~OR~~	
	~~A.2.1 Suspend CORE ALTERATIONS.~~	~~Immediately~~ TSTF-471
	~~AND~~	

CTS

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
DOC M01	1 A.2.2 Suspend movement of [recently] irradiated fuel assemblies.	Immediately 3 TSTF-471 1
	AND 1	
	2 A.2.3 Suspend operations involving positive reactivity additions that could result in loss of required SDM or boron concentration.	Immediately TSTF-471 1
	AND 1	
	3 A.2.4 Initiate action to restore required inverters to OPERABLE status.	Immediately TSTF-471 1

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
DOC M01 SR 3.8.8.1	Verify correct inverter voltage, [frequency,] and alignments to required AC vital buses. 3	7 days

, for the required inverter. the associated 120 V 4 2

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JUSTIFICATION FOR DEVIATIONS
ITS 3.8.8, INVERTERS - SHUTDOWN

1. The bracketed optional ISTS LCO 3.8.8 and "Reviewer's Note" have been deleted because the current licensing basis does not include any requirements for inverters to be OPERABLE. ISTS 3.8.8 Required Action A.1 provides an option to declare affected required feature(s) inoperable with one or more required inverters inoperable. The ISTS Bases states that this is acceptable since the remaining inverters may be capable of supporting sufficient features to allow continuation of fuel movement. Therefore, this Required Action assumes more than one inverter is required by the LCO. This option has been deleted since only one inverter is required to be OPERABLE by ITS LCO 3.8.8. The subsequent Required Actions have been renumbered and modified, as applicable.

2. The second option of ISTS LCO 3.8.8 is not specific as to what the 120 VAC inverters must be powering. The LCO has been modified to require one inverter to be powering one of the 120 VAC vital buses required by LCO 3.8.10. In addition, SR 3.8.8.1 has been modified to reflect that all inverters at the unit are not required to be OPERABLE and that the required inverter must be aligned to the associated 120 VAC vital bus.

3. The brackets are removed and the proper plant specific information/value is provided.

4. Changes made to be consistent with changes made in another Specification.

5. Typographical error corrected.

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Improved Standard Technical Specifications (ISTS) Bases Markup and Justification for Deviations (JFDs)

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]~~ UFSAR, Section 6 (Ref. 1) and ~~Chapter [14]~~ Section 15 (Ref. 2), assume Engineered Safety Features 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 ~~Engineered~~ Safety Features Actuation System (~~E~~SFAS) instrumentation and controls so that the fuel, Reactor Coolant System (RCS), and containment design limits are not exceeded. S 1 2 1 3

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~~ one inverter~~s~~ to a ~~each~~ required 120 V AC vital bus during MODES 5 and 6 and during movement of irradiated fuel assemblies ensures that: 4 1 5

a. The unit can be maintained in the shutdown or refueling condition for extended periods~~,~~ ; 6

b. Sufficient instrumentation and control capability is available for monitoring and maintaining the unit status~~,~~ ; and 6

c. Adequate power is available to mitigate events postulated during shutdown, such as a fuel handling accident~~[involving handling recently irradiated fuel. Due to radioactive decay, the inverters are only required to mitigate fuel handling accidents involving handling recently irradiated fuel (i.e., fuel that has occupied part of a critical reactor core within the previous [X] days)]~~. 2

In general, when the unit is shut down, the Technical Specification 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 DBAs that are analyzed in MODES ~~[~~1, 2, 3, and 4~~]~~ have no specific analyses in 2

BASES

APPLICABLE SAFETY ANALYSES (continued)

MODES [5 and 6] 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

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 DBAs 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.

electrical power

The inverters were previously identified as part of the ~~distribution~~ system and, as such, satisfy Criterion 3 of 10 CFR 50.36(c)(2)(ii). 1

LCO

The inverter[s] 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 a postulated DBA. The required ~~battery powered~~ inverter[s] provide[s] an essential ~~uninterruptible~~ supply of AC electrical power to the 120 V AC vital bus~~[es] even if the 4.16 kV safety buses are de-energized~~. OPERABILITY of the inverter[s] requires the associated 120 VAC vital bus to be powered by the inverter with output voltage and frequency within tolerances, and power input to the inverter from a 125 VDC station battery. Alternately, power supply may be from an AC Source or battery charger via rectifier as long as the station battery is available as the uninterruptible power supply ~~that the vital bus be powered by the inverter~~. This ensures the availability of sufficient inverter 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 ~~[involving handling recently irradiated fuel]~~). 2 2 1 2 2 1 2 1

BASES

APPLICABILITY

The inverter[s] required to be OPERABLE in MODES 5 and 6, and during movement of [recently] irradiated fuel assemblies provide assurance that: 4 2

a. Systems to provide adequate coolant inventory makeup are available for the irradiated fuel in the core[] ; 6

b. Systems needed to mitigate a fuel handling accident [involving handling recently irradiated fuel (i.e., fuel that has occupied part of a critical reactor core within the previous [X] days)] are available[] ; 2 6

c. Systems necessary to mitigate the effects of events that can lead to core damage during shutdown are available[] and ; 6

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, 3, and 4 are covered in LCO 3.8.7.

ACTIONS

LCO 3.0.3 is not applicable while in MODE 5 or 6. However, since irradiated fuel assembly movement can occur in MODE 1, 2, 3, or 4, 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 5 or 6, LCO 3.0.3 would not specify any action. If moving irradiated fuel assemblies while in MODE 1, 2, 3, or 4, the fuel movement is independent of reactor operations. Entering LCO 3.0.3, while in MODE 1, 2, 3, or 4 would require the unit to be shutdown unnecessarily.

~~A.1, A.2.1, A.2.2, A.2.3, and A.2.4~~ A.1, A.2, and A.3 TSTF-471 4

~~[If two trains are required by LCO 3.8.10, "Distribution Systems - Shutdown," the remaining OPERABLE inverters may be capable of supporting sufficient required features to allow continuation of CORE ALTERATIONS, fuel movement [involving handling recently irradiated fuel], and operations with a potential for positive reactivity additions that could result in loss of required SDM (MODE 5) or boron concentration (MODE 6).] Suspending positive reactivity additions that could result in failure to meet the minimum SDM or boron concentration limit~~ INSERT 1 TSTF-471 4 is required to assure continued safe operation. Introduction of coolant inventory must be from sources that have a boron concentration greater than that what would be required in the RCS for minimum SDM or refueling boron concentration. This may result in an overall reduction in RCS boron

4 **INSERT 1**

With the required inverter inoperable, suspension of movement of irradiated fuel assemblies and operations involving positive reactivity additions that could result in loss of required SDM (MODE 5) specified in LCO 3.1.1, "SHUTDOWN MARGIN (SDM)," or boron concentration (MODE 6) specified in LCO 3.9.1, "Boron Concentration,"

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BASES

ACTIONS (continued)

concentration, but provides acceptable margin to maintaining subcritical operation. Introduction of temperature changes including temperature increases when operating with a positive moderator temperature coefficient (MTC) must also be evaluated to ensure they do not result in a loss of required SDM. ~~By the allowance of the option to declare required features inoperable with the associated inverter(s) inoperable, appropriate restrictions will be implemented in accordance with the affected required features LCOs' Required Actions. In many instances, this option may involve undesired administrative efforts. Therefore, the allowance for sufficiently conservative actions is made (i.e., to suspend CORE ALTERATIONS, movement of [recently] irradiated fuel assemblies, and operations involving positive reactivity additions).~~ 3 4 TSTF-471

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 inverter[s] and to continue this action until restoration is accomplished in order to provide the necessary inverter power to the unit safety systems. 2

The Completion Time of immediately is consistent with the required times for actions requiring prompt attention. The restoration of the required inverter[s] should be completed as quickly as possible in order to minimize the time the unit safety systems may be without power or powered from a Class 1E constant voltage ~~source~~ transformer or non-essential power source. 1

SURVEILLANCE REQUIREMENTS

SR 3.8.8.1 4

This Surveillance verifies that the required inverter[s] ~~are~~ is functioning properly with all required circuit breakers closed and 120 V AC vital bus[es] energized from the inverter. The inverter may be connected to its associated rectifier as long as the battery is available as the uninterruptible power supply. The verification of proper voltage and frequency output ensures that the required power is readily available for the instrumentation connected to the 120 V AC vital bus[es]. 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. 1 4 1 1 4

REFERENCES

1. U FSAR, ~~Chapter [6]~~ Section 6.
2. U FSAR, ~~Chapter [14]~~ Section 15. 1 2

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JUSTIFICATION FOR DEVIATIONS
ITS 3.8.8 BASES, INVERTERS - SHUTDOWN

1. Changes are made (additions, deletions, and/or changes) to the ISTS Bases, which reflect the plant specific nomenclature, number, reference, system description, analysis, or licensing basis description.

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

3. These punctuation corrections have been made consistent with the Writer's Guide for the Improved Standard Technical Specifications, TSTF-GG-05-01, Section 3.2.2.

4. Changes are made to reflect changes made to the Specification.

5. Changes are made to reflect the Specifications.

6. These punctuation corrections have been made consistent with the Writer's Guide for the Improved Standard Technical Specifications, TSTF-GG-05-01, Section 5.1.3.

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Specific No Significant Hazards Considerations (NSHCs)

DETERMINATION OF NO SIGNIFICANT HAZARDS CONSIDERATIONS
ITS 3.8.8, INVERTERS - SHUTDOWN

There are no specific NSHC discussions for this Specification.

ATTACHMENT 9

ITS 3.8.9, DISTRIBUTION SYSTEMS - OPERATING

Current Technical Specification (CTS) Markup and Discussion of Changes (DOCs)

ITS 3.8.9

A01

ITS

ELECTRICAL POWER SYSTEMS

3/4.8.2 ONSITE POWER DISTRIBUTION SYSTEMS

A.C. DISTRIBUTION - OPERATING

LIMITING CONDITION FOR OPERATION

Train 1 and Train 2 AC and AC vital bus — LA02

power distribution subsystems — LA02

LCO 3.8.9

3.8.2.1 The following A.C. electrical busses shall be OPERABLE and energized with tie breakers open between redundant busses: — LA01

4160 volt Essential Bus # C1	
4160 volt Essential Bus # D1	
480 volt Essential Bus # E1	
480 volt Essential Bus # F1	LA02
120 volt A.C. Vital Bus # Y1	
120 volt A.C. Vital Bus # Y2	
120 volt A.C. Vital Bus # Y3	
120 volt A.C. Vital Bus # Y4	

APPLICABILITY: MODES 1, 2, 3 and 4.

ACTION:

Add proposed ACTION A Note — A02

ACTIONS A and B

With less than the above complement of A.C. busses OPERABLE, restore the inoperable bus to OPERABLE status within 8 hours or be in at least HOT

ACTION D

STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.

Add proposed ACTION E — M01

SURVEILLANCE REQUIREMENTS

SR 3.8.9.1

4.8.2.1 The specified A.C. busses shall be determined OPERABLE with the breakers open between redundant busses at least once per 7 days by verifying correct breaker alignment and indicated power availability. — LA01

voltage. — M02

A01

ITS

ELECTRICAL POWER SYSTEMS

D.C. DISTRIBUTION - OPERATING

LIMITING CONDITION FOR OPERATION

electrical power distribution subsystems

LA02

LA01

Train 1 and Train 2

LCO 3.8.9 3.8.2.3 The following D.C. ~~bus trains~~ shall be ~~energized and~~ OPERABLE ~~with disconnect switches between bus trains open:~~

LA02

~~TRAIN "A" consisting of 250/125-volt D.C. MCC 1,~~ 125-volt D.C. station batteries 1P and 1N and 2 full capacity chargers.

See ITS 3.8.4

~~TRAIN "B" consisting of 250/125-volt D.C. MCC 2,~~ 125-volt D.C. station batteries 2P and 2N and 2 full capacity chargers.

LA02

See ITS 3.8.4

APPLICABILITY: MODES 1, 2, 3 and 4.

ACTION:

ACTION C a. With only one 125-volt D.C. bus of a 250/125 volt D.C. MCC OPERABLE, restore the inoperable bus to OPERABLE status within 2 hours or be in at least HOT STANDBY within the next 6 hours and

ACTION D in COLD SHUTDOWN within the following 30 hours.

Add proposed ACTION E

M01

b. With only one 125-volt D.C. battery or only one charger of one MCC OPERABLE, restore the inoperable battery or charger to OPERABLE status within 2 hours or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.

See ITS 3.8.4

SURVEILLANCE REQUIREMENTS

LA01

SR 3.8.9.1 4.8.2.3.1 Each D.C. bus train shall be determined OPERABLE ~~and/energized with disconnect switches open between redundant busses~~ at least once per 7 days by verifying correct disconnect switch/breaker alignment, ~~indicated power availability from the charger and battery~~, and voltage on the bus ~~of greater than or equal to 125 volts D.C.~~

LA03

4.8.2.3.2 Each 125-volt battery and charger shall be demonstrated OPERABLE:

See ITS 3.8.4

a. At least once per 7 days by:

1. Verifying that the parameters in Table 4.8-1 meet the Category A limits, and

See ITS 3.8.6

DISCUSSION OF CHANGES
ITS 3.8.9, DISTRIBUTION SYSTEMS - OPERATING

ADMINISTRATIVE CHANGES

A01 In the conversion of the Davis-Besse Current Technical Specifications (CTS) to the plant specific Improved Technical Specifications (ITS), certain changes (wording preferences, editorial changes, reformatting, revised numbering, etc.) are made to obtain consistency with NUREG-1430, Rev. 3.1, "Standard Technical Specifications-Babcock and Wilcox Plants" (ISTS).

These changes are designated as administrative changes and are acceptable because they do not result in technical changes to the CTS.

A02 CTS 3.8.2.1 Action states that with less than the above complement of AC buses OPERABLE, to restore the inoperable bus to OPERABLE status within 8 hours. ITS 3.8.9 Required Action A.1 allows 8 hours to restore the Train 1 and Train 2 AC electrical power distribution subsystem(s) to OPERABLE status. In addition, a Note has been added (ITS 3.8.9, Note to ACTION A) that requires entry into applicable Conditions and Required Action of LCO 3.8.4, "DC Sources – Operating," for DC Sources made inoperable by inoperable power distribution subsystems. This changes the CTS by requiring the compensatory actions for DC Sources to be taken if a DC Source is made inoperable by inoperable power distribution subsystems.

This change is acceptable because no changes are made to CTS requirements. The change in format from the CTS to the ITS maintains all technical requirements. The addition of the Note only acts as a reminder to enter the appropriate actions if the emergency bus which supplies the Train 1 or Train 2 battery charger becomes de-energized. In the event an emergency bus is inoperable such that a Train 1 or Train 2 battery charger were inoperable, ITS LCO 3.0.6 would allow taking only the Distribution System - Operating ACTIONS; taking exception to complying with the DC Sources - Operating ACTIONS. Since the Distribution System - Operating ACTIONS may not be sufficiently conservative in this event (i.e., a battery charger may be without power), specific direction to take appropriate ACTIONS for the DC Sources - Operating is added (ITS 3.8.9, Note to ACTION A) when there is no power to support the associated required battery charger. This change is designated as administrative because it does not result in a technical change to the CTS.

MORE RESTRICTIVE CHANGES

M01 CTS 3.8.2.1 Action states that with less than the above complement of AC buses OPERABLE, to restore the inoperable bus to OPERABLE status within 8 hours. CTS 3.8.2.3 Action a states that with one 125 VDC bus inoperable, to restore the inoperable bus to OPERABLE status within 2 hours. However, there are no limitations to preclude a loss of function due to numerous concurrently inoperable AC and DC buses. ITS 3.8.9 ACTION E has been added, requiring entry into ITS 3.0.3 if the loss of two or more electrical power distribution subsystems results in a loss of safety function.

The purpose of the CTS Actions is to limit the time the unit can operate under these conditions. CTS 3.8.2.3 Action a specifies the compensatory actions for

DISCUSSION OF CHANGES
ITS 3.8.9, DISTRIBUTION SYSTEMS - OPERATING

one inoperable DC bus. With two inoperable DC buses, CTS 3.8.2.3 does not provide any actions and entry into LCO 3.0.3 would be required. CTS 3.8.2.1 Action is applicable to all inoperable AC buses even if there is a loss of safety function. Certain combinations of inoperable AC and DC electrical power distribution subsystems will result in a loss of safety function (e.g., an inoperable Train 1 AC electrical power distribution subsystem in combination with an inoperable Train 2 DC electrical power distribution subsystem). ITS 3.8.9 includes ACTION E, which requires immediate entry into LCO 3.0.3 if the loss of one or more electrical power distribution subsystems results in a loss of safety function. ITS 3.8.9 Required Action E.1 preserves the intent of ITS LCO 3.0.3 and reflects an additional restriction on plant operation. This change is designated as more restrictive because an explicit action has been added which requires entry into LCO 3.0.3 with any combination of AC and/or DC buses inoperable that result in a loss of safety function.

M02 CTS 4.8.2.1 states the specified AC buses shall be determined OPERABLE by verifying correct breaker alignment and "indicated power availability." ITS SR 3.8.9.1 requires the verification of correct breaker alignments and "voltage" to required AC and AC vital bus electrical power distribution subsystems. This changes the CTS by requiring the verification of the correct voltages to the required AC and vital bus electrical power distribution subsystems, whereas the CTS only requires verification of indicated power.

The purpose of this change is to ensure proper voltage is supplied to the required AC and 120 VAC vital bus electrical power distribution subsystems. This change is acceptable because the Surveillance will continue to verify OPERABILITY of the required AC and vital bus electrical power distribution subsystems. Proper voltage from the required subsystems ensures proper voltage is supplied to the required safety features. This change is designated as more restrictive because the ITS requires verification of the correct voltage, whereas the CTS only requires a verification of indicated power availability.

<u>RELOCATED SPECIFICATIONS</u>

None

<u>REMOVED DETAIL CHANGES</u>

LA01 *(Type 1 – Removing Details of System Design and System Description, Including Design Limits)* CTS LCO 3.8.2.1 requires the AC electrical buses to be OPERABLE "and energized with tie breakers open between redundant busses." CTS 4.8.2.1 also requires the AC buses to be determined OPERABLE "with tie breakers open between redundant busses" by verifying correct breaker alignment and indicated power availability. CTS LCO 3.8.2.3 requires the DC bus trains to be "energized" and OPERABLE "with disconnect switches between bus trains open." CTS 4.8.2.3.1 requires the DC bus trains to be determined OPERABLE "and energized with disconnect switches open between redundant busses" by verifying correct disconnect switch/breaker alignment, indicated power availability from the charger and battery, and voltage on the bus. ITS LCO 3.8.9 requires

DISCUSSION OF CHANGES
ITS 3.8.9, DISTRIBUTION SYSTEMS - OPERATING

the applicable electrical power distribution subsystems to be OPERABLE and ITS SR 3.8.9.1 requires the verification of correct breaker alignments and voltage to required AC, DC, and vital bus electrical power distribution subsystems. This changes the CTS by moving the procedural detail that the buses must be energized with tie breakers or disconnect switches open between redundant buses from the CTS to the ITS Bases.

The removal of these details for meeting Technical Specification requirements from the Technical Specifications is acceptable because this type of information is not necessary to be included in the Technical Specifications to provide adequate protection of public health and safety. The ITS still retains the requirement for the electrical power distribution subsystems to be OPERABLE and requires the verification of correct breaker alignments and voltage to required AC, DC, and vital bus electrical power distribution subsystems. Also, this change is acceptable because these types of procedural details will be adequately controlled in the ITS Bases. Changes to the Bases are controlled by the Technical Specification Bases Control Program in Chapter 5. This program provides for the evaluation of changes to ensure the Bases are properly controlled. This change is designated as a less restrictive removal of detail change because procedural details for meeting Technical Specification requirements are being removed from the Technical Specifications.

LA02 *(Type 1 – Removing Details of System Design and System Description, Including Design Limits)* CTS LCO 3.8.2.1 requires the AC electrical buses to be OPERABLE and lists the specific AC and 120 VAC vital buses, including the applicable nominal bus voltage. CTS LCO 3.8.2.3 requires the Trains A and B DC buses to be OPERABLE and lists the specific MCC. ITS LCO 3.8.9 requires the Train 1 and Train 2 AC, DC, and AC vital bus electrical power distribution subsystems to be OPERABLE. This changes the CTS by moving the specific names of the buses and the associated nominal bus voltages (i.e., 4160 V, 480, 120V, 250/125 VDC) from the CTS to the ITS Bases.

The moving of these details, which are related to system design, from the Technical Specifications is acceptable because this type of information is not necessary to be included in the Technical Specifications to provide adequate protection of public health and safety. The ITS still retains the requirement for the OPERABLE busses, and the appropriate Condition to enter if a required bus becomes inoperable, and the appropriate Surveillance Requirements. Also, this change is acceptable because the removed information will be adequately controlled in the ITS Bases. Changes to the Bases are controlled by the Technical Specification Bases Control Program in Chapter 5. This program provides for the evaluation of changes to ensure the Bases are properly controlled. This change is designated as a less restrictive removal of detail change because information relating to system design is being removed from the Technical Specifications.

LA03 *(Type 1 – Removing Details of System Design and System Description, Including Design Limits)* CTS 4.8.2.3.1 requires DC bus voltage of greater than or equal to 125 volts DC. This changes the CTS by moving the required bus voltage from the CTS to the ITS Bases.

DISCUSSION OF CHANGES
ITS 3.8.9, DISTRIBUTION SYSTEMS - OPERATING

The moving of these details, which are related to system design, from the Technical Specifications is acceptable because this type of information is not necessary to be included in the Technical Specifications to provide adequate protection of public health and safety. The ITS still retains the requirement for correct voltage, with the specific voltage for bus OPERABILITY in the ITS bases for SR 3.8.9.1. The appropriate Condition to enter if a required bus becomes inoperable, and the appropriate Surveillance Requirements. Also, this change is acceptable because the removed information will be adequately controlled in the ITS Bases. Changes to the Bases are controlled by the Technical Specification Bases Control Program in Chapter 5. This program provides for the evaluation of changes to ensure the Bases are properly controlled. This change is designated as a less restrictive removal of detail change because information relating to system design is being removed from the Technical Specifications.

LESS RESTRICTIVE CHANGES

None

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Improved Standard Technical Specifications (ISTS) Markup and Justification for Deviations (JFDs)

3.8 ELECTRICAL POWER SYSTEMS

3.8.9 Distribution Systems - Operating

3.8.2.1, 3.8.2.3 LCO 3.8.9 Train [A] [1] and Train [B] [2] AC, DC, and AC vital bus electrical power distribution subsystems shall be OPERABLE. (1)

APPLICABILITY: MODES 1, 2, 3, and 4.

ACTIONS

	CONDITION	REQUIRED ACTION	COMPLETION TIME	
3.8.2.1 Action	A. One or more AC electrical power distribution subsystems inoperable.	------------------NOTE------------------ Enter applicable Conditions and Required Actions of LCO 3.8.4, "DC Sources - Operating," for DC ~~trains~~ sources made inoperable by inoperable power distribution subsystems. --- A.1 Restore AC electrical power distribution subsystem(s) to OPERABLE status.	 8 hours	(2)
3.8.2.1 Action	B. One or more AC vital buses inoperable.	B.1 Restore AC vital bus(es) ~~subsystem(s)~~ to OPERABLE status.	~~2~~ 8 hours	(2) (3)
3.8.2.3 Action a	C. One ~~or more~~ DC electrical power distribution subsystems inoperable.	C.1 Restore DC electrical power distribution subsystem~~(s)~~ to OPERABLE status.	2 hours	(4)

CTS

ACTIONS (continued)

	CONDITION	REQUIRED ACTION		COMPLETION TIME	
3.8.2.1 Action, 3.8.2.3Action a	D. Required Action and associated Completion Time of Condition A, B, or C not met.	D.1	Be in MODE 3.	6 hours	
		AND			
		D.2	Be in MODE 5.	36 hours	5
DOC M01	E. Two or more electrical power distribution subsystems inoperable that result in a loss of function.	E.1	Enter LCO 3.0.3.	Immediately	

SURVEILLANCE REQUIREMENTS

	SURVEILLANCE		FREQUENCY	
4.8.2.1, 4.8.2.3.1	SR 3.8.9.1	Verify correct breaker alignments and voltage to [required] AC, DC, and AC vital bus electrical power distribution subsystems.	7 days	6

JUSTIFICATION FOR DEVIATIONS
ITS 3.8.9, DISTRIBUTION SYSTEMS - OPERATING

1. Changes made to reflect the plant specific nomenclature.

2. Change made to be consistent with the Specification.

3. The current licensing basis time allowed to restore an inoperable vital bus electrical power distribution subsystem is 8 hours. This 8 hour time is provided for all AC buses - 4.16 kV, 480 V, and the 120 VAC vital buses. The consequences of a loss of a train of the 120 VAC vital buses would be similar to the loss of a train of the higher voltage (4.16kV and 480 V) AC electrical power subsystem. Therefore, this time has been maintained.

4. The allowance in ISTS 3.8.9 ACTION C to have one or more DC electrical power distribution subsystems inoperable for 2 hours has been changed to address only the inoperability of one Train 1 or Train 2 DC distribution subsystem, since if both the Train 1 and Train 2 buses were inoperable, then a loss of safety function would exist and entry into ACTION E would be necessary.

5. This change is made consistent with the Writer's Guide for Plant-Specific Improved Technical Specifications, TSTF-GG-05-01, Section 4.1.6.i.5.ii.

6. The brackets are removed and the proper plant specific information/value is provided.

Improved Standard Technical Specifications (ISTS) Bases Markup and Justification for Deviations (JFDs)

All changes are 1 unless otherwise noted

B 3.8 ELECTRICAL POWER SYSTEMS

B 3.8.9 Distribution Systems - Operating

BASES

BACKGROUND

The onsite Class 1E AC, DC, and AC vital bus electrical power distribution systems are divided by train into [two] redundant and independent AC, DC, and 120 V AC vital bus electrical power distribution subsystems. 2

The AC electrical power subsystem for each train consists of a primary Engineered Safety Feature (ESF) 4.16 kV essential bus and secondary [480 and 120] V essential buses, distribution panels, motor control centers and load centers. Each [4.16 kV ESF essential bus] has at least [one separate and independent offsite source of power] as well as a dedicated onsite emergency diesel generator (EDG) source. Each [4.16 kV ESF essential bus] is normally connected to a preferred offsite source. After a loss of the preferred offsite power source to a 4.16 kV ESF essential bus, a fast transfer to the alternate offsite source is accomplished by utilizing a time delayed bus undervoltage relay. If all offsite sources are unavailable, the onsite emergency EDG supplies power to the 4.16 kV ESF essential bus. Control power for the 4.16 kV breakers is E supplied from the Class 1E batteries. Additional description of this system may be found in the Bases for LCO 3.8.1, "AC Sources - Operating," and the Bases for LCO 3.8.4, "DC Sources - Operating." 2 2 2 2

The secondary AC electrical power distribution subsystem for each train includes the safety related buses, load centers, motor control centers, and distribution panels shown in Table B 3.8.9-1.

The 120 VAC vital buses are arranged in two load groups per train and are normally powered from the inverters. The alternate power supply for the vital buses are Class 1E constant voltage source transformers powered from the same train as the associated inverter, and its use is governed by LCO 3.8.7, "Inverters - Operating." Each constant voltage source transformer is powered from a Class 1E AC bus.

The DC electrical distribution subsystem for each train consists of a 250/125 VDC motor control center (MCC), and each 250/125 VDC MCC consists of two [125] V DC bus[es] and distribution panel(s). 2

The list of all required DC and vital AC distribution buses [and panels] is presented in Table B 3.8.9-1. 2

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BASES

Section 6

APPLICABLE SAFETY ANALYSES

Section 15

1 2

U The initial conditions of Design Basis Accident (DBA) and transient analyses in the FSAR, Chapter [6] (Ref. 1) and Chapter [14] (Ref. 2), assume ESF systems are OPERABLE. The AC, DC, and AC vital bus electrical power distribution systems are designed to provide sufficient capacity, capability, redundancy, and reliability to ensure the availability of necessary power to ESF systems so that the fuel, Reactor Coolant System, and containment design limits are not exceeded. These limits are discussed in more detail in the Bases for Section 3.2, "Power Distribution Limits," Section 3.4, "Reactor Coolant System (RCS)," and Section 3.6, "Containment Systems." 1

Engineered Safety Features ( )

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

a. An assumed loss of all offsite power or all onsite AC electrical power and ; 3

b. A worst-case single failure.

The distribution systems satisfy Criterion 3 of 10 CFR 50.36(c)(2)(ii).

LCO

The required 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.

However, the 250 VDC portion of the buses listed in Table B 3.8.9-1 power non-essential loads and are not required to be OPERABLE.

1 2

Maintaining the Train [A] and Train [B] 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

systems

OPERABLE AC electrical power distribution subsystems require the associated buses, ~~load centers, motor control centers, and distribution panels~~ to be energized to their proper voltages. OPERABLE DC electrical power distribution subsystems require the associated buses ~~and distribution panels~~ to be energized to their proper voltage from either the associated 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 internal AC source~~, or Class 1E constant voltage transformer]. 1 1 AC 1 , 125 V 2

BASES

LCO (continued)

INSERT 1 — and disconnect switches — 1

In addition, tie breakers between redundant safety related AC, DC, and AC vital bus power distribution subsystems~~, if they exist,~~ must be open. This prevents any electrical malfunction in any power distribution subsystem from propagating to the redundant subsystem, that could cause the failure of a redundant subsystem and a loss of essential safety function(s). If any tie breakers are closed, the ~~affected redundant~~ electrical power distribution subsystems 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 buses from being powered from the same offsite circuit.

electrical — 1

that are not being powered from their normal source (i.e., they are being powered from their redundant electrical power distribution subsystem)

or disconnect switches — 1

essential — 1

APPLICABILITY

The electrical power distribution subsystems are required to be OPERABLE in MODES 1, 2, 3, and 4 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~~ ; — 3

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

and other conditions in which electrical power distribution subsystems are required

Electrical power distribution subsystem requirements for MODES 5 and 6 are covered in the Bases for LCO 3.8.10, "Distribution Systems - Shutdown." — 4

ACTIONS

A.1 — 1

1 — Train 2

With one or more Train $\boxed{A}$ and $\boxed{B}$ required AC ~~buses, load centers, motor control centers, or distribution panels~~ (except AC vital buses), ~~in one train~~ inoperable and a loss of function has not 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 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. — 5 — 6 — 5

electrical power distribution subsystems

electrical

electrical power distribution subsystem(s)

1 **INSERT 1**

Based on the number of safety significant electrical loads associated with each bus listed in Table B 3.8.9-1, if one or more of the buses becomes inoperable, entry into the appropriate ACTIONS of LCO 3.8.9 is required. Some buses, such as distribution panels and motor control centers, which help comprise the AC and DC distribution systems, are not listed in Table B 3.8.9-1. The loss of electrical loads associated with these buses may not result in a complete loss of a redundant safety function necessary to shut down the reactor and maintain it in a safe condition. Therefore, should one or more of these buses become inoperable due to a failure not affecting the OPERABILITY of a bus listed in Table B 3.8.9-1 (e.g., a breaker supplying a single distribution panel fails open), the individual loads on the bus would be declared 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 3.8.9-1 (e.g., loss of 4.16 kV essential bus, which results in de-energization of all buses powered from the 4.16 kV essential 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 4.16 kV essential bus).

BASES

ACTIONS (continued)

Condition A worst scenario is one train without AC power (i.e., no offsite power to the train and the associated DG inoperable). In this Condition, the unit is more vulnerable to a complete loss of AC power. It is, therefore, imperative that the unit operator's attention be focused on minimizing the potential for loss of power to the remaining train by stabilizing the unit, and on restoring power to the affected train. The 8 hour time limit before requiring a unit shutdown in this Condition is acceptable because of: E 1

a. The potential for decreased safety if the unit operator's attention is diverted from the evaluations and actions necessary to restore power to the affected train to the actions associated with taking the unit to shutdown within this time limit, and ; 3

b. The potential for an event in conjunction with a single failure of a redundant component in the train with AC power.

Required Action A.1 is modified by a Note that requires the applicable Conditions and Required Actions of LCO 3.8.4, "DC Sources - Operating," to be entered for DC trains made inoperable by inoperable power distribution subsystems. This is an exception to LCO 3.0.6 and ensures the proper actions are taken for these components. Inoperability of a distribution system can result in loss of charging power to batteries and eventual loss of DC power. This Note ensures that the appropriate attention is given to restoring charging power to batteries, if necessary, after loss of distribution systems. sources 4

B.1

With one or more AC vital buses inoperable, and a loss of function has not yet occurred, 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 8 [2] hours by powering the bus from the associated [inverter via inverted 125 V DC, ~~inverter using internal AC Source,~~ or Class 1E constant voltage transformer]. voltage , 2 5 2

BASES

ACTIONS (continued)

Condition B represents one or more AC vital buses without power; potentially both the DC source and the associated AC source are nonfunctioning. In this situation the unit 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 unit, minimizing the potential for loss of power to the remaining vital buses and restoring power to the affected vital bus.

8

This [illegible] hour limit is more conservative than Completion Times allowed for the vast 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 the Required Action Completion Times shorter than [illegible] hours if declared inoperable, is acceptable because of: 5

8 5

a. The potential for decreased safety by requiring a change in unit conditions (i.e., requiring a shutdown) and not allowing stable operations to continue ; 3

b. The potential for decreased safety by requiring entry into numerous applicable Conditions and Required Actions for components without adequate vital AC power and not providing sufficient time for the operators to perform the necessary evaluations and actions for restoring power to the affected train ; and 4

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

8

The [illegible] 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. 5

C.1

electrical power distribution subsystem

With one ~~or more~~ DC ~~buses or distribution panels~~ inoperable, and a loss of function has not yet occurred, the remaining DC electrical power distribution subsystem ~~s are~~ 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 and distribution panels~~ electrical power distribution subsystem must be restored to OPERABLE status within 2 hours by powering the bus from the associated battery or charger. 5 4 5 2 4

All changes are 1 unless otherwise noted

BASES

ACTIONS (continued)

electrical power distribution subsystem

Condition C represents one ~~or more~~ DC ~~buses or distribution panels~~ without adequate DC power; potentially both with the battery significantly degraded and the associated charger nonfunctioning. In this situation, the unit 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 unit, minimizing the potential for loss of power to the remaining trains and restoring power to the affected train. 5

This 2 hour limit is more conservative than Completion Times allowed for the vast majority of components that are 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 by requiring a change in unit conditions (i.e., requiring a shutdown) while not allowing stable operations to continue ; 6 3

b. The potential for decreased safety by requiring entry into numerous applicable Conditions and Required Actions for components without DC power and not providing sufficient time for the operators to perform the necessary evaluations and actions to restore power to the affected train ; and 3

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

The 2 hour Completion Time for DC buses is consistent with Regulatory Guide 1.93 (Ref. 3).

D.1 and D.2

If any Required Action and associated Completion Time of Condition A, B, or C is not met

~~If the inoperable distribution 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 6 hours and to MODE 5 within 36 hours. The allowed Completion Times are reasonable, based on operating experience, to reach the required unit conditions from full power conditions in an orderly manner and without challenging plant systems. 4

All changes are 1 unless otherwise noted

BASES

ACTIONS (continued)

E.1

Condition E corresponds to a level of degradation in the electrical distribution system that causes a required safety function to be lost. When more than one inoperable electrical power distribution subsystem results in the loss of a required function, the plant is in a condition outside the accident analysis. Therefore, no additional time is justified for continued operation. LCO 3.0.3 must be entered immediately to commence a controlled shutdown.

SURVEILLANCE REQUIREMENTS

SR 3.8.9.1

, including tie breakers open between redundant buses,

This Surveillance verifies that the [required] AC, DC, and AC vital bus electrical power distribution systems are functioning properly, with the correct circuit breaker alignment. The correct breaker alignment ensures the appropriate separation and independence of the electrical divisions is maintained, and the appropriate voltage is available to each required bus. The verification of proper voltage availability on the buses ensures that the required voltage is readily available for motive as well as control functions for critical system loads connected to these buses. The 7 day Frequency takes into account the redundant capability of the AC, DC, and AC vital bus electrical power distribution subsystems, and other indications available in the control room that alert the operator to subsystem malfunctions. 2

(which includes all types of circuit breaking devices)

The voltage of the DC bus must be greater than or equal to 125 VDC. 1

REFERENCES

U

1. FSAR, ~~Chapter [6]~~ Section 6 2
2. FSAR, ~~Chapter [14]~~ Section 15
3. Regulatory Guide 1.93, December 1974.

All changes are 1 unless otherwise noted

2

Table B 3.8.9-1 (page 1 of 1)
AC and DC Electrical Power Distribution Systems

TYPE	VOLTAGE	TRAIN A* (1)	TRAIN B* (2)
essential AC safety buses	[4160 V]	[ESF Bus] [NB01]	C1 Essential D1 [ESF Bus] [NB02]
	[480 V]	Load Centers [NG01, NG03]	Essential Bus E1 Load Centers [NG02, NG04] Essential Bus F1
	[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	250/ [125 V] DC MCC1	Bus [NK01]	Bus [NK02] DC MCC2
		Bus [NK03]	Bus [NK04]
		Distribution Panels [NK41, NK43, NK51]	Distribution Panels [NK42, NK44, NK52]
AC vital buses	[120 V]	Y1 Bus [NN01]	Bus [NN02] Y2
		Y3 Bus [NN03]	Bus [NN04] Y4

* Each train of the AC and DC electrical power distribution systems is a subsystem.

JUSTIFICATION FOR DEVIATIONS
ITS 3.8.9 BASES, DISTRIBUTION SYSTEMS – OPERATING

1. Changes are made to (additions, deletions and/or changes) to the ISTS Bases, which reflect the plant specific nomenclature, number, reference, system description, analysis and licensing basis description.
2. The brackets have been removed and proper plant specific information has been provided.
3. Changes are made to reflect changes made to the Specification.
4. Editorial/grammatical error corrected.
5. Changes made to reflect the Specification.

Specific No Significant Hazards Considerations (NSHCs)

DETERMINATION OF NO SIGNIFICANT HAZARDS CONSIDERATIONS
ITS 3.8.9, DISTRIBUTION SYSTEMS - OPERATING

There are no specific NSHC discussions for this Specification.

ATTACHMENT 10

ITS 3.8.10, DISTRIBUTION SYSTEMS - SHUTDOWN

Current Technical Specification (CTS) Markup and Discussion of Changes (DOCs)

A01

ITS

ELECTRICAL POWER SYSTEMS

A.C. DISTRIBUTION - SHUTDOWN

LIMITING CONDITION FOR OPERATION

The necessary portions of the — M01

LCO 3.8.10 3.8.2.2 ~~As a minimum, the following~~ A.C. electrical busses shall be OPERABLE:

and AC vital bus electrical power distribution subsystems — LA01

~~1 - 4160 volt Essential Bus~~

~~1 - 480 volt Essential Bus~~

~~3 - 120 volt A.C. Essential Busses~~

APPLICABILITY: MODES 5 and 6. — During movement of irradiated fuel assemblies — M02

ACTION: — Add proposed ACTIONS Note — M02

ACTION A With less than the above complement of A.C. busses OPERABLE and energized, ~~establish CONTAINMENT INTEGRITY within 8 hours~~.

Add proposed Required Action A.2.1, A.2.2, A.2.3, and A.2.4 — L01

Add proposed Required Action A.1 — M01

SURVEILLANCE REQUIREMENTS

SR 3.8.10.1 4.8.2.2 The specified A.C. busses shall be determined OPERABLE at least once per 7 days by verifying correct breaker alignment and indicated power ~~availability~~.

voltage — M03

ITS 3.8.10

A01

ITS

ELECTRICAL POWER SYSTEMS

D.C. DISTRIBUTION - SHUTDOWN

LIMITING CONDITION FOR OPERATION

The necessary portions of the — M01

See ITS 3.8.5

LCO 3.8.10

3.8.2.4 As a minimum, ~~the~~ following D.C. electrical equipment ~~and bus~~ shall be energized and OPERABLE: — LA01, LA02

power distribution subsystems

1 - 250/125-volt D.C. MCC, and — LA01

2 - 125-volt battery banks and chargers supplying the above D.C. MCC. — See ITS 3.8.5

APPLICABILITY: MODES 5 and 6. — During movement of irradiated fuel assemblies — M02

ACTION: — Add proposed ACTIONS Note — M02

ACTION A

With less than the above complement of D.C. equipment and bus OPERABLE, ~~establish CONTAINMENT INTEGRITY within 8 hours.~~ — Add proposed Required Action A.2.1, A.2.2, A.2.3, and A.2.4 — L01

Add proposed Required Action A.1 — M01

SURVEILLANCE REQUIREMENTS

SR 3.8.10.1

4.8.2.4.1 The above required 250/125-volt D.C. MCC shall be determined OPERABLE ~~and energized~~ at least once per 7 days by verifying correct disconnect switch/breaker alignment, ~~indicated power availability from the charger and battery~~, and voltage on the bus ~~of greater than or equal to 125 volts D.C.~~ — LA02, LA01

4.8.2.4.2 The above required 125-volt battery banks and chargers shall be demonstrated OPERABLE per Surveillance Requirement 4.8.2.3.2. — See ITS 3.8.6

DISCUSSION OF CHANGES
ITS 3.8.10, DISTRIBUTION SYSTEMS - SHUTDOWN

ADMINISTRATIVE CHANGES

A01 In the conversion of the Davis-Besse Current Technical Specifications (CTS) to the plant specific Improved Technical Specifications (ITS), certain changes (wording preferences, editorial changes, reformatting, revised numbering, etc.) are made to obtain consistency with NUREG-1430, Rev. 3.1, "Standard Technical Specifications-Babcock and Wilcox Plants" (ISTS).

These changes are designated as administrative changes and are acceptable because they do not result in technical changes to the CTS.

MORE RESTRICTIVE CHANGES

M01 CTS LCO 3.8.2.2 requires a minimum of one 4160 V essential bus, one 480 V essential bus, and three 120 VAC vital buses to be OPERABLE. CTS LCO 3.8.2.4 requires one 250/125 VDC MCC to be OPERABLE. The existing requirement of CTS LCO 3.8.2.2 and LCO 3.8.2.4 for distribution buses to be OPERABLE during shutdown conditions is not specific as to what the system must be powering. ITS 3.8.10 specifies that the necessary portions of Train 1 and Train 2 AC, Train 1 and Train 2 250 VDC, and Train 1 and Train 2 AC vital bus electrical power distribution subsystems must be OPERABLE to support equipment required to be OPERABLE. In addition, an optional Required Action (ITS 3.8.10 Required Action A.1) has been added which allows the associated supported required feature(s) to be declared inoperable. This change adds a requirement that the applicable portions of Train 1 and Train 2 AC, Train 1 and Train 2 125 VDC, and Train 1 and Train 2 AC vital bus electrical power distribution subsystems must be OPERABLE when required to support equipment required to be OPERABLE by the Technical Specifications. This could require more buses to be OPERABLE than is currently required. In addition, an action has been added to allow an option to the existing actions.

The purpose of CTS 3.8.2.2 and CTS 3.8.2.4 is to ensure that at least one train of AC, DC and VAC vital bus electrical power distribution systems are OPERABLE. This change adds a requirement that the applicable portions of Train 1 and Train 2 AC, Train 1 and Train 2 125 VDC, and Train 1 and Train 2 AC vital bus electrical power distribution subsystems must be OPERABLE when required to support equipment required to be OPERABLE by the Technical Specifications. This added restriction conservatively assures the needed electrical power distribution buses are OPERABLE, even if this results in both the trains of one or more of the electrical power distribution systems being required. Since the ITS 3.8.10 electrical power distribution subsystem OPERABILITY requirements require the necessary portions of the distribution subsystems to be OPERABLE to support equipment required to be OPERABLE, if a portion of the electrical power distribution subsystem cannot supply any required equipment, that electrical power distribution subsystem is inoperable. In this event it may not be necessary to suspend all irradiated fuel handling and positive reactivity additions. Conservative actions can be assured if all required equipment without the necessary power is declared inoperable, and the associated ACTIONS of the individual equipment is taken (ITS 3.8.10 Required Action A.1). Therefore, along with the conservative additional requirements placed on the electrical power

DISCUSSION OF CHANGES
ITS 3.8.10, DISTRIBUTION SYSTEMS - SHUTDOWN

distribution subsystems, Required Action A.1, which requires the associated supported equipment to be declared inoperable, is also added. These changes are acceptable since the additions represent restrictions consistent with implicit assumptions for operation in shutdown conditions (required equipment receiving the necessary required power), and these restrictions are not currently imposed by the Technical Specifications. This change is designated as more restrictive because it adds a new requirement to the CTS.

M02 CTS 4.8.2.2 and CTS 4.8.2.4 are applicable in MODES 5 and 6. ITS 3.8.10 is applicable in MODE 5 and 6 and during movement of irradiated fuel assemblies. A Note has been added to the ACTIONS which states that LCO 3.0.3 is not applicable. This changes the CTS by adding the Applicability of during movement of irradiated fuel assemblies and adds the Note to the ACTIONS stating that LCO 3.0.3 is not applicable.

This change is acceptable because the proposed requirements are necessary to ensure the electrical power subsystems are OPERABLE to support equipment required to OPERABLE during movement of irradiated fuel assemblies. Movement of fuel normally occurs during MODES 5 and 6, however, it can also occur outside of containment in other plant MODES (MODES 1, 2, 3, and 4) or other conditions (i.e., reactor defueled). This Specification is needed to ensure the appropriate distribution system requirements are specified during fuel handling and ensure the appropriate actions are taken (i.e., stop fuel movement) when the minimum electrical supply is not available (See DOC L01 for the changes to the Required Actions). This change adds a clarification Note stating that LCO 3.0.3 is not applicable. If moving irradiated fuel assemblies while in MODES 5 or 6, LCO 3.0.3 is not applicable and would not specify any action. If moving irradiated fuel assemblies while in MODES 1, 2, 3, or 4, the fuel movement is independent of reactor operations and the inability to suspend movement in accordance with the ITS 3.8.10 Required Actions would not be sufficient reason to require a reactor shutdown. This Note has been added for clarification and is necessary since defaulting to LCO 3.0.3 would require the reactor to be shutdown, but would not require suspension of the activities with a potential for releasing radioactive materials. This change is designated as more restrictive because the ITS requires the equipment to be OPERABLE during movement of irradiated fuel assemblies both inside and outside of the containment, not only when in MODES 5 and 6.

M03 CTS 4.8.2.2 states the specified buses shall be determined OPERABLE by verifying correct breaker alignment and "indicated power availability." ITS SR 3.8.10.1 requires the verification of correct breaker alignments and "voltage" to required AC and AC vital buses electrical power distribution subsystems. This changes the CTS by requiring the verification of the correct voltages to the required AC and AC vital bus electrical power distribution subsystems, whereas the CTS only requires verification of indicated power availability.

The purpose of this change is to ensure proper voltage is supplied to the required AC and AC vital buses electrical power distribution subsystems. This change is acceptable because the Surveillance will continue to verify OPERABILITY of the required AC and 120 AC vital bus electrical power distribution subsystems. Proper voltage from the required subsystems ensures proper voltage is supplied

DISCUSSION OF CHANGES
ITS 3.8.10, DISTRIBUTION SYSTEMS - SHUTDOWN

to the required safety features. This change is designated as more restrictive because the ITS requires verification of the correct voltage, whereas the CTS only requires a verification of indicated power availability.

RELOCATED SPECIFICATIONS

None

REMOVED DETAIL CHANGES

LA01 *(Type 1 – Removing Details of System Design and System Description, Including Design Limits)* CTS LCO 3.8.2.2 requires AC electrical buses to be OPERABLE and specifies nominal bus voltages. CTS LCO 3.8.2.4 requires a 250/125 VDC MCC to be OPERABLE and CTS 4.8.2.4.1 requires the MCC bus voltage to be 125 VDC. ITS LCO 3.8.10 requires necessary portions of the AC, DC, and VAC vital bus electrical power distribution subsystems to be OPERABLE to support equipment required to be OPERABLE. ITS SR 3.8.10.1 requires the verification of correct breaker alignment and voltage to each required AC, DC, and VAC vital bus electrical power distribution subsystems. This changes the CTS by moving description of the buses (including the nominal bus voltages and the specified limit for the 125 VDC MCC) from the Specification to the Bases.

The removal of these details, which are related to system design, from the Technical Specifications, is acceptable because this type of information is not necessary to be included in the Technical Specifications to provide adequate protection of public health and safety. The ITS still retains the requirement for the electrical power distribution subsystems to be OPERABLE and requires the verification of correct breaker alignment and voltage to required AC and DC electrical power distribution subsystems. This change is acceptable because the removed information will be adequately controlled in the ITS Bases. Changes to the Bases are controlled by the Technical Specification Bases Control Program in Chapter 5. This program provides for the evaluation of changes to ensure the Bases are properly controlled. This change is designated as a less restrictive removal of detail change because information relating to system design is being removed from the Technical Specifications.

LA02 *(Type 3 – Removing Procedural Details for Meeting TS Requirements or Reporting Requirements)* CTS 3.8.2.4 requires the DC electrical equipment including the 250/125 V DC MCC to be demonstrated OPERABLE and "energized." CTS 4.8.2.4 requires the DC 250/125 VDC MCC to be demonstrated OPERABLE and "energized" by verifying correct switch/breaker alignment and indicated power availability, indicated power availability from the "charger and battery". ITS LCO 3.8.10 requires the applicable electrical power distribution subsystems to be OPERABLE and ITS SR 3.8.10.1 requires the verification of correct breaker alignments and voltage to each required AC, DC, and AC vital bus electrical power distribution subsystems. This changes the CTS by moving the procedural detail that the buses must be "energized" and "indicated power availability from the charger and battery" from the CTS to the ITS Bases.

DISCUSSION OF CHANGES
ITS 3.8.10, DISTRIBUTION SYSTEMS - SHUTDOWN

The removal of these details for meeting Technical Specification requirements from the Technical Specifications is acceptable because this type of information is not necessary to be included in the Technical Specifications to provide adequate protection of public health and safety. The ITS still retains the requirement for the electrical power distribution subsystems to be OPERABLE and requires the verification of correct breaker alignment and voltage to required AC, DC, and 120 VAC vital bus electrical power distribution subsystems. Also, this change is acceptable because these types of procedural details will be adequately controlled in the ITS Bases. Changes to the Bases are controlled by the Technical Specification Bases Control Program in Chapter 5. This program provides for the evaluation of changes to ensure the Bases are properly controlled. This change is designated as a less restrictive removal of detail change because procedural details for meeting Technical Specification requirements are being removed from the Technical Specifications.

<u>LESS RESTRICTIVE CHANGES</u>

L01 *(Category 4 – Relaxation of Required Action)* With less than the minimum complement of AC busses OPERABLE and energized, CTS 3.8.2.2 requires the establishment of containment integrity within 8 hours. With less than the minimum complement of DC buses OPERABLE and energized, CTS 3.8.2.4 also requires the establishment of containment integrity within 8 hours. ITS 3.8.10 ACTION A requires suspending movement of irradiated fuel assemblies, suspension of operations involving a positive reactivity additions that could result in the loss of required SDM or boron concentration, the initiation of actions to restore required AC, DC, and AC vital bus electrical power distribution subsystems to OPERABLE status, and the declaration of the associated required decay heat removal subsystems(s) inoperable and not in operation. This changes the CTS by replacing the existing Required Action to restore containment integrity.

The purpose of the CTS 3.8.2.2 Action and CTS 3.8.2.4 Action is to isolate the containment to minimize any release from the plant if an event were to occur during shutdown conditions. This change is acceptable because the Required Actions are used to establish remedial measures that must be taken in response to the degraded conditions in order to minimize risk associated with continued operation while providing time to repair inoperable features. The Required Actions are consistent with safe operation under the specified Condition, considering the OPERABLE status of the redundant systems or features. This includes the capacity and capability of remaining systems or features, a reasonable time for repairs or replacement, and the low probability of a DBA occurring during the repair period. The proposed Required Actions require the suspension of movement of irradiated fuel assemblies, the suspension of operations involving a positive reactivity additions that could result in the loss of required SDM or boron concentration, the initiation of actions to restore required AC, DC, and AC vital bus electrical power distribution subsystems to OPERABLE status, and the declaration of the associated required decay heat removal subsystems(s) inoperable and not in operation. Suspending the movement of irradiated fuel assemblies will prevent a fuel handling accident from occurring. Suspending positive reactivity additions that could result in failure to meet the

DISCUSSION OF CHANGES
ITS 3.8.10, DISTRIBUTION SYSTEMS - SHUTDOWN

minimum SDM or boron concentration limit is required to assure continued safe operation. The actions to restore required AC, DC, and AC vital bus electrical power distribution subsystems to OPERABLE status will place the plant in compliance with the LCO. Declaration of the associated required decay heat removal subsystems(s) inoperable and not in operation will require the plant to enter the applicable LCOs to apply additional Required Actions. The proposed actions will immediately minimize the potential for any accident releases outside of the containment and are considered acceptable in lieu of the current action to restore containment integrity within 8 hours. The actions may be considered somewhat more restrictive since immediate action is required, however, is classified as less restrictive since the current actions to restore containment integrity have been deleted. This change is designated as less restrictive because less stringent Required Actions are being applied in the ITS than were applied in the CTS.

Improved Standard Technical Specifications (ISTS) Markup and Justification for Deviations (JFDs)

CTS

3.8 ELECTRICAL POWER SYSTEMS

3.8.10 Distribution Systems - Shutdown

3.8.2.2, 3.8.2.4	LCO 3.8.10	The necessary portion S of AC, DC, and AC vital bus electrical power distribution subsystems shall be OPERABLE to support equipment required to be OPERABLE.	1
	APPLICABILITY:	MODES 5 and 6, During movement of ~~[recently]~~ irradiated fuel assemblies.	2

ACTIONS

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

CTS	CONDITION	REQUIRED ACTION	COMPLETION TIME	
3.8.2.2 Action, 3.8.2.4 Action	A. One or more required AC, DC, or AC vital bus electrical power distribution subsystems inoperable.	A.1 Declare associated supported required feature(s) inoperable. <u>OR</u>	Immediately	
		~~A.2.1 Suspend CORE ALTERATIONS.~~	~~Immediately~~	TSTF-471
		~~<u>AND</u>~~		
		1 A.2.~~2~~ Suspend movement of ~~[recently]~~ irradiated fuel assemblies. <u>AND</u>	Immediately	TSTF-471 2
		2 A.2.~~3~~ Suspend operations involving positive reactivity additions that could result in loss of required SDM or boron concentration. <u>AND</u>	Immediately	TSTF-471

CTS

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
3.8.2.2 Action, 3.8.2.4 Action	A.2.4 Initiate actions to restore required AC, DC, and AC vital bus electrical power distribution subsystems to OPERABLE status. AND A.2.5 Declare associated required decay heat removal subsystem(s) inoperable and not in operation.	Immediately Immediately

3 4 TSTF-471 TSTF-471

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
4.8.2.2. 4.8.2.4.1 SR 3.8.10.1	Verify correct breaker alignments and voltage to required AC, DC, and AC vital bus electrical power distribution subsystems.	7 days

JUSTIFICATION FOR DEVIATIONS
ITS 3.8.10, DISTRIBUTION SYSTEMS - SHUTDOWN

1. Typographical error corrected.

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

Attachment 1, Volume 13, Rev. 0, Page 313 of 323

Improved Standard Technical Specifications (ISTS) Bases Markup and Justification for Deviations (JFDs)

B 3.8 ELECTRICAL POWER SYSTEMS

B 3.8.10 Distribution Systems - Shutdown

BASES

BACKGROUND

A description of the AC, DC and AC vital bus electrical power distribution systems is provided in the Bases for LCO 3.8.9, "Distribution Systems - Operating."

Section 6

Section 15

APPLICABLE SAFETY ANALYSES

U

The initial conditions of Design Basis Accident (DBA) and transient analyses in the FSAR, Chapter [6] (Ref. 1) and Chapter [14] (Ref. 2), assume Engineered Safety Feature (ESF) systems are OPERABLE. The AC, DC, and AC vital bus electrical power distribution systems are designed to provide sufficient capacity, capability, redundancy, and reliability to ensure the availability of necessary power to ESF systems so that the fuel, Reactor Coolant System, and containment design limits are not exceeded. 1 2

s

The OPERABILITY of the AC, DC, and AC vital bus electrical power distribution systems is consistent with the initial assumptions of the accident analyses and the requirements for the supported systems' OPERABILITY.

The OPERABILITY of the minimum AC, DC, and AC vital bus electrical power distribution subsystems during MODES 5 and 6, and during movement of [recently] irradiated fuel assemblies ensures that: 2

a. The unit can be maintained in the shutdown or refueling condition for extended periods, ; 3

b. Sufficient instrumentation and control capability is available for monitoring and maintaining the unit status, and ; 3

c. Adequate power is provided to mitigate events postulated during shutdown, such as a fuel handling accident [involving handling recently irradiated fuel. Due to radioactive decay, AC, DC, and AC vital bus electrical power is only required to mitigate fuel handling accidents involving handling recently irradiated fuel (i.e., fuel that has occupied part of a critical reactor core within the previous [X] days)]. 2

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

BASES

LCO

Various combinations of subsystems, equipment, and components are required OPERABLE by other LCOs, depending on the specific plant condition. Implicit in those requirements is the required OPERABILITY of necessary support required features. This LCO explicitly requires energization of the portions of the electrical power distribution system necessary to support OPERABILITY of required systems, equipment, and components - all specifically addressed in each LCO and implicitly required via the definition of OPERABILITY. 2

INSERT 1 1

Maintaining these portions of the distribution system energized ensures the availability of sufficient power to operate the unit in a safe manner to mitigate the consequences of postulated events during shutdown (e.g., fuel handling accidents [involving handling ~~recently~~ irradiated fuel]). 2

APPLICABILITY

The AC and DC electrical power distribution subsystems required to be OPERABLE in MODES 5 and 6, and during movement of ~~[recently]~~ irradiated fuel assemblies, provide assurance that: 2

a. Systems to provide adequate coolant inventory makeup are available for the irradiated fuel in the core;

b. Systems needed to mitigate a fuel handling accident ~~[involving handling recently irradiated fuel (i.e., fuel that has occupied part of a critical reactor core within the previous [X] days)]~~ are available; 2 3

c. Systems necessary to mitigate the effects of events that can lead to core damage during shutdown are available; and 3

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, 3, and 4 are covered in LCO 3.8.9.

ACTIONS

LCO 3.0.3 is not applicable while in MODE 5 or 6. However, since irradiated fuel assembly movement can occur in MODE 1, 2, 3, or 4, 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 5 or 6, LCO 3.0.3 would not specify any action. If moving irradiated fuel assemblies while in MODE 1, 2, 3, or 4, the fuel movement is independent of reactor operations. Entering LCO 3.0.3, while in MODE 1, 2, 3, or 4 would require the unit to be shutdown unnecessarily.

1 **INSERT 1**

OPERABLE AC vital bus electrical power distribution subsystems require the associated buses to be energized to their proper voltage either from a) the associated inverter, via inverted 125 VDC voltage or the Class 1E constant voltage transformer, or b) the associated non-essential power source (regulated instrumentation distribution panel YAR or YBR). Furthermore, tie breakers between redundant safety related AC, DC, and AC vital buses are allowed to be closed.

3

BASES

ACTIONS (continued)

A.1, A.2.1, A.2.2, A.2.3, A.2.4, and A.2.5 6

Although redundant required features may require redundant trains of electrical power distribution subsystems to be OPERABLE, one OPERABLE distribution subsystem train may be capable of supporting sufficient required features to allow continuation of CORE ALTERATIONS and [recently] irradiated fuel movement. By allowing the option to declare required features associated with an inoperable distribution subsystem inoperable, appropriate restrictions are implemented in accordance with the affected distribution subsystems LCO's Required Actions. In many instances, this option may involve undesired administrative efforts. Therefore, the allowance for sufficiently conservative actions is made (i.e., to suspend CORE ALTERATIONS, movement of [recently] irradiated fuel assemblies, and operations involving positive reactivity additions that could result in loss of required SDM (MODE 5) or boron concentration (MODE 6) with coolant at boron concentrations less than required to assure the RCS boron concentration is maintained. INSERT 2 TSTF-471 2 TSTF-471 2 7 5

specified in LCO 3.1.1, "SHUTDOWN MARGIN (SDM),"

specified in LCO 3.9.1, "Boron Concentration").

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

Notwithstanding performance of the above conservative Required Actions, a required decay heat removal (DHR) subsystem may be inoperable. In this case, Required Actions A.2.1 through A.2.5 do not adequately address the concerns relating to coolant circulation and heat removal. Pursuant to LCO 3.0.6, the DHR ACTIONS would not be entered. Therefore, Required Action A.2.6 is provided to direct declaring DHR inoperable, which results in taking the appropriate DHR actions. 3 6 4 6

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

5 **INSERT 2**

Suspending positive reactivity additions that could result in failure to meet the minimum SDM or boron concentration limit is required to assure continued safe operation. Introduction of coolant inventory must be from sources that have a boron concentration greater than that what would be required in the RCS for minimum SDM or refueling boron concentration. This may result in an overall reduction in RCS boron concentration, but provides acceptable margin to maintaining subcritical operation. Introduction of temperature changes including temperature increases when operating with a positive moderator temperature coefficient (MTC) must also be evaluated to ensure they do not result in a loss of required SDM.

BASES

SURVEILLANCE REQUIREMENTS

SR 3.8.10.1

required

the correct breaker (which includes all types of circuit breaking devices) alignment

This Surveillance verifies that the AC, DC, and AC vital bus electrical power distribution subsystems are functioning properly, with ~~all the buses energized~~. The verification of proper voltage availability on the buses ensures that the required power is readily available for motive as well as control functions for critical system loads connected to these buses. The 7 day Frequency takes into account the capability of the electrical power distribution subsystems, and other indications available in the control room that alert the operator to subsystem malfunctions. 4 8 required 4

The voltage of the required DC bus must be greater than or equal to 125 VDC. 1

REFERENCES

U

1. FSAR, ~~Chapter [6]~~. Section 6 1 2
2. FSAR, ~~Chapter [14]~~. Section 15 1 2

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JUSTIFICATION FOR DEVIATIONS
ITS 3.8.10 BASES, DISTRUBUTION SYSTEMS - SHUTDOWN

1. Changes are made to (additions, deletions and/or changes) to the ISTS Bases, which reflect the plant specific nomenclature, number, reference, system description, analysis and licensing basis description.
2. The brackets have been removed and proper plant specific information has been provided.
3. These punctuation corrections have been made consistent with the Writer's Guide for the Improved Standard Technical Specifications, TSTF-GG-05-01, Section 5.1.3.
4. Changes are made to reflect the Specification.
5. Changes are made to be consistent with the Bases of LCO 3.8.2.
6. Changes made to be consistent with changes made to the Specification.
7. Editorial changes for clarity and consistency.
8. Changes made to be consistent with the Bases of LCO 3.8.9

Specific No Significant Hazards Considerations (NSHCs)

DETERMINATION OF NO SIGNIFICANT HAZARDS CONSIDERATIONS
ITS 3.8.10, DISTRIBUTION SYSTEMS - SHUTDOWN

There are no specific NSHC discussions for this Specification.

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