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10 CFR 50.90

U.S. Nuclear Regulatory Commission  
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MCGUIRE NUCLEAR STATION, UNIT NOS. 1 AND 2  
DOCKET NOS. 50-369 AND 50-370  
RENEWED LICENSE NOS. NPF-9 AND NPF-17

**SUBJECT: SUPPLEMENT TO LICENSE AMENDMENT REQUEST PROPOSING  
CHANGES TO CATAWBA AND MCGUIRE TECHNICAL SPECIFICATION 3.8.1,  
“AC SOURCES – OPERATING”**

**REFERENCES:**

1. Duke Energy letter, *License Amendment Request Proposing Changes to Catawba and McGuire Technical Specification 3.8.1, “AC Sources - Operating”*, dated May 2, 2017 (ADAMS Accession No. ML17122A116).
2. Nuclear Regulatory Commission letter, *McGuire Nuclear Station, Units 1 and 2 and Catawba Nuclear Station, Units 1 and 2 - Supplemental Information Needed for Acceptance of Requested Licensing Action RE: License Amendment Request Proposing Changes to Technical Specification 3.8.1, “AC Sources - Operating” (CAC Nos. MF9667 through MF9674*, dated June 30, 2017 (ADAMS Accession No. ML17167A317).
3. Duke Energy letter, *Supplement to License Amendment Request Proposing Changes to Catawba and McGuire Technical Specification 3.8.1, “AC Sources - Operating”*, dated July 20, 2017 (ADAMS Accession No. ML17201Q132).
4. Nuclear Regulatory Commission letter, *Catawba/McGuire - Acceptance of Requested Licensing Action Re: EDG AOT Extension/Shared Systems LAR (CACs MF9667 through MF9974)*, dated August 10, 2017 (ADAMS Accession No. ML17226A002).
5. Duke Energy letter, *Supplement to License Amendment Request Proposing Changes to Catawba and McGuire Technical Specification 3.8.1, “AC Sources - Operating”*, dated November 21, 2017 (ADAMS Accession No. ML17325A588).

6. Nuclear Regulatory Commission letter, Catawba/McGuire – Regulatory Audit to Support Commission Approval of Proposed Amendments for Changes to Technical Specifications 3.8.1, “AC Sources – Operating” and 3.7.8, “Nuclear Service Water System” (CAC Nos. MF9667, MF9668, MF9671, MF9672, MG0245, and MG0246), dated May 2, 2017 (ADAMS Accession No. ML18117A187).

Ladies and Gentlemen:

By letter dated May 2, 2017 (Reference 1), Duke Energy Carolinas, LLC (Duke Energy) submitted a License Amendment Request (LAR) for Catawba Nuclear Station (CNS), Units 1 and 2 and McGuire Nuclear Station (MNS), Units 1 and 2. The proposed change would extend the Completion Time for an inoperable diesel generator in Technical Specification (TS) 3.8.1, “AC Sources - Operating” at both stations. The proposed change would also alter the AC power source operability requirements for the Nuclear Service Water System (NSWS), Control Room Area Ventilation System (CRAVS), Control Room Area Chilled Water System (CRACWS) and Auxiliary Building Filtered Ventilation Exhaust System (ABFVES) (i.e., shared systems).

By letter dated June 30, 2017 (Reference 2), the Nuclear Regulatory Commission (NRC) requested supplemental information from Duke Energy. By letter dated July 20, 2017 (Reference 3), Duke Energy provided responses to the supplemental information request. The NRC concluded that Duke Energy did provide technical information in sufficient detail to enable the NRC staff to complete its detailed technical review and make an independent assessment regarding the acceptability of the proposed amendment in terms of regulatory requirements and the protection of public health and safety and the environment by letter dated August 10, 2017 (Reference 4).

Subsequent to a public meeting on September 20, 2017 held between Duke Energy and the NRC staff to discuss the proposed change, Duke Energy provided a supplement to the LAR with revisions to the portion of the proposed change associated with AC power source operability requirements for shared systems (Reference 5). Specifically, two new Limiting Conditions for Operation (LCO) were proposed to be added to CNS and MNS TS 3.8.1. As a result of discussions between Duke Energy and the NRC staff during an audit of the subject LAR for CNS and MNS, Duke Energy is further supplementing the LAR in the Enclosure to this letter to revise the proposed TS 3.8.1 LCOs and corresponding Conditions (MNS only) to adequately reflect the equipment required to be operable. Additionally, this supplement addresses the Requests for Additional Information (RAI) questions discussed during the audit (Reference 6), applicable to MNS only. A supplement addressing the CNS RAI questions will be provided separately.

Attachment 1 provides revised TS markups for MNS to reflect the proposed change. Attachment 2 provides MNS TS Bases pages marked up (for information only). The TS Bases changes will be processed after LAR approval under the TS Bases Control Program for MNS. Attachment 3 provides the Duke Energy responses to the MNS NRC RAIs. Since one regulatory commitment is being added to support the proposed change, Attachment 4 provides the comprehensive list of regulatory commitments that are associated with the subject LAR.

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The conclusions of the original Significant Hazards Consideration Determination and Environmental Considerations contained in the May 2, 2017 LAR (Reference 1) are unaffected as a result of this LAR supplement.

Should you have any questions concerning this letter, or require additional information, please contact Art Zaremba at 980-373-2062.

I declare under penalty of perjury that the foregoing is true and correct. Executed on

July 10, 2018

Sincerely,



Steven Capps  
Senior Vice President, Nuclear Corporate

Enclosure: License Amendment Request Supplemental Information

Attachments:

1. Revised McGuire Technical Specification Marked Up Pages
2. Revised McGuire Technical Specification 3.8.1 Bases Marked Up Pages (For Information Only)
3. Response to NRC Request for Additional Information (MNS only)
4. Regulatory Commitments

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**Enclosure**

**License Amendment Request Supplemental Information**

## 1. DESCRIPTION OF THE PROPOSED CHANGE (REVISED)

The proposed change submitted November 21, 2017 (ADAMS Accession No. ML17325A588) to modify Catawba (CNS) and McGuire Nuclear Station (MNS) Technical Specification (TS) 3.8.1, "AC Sources - Operating," is being revised in the following sections, for MNS only, to reflect the sufficient amount of AC sources that are required to be operable at each station in order to mitigate a design basis accident (i.e., Loss of Coolant Accident on one unit and a dual-unit Loss of Offsite Power). The corresponding Conditions are also proposed to be revised for MNS. The changes that are presented in this Enclosure and that are also reflected in Attachment 1, supersede the requested MNS TS 3.8.1 changes from the November 21, 2017 License Amendment Request supplement submittal entirely.

As noted in the November 21, 2017 submittal, the TS revisions presented below for MNS are still similar in content and structure to TS 3.8.1, "AC Sources - Operating" for Calvert Cliffs Nuclear Power Plant.

Note: The requirement for shared systems to have both an operable normal and emergency power supply in order to be considered operable is still proposed to be deleted from the MNS TS Bases.

### 1.1 McGuire Technical Specification 3.8.1 Change Request

Attachment 1 contains MNS TS 3.8.1 markups that reflect the proposed change and will be revised as follows:

A new LCO 3.8.1.c is added that states: "The qualified circuit(s) between the offsite transmission network and the opposite unit's Onsite Essential Auxiliary Power System necessary to supply power to the Nuclear Service Water System (NSWS), Control Room Area Ventilation System (CRAVS), Control Room Area Chilled Water System (CRACWS) and Auxiliary Building Filtered Ventilation Exhaust System (ABFVES); and"

A new LCO 3.8.1.d is added that states: "The DG(s) from the opposite unit necessary to supply power to the NSWS, CRAVS, CRACWS and ABFVES;"

A Note is added to the APPLICABILITY that states: "The opposite unit electrical power sources in LCO 3.8.1.c and LCO 3.8.1.d are not required to be OPERABLE when the associated shared systems are inoperable."

Condition A is revised to state: "One LCO 3.8.1.a offsite circuit inoperable."

Required Action A.1 is revised to state: "Perform SR 3.8.1.1 for required OPERABLE offsite circuit(s)."

The Completion Time (CT) for existing RA A.3 is revised to state:

"72 hours

AND

17 days from discovery of failure to meet LCO 3.8.1.a or LCO 3.8.1.b”

Condition B is revised to state: “One LCO 3.8.1.b DG inoperable.”

A new RA B.1 with an “AND” connector and associated CT are inserted as follows:

<p>B.1    Verify LCO 3.8.1.d DG(s)          OPERABLE.</p> <p><u>AND</u></p>	<p>1 hour</p> <p><u>AND</u></p> <p>Once per 12 hours          thereafter</p>
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The existing RA B.1 is renamed “B.2” and is revised to state: “Perform SR 3.8.1.1 for the required offsite circuit(s).”

The existing RA B.2 is renamed “B.3.”

The existing RA B.3.1 is renamed “B.4.1” and is revised to state: “Determine OPERABLE DG(s) is not inoperable due to common cause failure.”

The existing RA B.3.2 is renamed “B.4.2” and is revised to state: “Perform SR 3.8.1.2 for OPERABLE DG(s).”

A new RA B.5 with an “AND” connector and associated CT are inserted as follows:

<p>B.5    Ensure availability of          Emergency Supplemental          Power Source (ESPS).</p> <p><u>AND</u></p>	<p>Prior to entering the          extended Completion          Time of ACTION B.6</p> <p><u>AND</u></p> <p>Once per 12 hours          thereafter</p>
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The existing RA B.4 is renamed "B.6." The associated CT is revised to state:

"72 hours from discovery of unavailable ESPS"

AND

24 hours from discovery of unavailable ESPS when in extended Completion Time

AND

14 days

AND

17 days from discovery of failure to meet LCO 3.8.1.a or LCO 3.8.1.b"

New Condition C and associated RAs and CT is added as follows:

C. Required Action and associated Completion Time of Required Action B.1 not met.	C.1.1 Restore LCO 3.8.1.d DG to OPERABLE status.  <u>OR</u>  C.1.2 Restore LCO 3.8.1.b DG to OPERABLE status.	72 hours
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New Condition D and associated RAs and CTs is added as follows:

<p>D. One LCO 3.8.1.c offsite circuit inoperable.</p>	<p>-----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 a train.          -----</p>	
	<p>D.1 Perform SR 3.8.1.1 for the required offsite circuit(s).</p>	<p>1 hour   <u>AND</u>           Once per 8 hours thereafter</p>
	<p><u>AND</u></p>	
	<p>D.2 Declare NSWs, CRAVS, CRACWS or ABFVES with no offsite power available inoperable when the redundant NSWs, CRAVS, CRACWS or ABFVES is inoperable.</p>	<p>24 hours from discovery of no offsite power to one train concurrent with inoperability of redundant required feature(s)</p>
	<p><u>AND</u></p>	
	<p>D.3 Declare NSWs, CRAVS, CRACWS and ABFVES supported by the inoperable offsite circuit inoperable.</p>	<p>72 hours</p>

New Condition E and associated RAs and CTs is added as follows:

<p>E. One LCO 3.8.1.d DG inoperable.</p>	<p>-----NOTE-----          Enter applicable Conditions and Required Actions of LCO 3.8.9, "Distribution Systems—Operating," when Condition E is entered with no AC power source to a train.          -----</p> <p>E.1 Verify both LCO 3.8.1.b DGs OPERABLE and ESPS available.</p> <p><u>AND</u></p> <p>E.2 Perform SR 3.8.1.1 for the required offsite circuit(s).</p> <p><u>AND</u></p> <p>E.3 Declare NSW, CRAVS, CRACWS or ABFVES supported by the inoperable DG inoperable when the redundant NSW, CRAVS, CRACWS or ABFVES is inoperable.</p> <p><u>AND</u></p>	<p>1 hour  <u>AND</u>          Once per 12 hours thereafter</p> <p>1 hour  <u>AND</u>          Once per 8 hours thereafter</p> <p>4 hours from discovery of Condition E concurrent with inoperability of redundant required feature(s)</p>
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Existing Condition C is renamed "G" and is revised to state:

"Two LCO 3.8.1.a offsite circuits inoperable.

OR

One LCO 3.8.1.a offsite circuit that provides power to the NSW, CRAVS, CRACWS and ABFVES inoperable and one LCO 3.8.1.c offsite circuit inoperable.

OR

Two LCO 3.8.1.c offsite circuits inoperable."

Existing RA C.1 is renamed "G.1" and the associated CT is revised to state: "12 hours from discovery of Condition G concurrent with inoperability of redundant required features"

Existing RA C.2 is renamed "G.2."

Existing Condition D is renamed "H" and is revised to state:

"One LCO 3.8.1.a offsite circuit inoperable.

AND

One LCO 3.8.1.b DG inoperable."

The Note above existing RA D.1 is revised to state: "Enter applicable Conditions and Required Actions of LCO 3.8.9, "Distribution Systems - Operating," when Condition H is entered with no AC power source to any train."

Existing RA D.1 is renamed "H.1" and existing RA D.2 is renamed "H.2."

Existing Condition E is renamed "I" and is revised to state:

"Two LCO 3.8.1.b DGs inoperable.

OR

LCO 3.8.1.b DG that provides power to the NSW, CRAVS, CRACWS and ABFVES inoperable and one LCO 3.8.1.d DG inoperable.

OR

Two LCO 3.8.1.d DGs inoperable."

Existing RA E.1 is renamed "I.1."

Existing Condition F is renamed "J." Existing RA F.1 is renamed "J.1."

Existing Condition G is renamed "K" and is revised to state:

"Required Action and associated Completion Time of Condition A, C, F, G, H, I, or J not met.

OR

Required Action and associated Completion Time of Required Action B.2, B.3, B.4.1, B.4.2, or B.6 not met.

OR

Required Action and associated Completion Time of Required Action E.2, E.3, E.4.1, E.4.2, or E.5 not met."

Existing RA G.1 is renamed "K.1." Existing RA G.2 is renamed "K.2."

Existing Condition H is renamed "L" and is revised to state:

"Three or more LCO 3.8.1.a and LCO 3.8.1.b AC sources inoperable.

OR

Three or more LCO 3.8.1.c and LCO 3.8.1.d AC sources inoperable."

Existing RA H.1 is renamed "L.1."

A new NOTE is added at the beginning of the SURVEILLANCE REQUIREMENTS section of TS 3.8.1 which states: "SR 3.8.1.1 through SR 3.8.1.20 are only applicable to LCO 3.8.1.a and LCO 3.8.1.b AC sources. SR 3.8.1.21 is only applicable to LCO 3.8.1.c and LCO 3.8.1.d AC sources."

New Surveillance Requirement (SR) 3.8.1.21 and associated Frequency is added as follows:

SR 3.8.1.21 For the LCO 3.8.1.c and LCO 3.8.1.d AC electrical sources, SR 3.8.1.1, SR 3.8.1.2, SR 3.8.1.4, SR 3.8.1.5, and SR 3.8.1.6 are required to be met.	In accordance with the Surveillance Frequency Control Program
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## 2. TECHNICAL EVALUATION

### 2.1 McGuire Evaluation of the TS 3.8.1 Change Request

In order to continue to meet Criterion 3 of 10 CFR 50.36 with the removal of the requirement from the MNS TS Bases to maintain both normal and emergency power for operability of the shared systems (NSWS, CRAVS, CRACWS and ABFVES), the opposite unit's AC power

sources that are necessary to support the NSWs, CRAVS, CRACWS and ABFVES are incorporated into TS 3.8.1 within new LCOs 3.8.1.c and 3.8.1.d. Each train of NSWs, CRAVS, CRACWS and ABFVES is connected to an onsite Class 1E electrical power distribution subsystem from either unit. The word "necessary" used in LCO 3.8.1.c and LCO 3.8.1.d clarifies that the respective AC power source is aligned to the opposite unit Onsite Essential Auxiliary Power System that is supplying power to a train of shared systems. For example, in a normal alignment at MNS, Unit 1 Essential Bus 1ETA supplies Train A of shared systems and Unit 2 Essential Bus 2ETB supplies Train B of shared systems. Thus for this normal plant configuration, the 2B offsite circuit and 2B DG, both of which supply power to 2ETB, would be LCO 3.8.1.c and LCO 3.8.1.d AC sources for Unit 1 TS 3.8.1. Similarly, the 1A offsite circuit and 1A DG, both of which supply power to 1ETA, would be LCO 3.8.1.c and LCO 3.8.1.d AC sources for Unit 2 TS 3.8.1. However, since the 2A offsite circuit and 2A DG are not necessary to supply power to a train of shared systems in the normal plant configuration, they would not be LCO 3.8.1.c and LCO 3.8.1.d AC sources. And since the 1B offsite circuit and 1B DG are not necessary to supply power to a train of shared systems in the normal plant configuration, they would not be LCO 3.8.1.c and LCO 3.8.1.d AC sources. It is important to note that if desired or required to maintain operability, Train A shared equipment can be swapped to receive power from Unit 2 Essential Bus 2ETA. Similarly, Train B shared equipment can be swapped to receive power from Unit 1 Essential Bus 1ETB.

Another example using an off-normal plant configuration also demonstrates how the requirements of 10 CFR 50.36 are satisfied for the proposed TS 3.8.1. When Unit 1 Essential Bus 1ETA supplies Train A shared systems and Unit 1 Essential Bus 1ETB supplies Train B shared systems, the 1A offsite circuit and 1B offsite circuit would both be LCO 3.8.1.c AC sources for Unit 2 TS 3.8.1. The 1A DG and 1B DG would both be LCO 3.8.1.d AC sources for Unit 2 TS 3.8.1. Similarly, when Unit 2 Essential Bus 2ETA supplies Train A shared systems and Unit 2 Essential Bus 2ETB supplies Train B shared systems, the 2A offsite circuit and 2B offsite circuit would both be LCO 3.8.1.c AC sources for Unit 1 TS 3.8.1. The 2A DG and 2B DG would both be LCO 3.8.1.d AC sources for Unit 1 TS 3.8.1.

The Note that is added to the Applicability section takes exception to the requirements for the required AC sources in LCO 3.8.1.c and LCO 3.8.1.d provided the associated shared systems are inoperable. This exception is intended to allow declaring the shared systems supported by the opposite unit inoperable either in lieu of declaring the LCO 3.8.1.c and LCO 3.8.1.d AC sources inoperable, or at any time subsequent to entering ACTIONS for an inoperable LCO 3.8.1.c or LCO 3.8.1.d AC source. This exception is acceptable since, with the shared systems supported by the opposite unit inoperable and the associated ACTIONS entered, the LCO 3.8.1.c and LCO 3.8.1.d AC sources provide no additional assurance that acceptable fuel design limits and reactor coolant pressure boundary limits are not exceeded as a result of abnormal transients and also provide no additional assurance that adequate core cooling is provided and containment operability and other vital functions are maintained in the event of a postulated design basis accident (DBA).

The primary need for the Note is during Engineered Safeguards Features (ESF) testing. The testing is performed when one unit is in Modes 1 through 4 and the other unit is shutdown. A single train of shared systems (NSWS, CRAVS, CRACWS and ABFVES) is aligned to the outage unit. In this instance, the outage unit AC sources cannot support operability of the train of shared systems for the online unit. The Applicability Note allows McGuire to declare the entire train of shared systems (NSWS, CRAVS, CRACWS and ABFES) inoperable in lieu of applying proposed LCOs 3.8.1.c and 3.8.1.d for the online unit.

Adding "LCO 3.8.1.a" to Condition A clarifies that the Condition pertains to a qualified circuit between the offsite transmission network and the Onsite Essential Auxiliary Power System rather than a qualified circuit between the offsite transmission network and the opposite unit's Onsite Essential Auxiliary Power System.

Changing "OPERABLE offsite circuit" to "required OPERABLE offsite circuit(s)" in RA A.1 reflects that it could be necessary to verify the operability of more than one offsite circuit when a LCO 3.8.1.a offsite circuit is inoperable, since an offsite circuit may be aligned to the opposite unit Onsite Essential Auxiliary Power System that is supplying power to a train of the NSWS, CRAVS, CRACWS and ABFVES (i.e., a LCO 3.8.1.c offsite circuit).

The proposed maximum CT of 17 days for RA A.3 limits the total time that LCO 3.8.1.a or LCO 3.8.1.b is not met while concurrently or simultaneously in Conditions A and B. The existing CT is the sum of the CT for RA A.3 (i.e., 72 hours) and existing RA B.4 (i.e., 72 hours). MNS is proposing to increase the CT for existing RA B.4 to 14 days; thus the maximum CT for RA A.3 will be increased from 6 days to 17 days.

Adding "LCO 3.8.1.b" to Condition B clarifies that the Condition pertains to a unit-specific DG rather than a DG from the opposite unit necessary to supply power to the NSWS, CRAVS, CRACWS and ABFVES.

New RA B.1 provides assurance that the LCO 3.8.1.d DG is operable when a LCO 3.8.1.b DG is inoperable.

Renaming RAs B.1, B.2, B.3.1, B.3.2 and B.4 are administrative changes.

"OPERABLE DG" is changed to "OPERABLE DG(s)" in new RAs B.4.1 and B.4.2 to reflect that the RAs are to be performed for a LCO 3.8.1.d DG in addition to the OPERABLE LCO 3.8.1.b DG.

New RA B.5 is added as a prerequisite for entering the extended CT of new RA B.6 (i.e., 14 days). As specified in the TS Bases markups (Attachment 2), Emergency Supplemental Power Source (ESPS) availability requires that:

1. The load test has been performed within 30 days of entry into the extended CT.
2. The ESPS fuel tank is verified locally to be greater than or equal to a 24 hour supply.
3. The ESPS supporting system parameters for starting and operating are verified to be within limits for functional availability (e.g., battery state of charge).

The CT of 72 hours from discovery of unavailable ESPS of new RA B.6 (formerly RA B.4) is based on the existing CT for an inoperable DG. The 24 hour CT of new RA B.6 is based on Branch Technical Position 8-8 and indicates that if the ESPS unavailability occurs sometime after 72 hours of continuous DG inoperability (i.e., after entering the extended CT for an inoperable DG), then the remaining time to restore the ESPS to available status or restore the DG to operable status is limited to 24 hours. The 14 day CT of new RA B.6 is in accordance with Branch Technical Position 8-8, which indicates that operation may continue when a DG is inoperable for a period that should not exceed 14 days, provided a supplemental AC power source is available. The ESPS is the supplemental AC power source for MNS. The 17 day CT of new RA B.6 limits the total time that LCO 3.8.1.a or LCO 3.8.1.b is not met while concurrently or simultaneously in Conditions A and B. The existing CT is the sum of the CT for RA A.3 (i.e., 72 hours) and existing RA B.4 (i.e., 72 hours). MNS is proposing to increase the CT for existing

RA B.4 to 14 days; thus the maximum CT for new RA B.6 will be increased from 6 days to 17 days.

New Condition C reflects that with a LCO 3.8.1.d DG inoperable, the remaining operable unit-specific DG and the required offsite circuits are adequate to supply power to the onsite Class 1E Distribution System. The CT of new RAs C.1.1 and C.1.2 are in accordance with Regulatory Guide 1.93, which indicates operation may continue in this condition for a period that should not exceed 72 hours. The 72 hour CT takes into account the capacity and capability of the remaining AC power sources, a reasonable time for repairs and the low probability of a DBA occurring during the period.

New Condition D is added for one inoperable qualified circuit between the offsite transmission network and the opposite unit's Onsite Essential Auxiliary Power System necessary to supply power to the NSW, CRAVS, CRACWS and ABFVES. The Note above new RA D.1 indicates that when Condition D is entered with no AC source to a train, the Conditions and RAs for LCO 3.8.9, "Distribution Systems - Operating," must be immediately entered. This allows new Condition D to provide requirements for the loss of a LCO 3.8.1.c offsite circuit and LCO 3.8.1.d DG without regard to whether a train is de-energized. LCO 3.8.9 provides the appropriate restrictions for a de-energized train.

New RA D.1 ensures a highly reliable power source remains with the one necessary LCO 3.8.1.c offsite circuit ("necessary" only when the offsite circuit is aligned to the opposite unit Onsite Essential Auxiliary Power System that is supplying power to a train of the NSW, CRAVS, CRACWS and ABFVES) inoperable by verifying the operability of the remaining required offsite circuits. The CT for new RA D.1 is consistent with NUREG-1431 and the CT for existing RA A.1.

New RA D.2 only applies if the train cannot be powered from an offsite source and is intended to provide assurance that an event coincident with a single failure of the associated DG will not result in a complete loss of safety function for the NSW, CRAVS, CRACWS or the ABFVES. The 24 hour CT for new RA D.2 is considered acceptable because it minimizes risk while allowing time for restoration before subjecting the unit to transients associated with shutdown. The remaining operable offsite circuits and DGs are adequate in this condition to supply power to the Class 1E Distribution System. The 24 hour CT also takes into account the component operability of the redundant counterpart to the inoperable NSW, CRAVS, CRACWS or ABFVES, 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.

New RA D.3 reflects that if the inoperable qualified circuit between the offsite transmission network and the opposite unit's Onsite Essential Auxiliary Power System necessary to supply power to the NSW, CRAVS, CRACWS and ABFVES cannot be restored to operable status within 72 hours, then the NSW, CRAVS, CRACWS and ABFVES components associated with the inoperable offsite circuit must be declared inoperable. The ACTIONS associated with the LCOs for those shared systems will ensure that appropriate action is taken. The 72 hour CT for new RA D.3 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.

New Condition E is added for one opposite unit DG necessary to supply power to the NSW, CRAVS, CRACWS and ABFVES inoperable. The Note above new RA E.1 indicates that when Condition E is entered with no AC source to a train, the Conditions and RAs for LCO 3.8.9, "Distribution Systems - Operating," must be immediately entered. This allows new Condition E



to provide requirements for the loss of a LCO 3.8.1.c offsite circuit and LCO 3.8.1.d DG without regard to whether a train is de-energized. LCO 3.8.9 provides the appropriate restrictions for a de-energized train.

The new RA E.1 to verify both unit-specific DGs are operable and the ESPS is available forms the basis for the 14 day CT of new RA E.5. The verification in this RA provides assurance that the LCO 3.8.1.b safety-related DGs and the ESPS are capable of supplying the Class 1E AC Electrical Power Distribution System.

New RA E.2 ensures a highly reliable power source remains with the one necessary LCO 3.8.1.d DG ("necessary" only when the DG is aligned to the opposite unit Onsite Essential Auxiliary Power System that is supplying power to a train of the NSWs, CRAVS, CRACWS and ABFVES) inoperable by verifying the operability of the remaining required offsite circuits. The CT for new RA E.2 is consistent with NUREG-1431 and the CT for existing RA A.1.

New RA E.3 is intended to provide assurance that a loss of offsite power, during the period a LCO 3.8.1.d DG is inoperable, does not result in a complete loss of safety function for the NSWs, CRAVS, CRACWS or the ABFVES. Four hours (i.e., the CT for new RA E.3) from discovering the LCO 3.8.1.d DG inoperable coincident with one train of NSWs, CRAVS, CRACWS or ABFVES inoperable that is associated with the other train that has emergency power is acceptable because it minimizes risk while allowing time for restoration before subjecting the unit to transients associated with shutdown. The four hour CT also takes into account the capacity and capability of the remaining NSWs, CRAVS, CRACWS and ABFVES train, a realistic time for repairs and the low probability of a DBA occurring during this period. The remaining operable DGs and offsite circuits are adequate in this condition to supply electrical power to the onsite Class 1E Distribution System.

New RA E.4.1 provides an allowance to avoid unnecessary testing of operable DGs. If it can be determined that the cause of the inoperable LCO 3.8.1.d DG (opposite unit DG necessary to supply power to the NSWs, CRAVS, CRACWS and ABFVES) does not exist on the operable DGs, then SR 3.8.1.2 does not have to be performed. In accordance with new RA E.4.2, if the cause of the initial inoperable LCO 3.8.1.d DG cannot be confirmed not to exist on the remaining DGs, then performance of SR 3.8.1.2 suffices to provide assurance of continued operability of the DGs. According to Generic Letter 84-15, the 24 hour CT is reasonable to confirm that the operable DGs are not affected by the same problem as the inoperable LCO 3.8.1.d DG.

New RA E.5 reflects that if the opposite unit DG that is needed to supply power to the NSWs, CRAVS, CRACWS and ABFVES cannot be restored to operable status within 14 days, then the NSWs, CRAVS, CRACWS and ABFVES components associated with the inoperable DG must be declared inoperable. The Actions associated with the NSWs, CRAVS, CRACWS and ABFVES will ensure the appropriate actions are taken. The CT of 14 days is justified by new RA E.1 (verify both unit-specific DGs are operable and the ESPS is available). The 14 day CT is also consistent with the proposed CT in ACTION B when ESPS is available.

New Condition F is added to indicate that with an additional LCO 3.8.1.b safety-related DG inoperable or the ESPS unavailable, the remaining operable LCO 3.8.1.b DG and qualified circuits are adequate to supply electrical power to the onsite Class 1E Distribution System.

New RA F.1.1 is provided to restore both of the unit-specific DGs to operable and the ESPS to available. New RA F.1.2 is provided to restore the LCO 3.8.1.d DG to operable. Either of the

new RAs F.1.1 and F.1.2 must be completed within 72 hours. The 72 hour CT for RAs F.1.1 and F.1.2 is consistent with Regulatory Guide 1.93. The 72 hour CT also 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 the period.

New RA F.1.3 reflects that if the opposite unit DG that is necessary to supply power to the NSWs, CRAVS, CRACWS and ABFVES cannot be restored to operable status within 72 hours, then the NSWs, CRAVS, CRACWS and ABFVES components associated with the inoperable DG must be declared inoperable. The ACTIONS associated with the LCOs for those shared systems will ensure that appropriate action is taken. The 72 hour CT for new RA F.1.3 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.

Renaming Condition C to Condition G is an administrative change. Adding "LCO 3.8.1.a" to new Condition G clarifies that the portion of the Condition pertains to the qualified circuits between the offsite transmission network and the Onsite Essential Auxiliary Power System rather than a qualified circuit between the offsite transmission network and the opposite unit's Onsite Essential Auxiliary Power System. The second part of Condition G after the "OR" connector is added to reflect when the offsite circuit required by LCO 3.8.1.c and one offsite circuit required by LCO 3.8.1.a are concurrently inoperable, if the LCO 3.8.1.a offsite circuit is credited with providing power to the NSWs, CRAVS, CRACWS and ABFVES. The third part of Condition G after the "OR" connector is added to reflect when two offsite circuits required by LCO 3.8.1.c are inoperable. Two offsite circuits are required by LCO 3.8.1.c when both Train A shared systems and Train B shared systems are aligned to receive power from the same unit.

Renaming RAs C.1 and C.2 to G.1 and G.2 is an administrative change. Changing "Condition C" to "Condition G" in the CT for new RA G.1 is an administrative change.

Renaming Condition D to Condition H is an administrative change. Adding "LCO 3.8.1.a" and "LCO 3.8.1.b" to new Condition H clarifies that the Condition pertains to a qualified circuit between the offsite transmission network and the Onsite Essential Auxiliary Power System (rather than a qualified circuit between the offsite transmission network and the opposite unit's Onsite Essential Auxiliary Power System) and to a DG capable of supplying the Onsite Essential Auxiliary Power Systems (rather than a DG from the opposite unit necessary to supply power to the NSWs, CRAVS, CRACWS and ABFVES).

Changing "Condition D" to "Condition H" in the NOTE above new RA H.1 is an administrative change. Renaming RAs D.1 and D.2 to H.1. and H.2 is an administrative change.

Renaming Condition E to Condition I is administrative change. Adding "LCO 3.8.1.b" to new Condition I clarifies that the portion of the Condition pertains to the unit-specific DGs rather than a DG from the opposite unit necessary to supply power to the NSWs, CRAVS, CRACWS and ABFVES. The second part of Condition I after the "OR" connector is added to reflect that with one LCO 3.8.1.d DG inoperable and the LCO 3.8.1.b DG that provides power to the NSWs, CRAVS, CRACWS and ABFVES inoperable, there are no remaining standby AC sources to the NSWs, CRAVS, CRACWS and ABFVES. The third part of Condition I after the "OR" connector is added to reflect that with two DGs required by LCO 3.8.1.d inoperable, there are no remaining standby AC sources to the shared portions of the NSWs, CRAVS, CRACWS and ABFVES. Two DGs are required by LCO 3.8.1.d when both Train A shared systems and Train B shared systems are aligned to receive power from the same unit.

Renaming RA E.1 to I.1 is an administrative change.

Renaming Condition F to Condition J is an administrative change. Renaming RA F.1 to J.1 is an administrative change.

Renaming Condition G to Condition K is an administrative change. All of the proposed revisions to new Condition K reflect instances where the RA and associated CT of a Condition (or RA) are not met.

Renaming RAs G.1 and G.2 to K.1 and K.2 is an administrative change.

Renaming Condition H to Condition L is an administrative change. Adding "LCO 3.8.1.a and LCO 3.8.1.b" to new Condition L clarifies that the Condition corresponds to a level of degradation in which all redundancy in the unit-specific (i.e., LCO 3.8.1.a and LCO 3.8.1.b) AC electrical power supplies has been lost. The second part of Condition L after the "OR" connector is added to reflect that the Condition corresponds to a level of degradation in which all redundancy in LCO 3.8.1.c and LCO 3.8.1.d AC electrical power supplies has been lost.

Renaming RA H.1 to L.1 is an administrative change.

The new NOTE added to the SURVEILLANCE REQUIREMENTS section of MNS TS 3.8.1 clarifies that not all of the SRs are applicable to all the components described in the LCO.

New SR 3.8.1.21 lists the SRs that are applicable to new LCO 3.8.1.c and new LCO 3.8.1.d. These SRs are 3.8.1.1, 3.8.1.2, 3.8.1.4, 3.8.1.5 and 3.8.1.6. The Frequency of new SR 3.8.1.21 is to be in accordance with the MNS Surveillance Frequency Control Program.

Attachment 1  
RA-18-0015

**Attachment 1**

**McGuire Technical Specification Marked Up Pages**

3.8 ELECTRICAL POWER SYSTEMS

3.8.1 AC Sources — Operating

LCO 3.8.1 The following AC electrical sources shall be OPERABLE:

- a. Two qualified circuits between the offsite transmission network and the Onsite Essential Auxiliary Power System; and
- b. Two diesel generators (DGs) capable of supplying the Onsite Essential Auxiliary Power Systems; and
- c. The qualified circuit(s) between the offsite transmission network and the opposite unit's Onsite Essential Auxiliary Power System necessary to supply power to the Nuclear Service Water System (NSWS), Control Room Area Ventilation System (CRAVS), Control Room Area Chilled Water System (CRACWS) and Auxiliary Building Filtered Ventilation Exhaust System (ABFVES); and
- d. The DG(s) from the opposite unit necessary to supply power to the NSWS, CRAVS, CRACWS and ABFVES;

AND

The automatic load sequencers for Train A and Train B shall be OPERABLE.

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

-----NOTE-----  
The opposite unit electrical power sources in LCO 3.8.1.c and LCO 3.8.1.d are not required to be OPERABLE when the associated shared systems are inoperable.  
-----

ACTIONS

NOTE

LCO 3.0.4.b is not applicable to DGs.

CONDITION	REQUIRED ACTION	COMPLETION TIME
<p>A. One <u>LCO 3.8.1.a</u> offsite circuit inoperable.</p>	<p>A.1 Perform SR 3.8.1.1 for <u>required</u> OPERABLE offsite circuit(s).</p>	<p>1 hour <u>AND</u> Once per 8 hours thereafter</p>
	<p><u>AND</u> A.2 Declare required feature(s) with no offsite power available inoperable when its redundant required feature(s) is inoperable.</p>	<p>24 hours from discovery of no offsite power to one train concurrent with inoperability of redundant required feature(s)</p>
	<p><u>AND</u> A.3 Restore offsite circuit to OPERABLE status.</p>	<p>72 hours <u>AND</u> <u>617</u> days from discovery of failure to meet LCO <u>3.8.1.a</u> or <u>LCO 3.8.1.b</u></p>



ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
<p>B. One <u>LCO 3.8.1.b</u> DG inoperable</p>	<p><u>B.1</u> <u>Verify LCO 3.8.1.d DG(s) OPERABLE.</u></p>	<p><u>1 hour</u> <u>AND</u> <u>Once per 12 hours thereafter</u></p>
	<p><u>AND</u></p> <p><u>B.12</u> Perform SR 3.8.1.1 for the <u>required</u> offsite circuit(s).</p>	<p>1 hour <u>AND</u> Once per 8 hours thereafter</p>
	<p><u>AND</u></p> <p><u>B.23</u> Declare required feature(s) supported by the inoperable DG inoperable when its required redundant feature(s) is inoperable.</p>	<p>4 hours from discovery of Condition B concurrent with inoperability of redundant required feature(s)</p>
	<p><u>AND</u></p> <p><u>B.34.1</u> Determine OPERABLE DG(s) is not inoperable due to common cause failure.</p>	<p>24 hours</p>
	<p><u>OR</u></p> <p><u>B.34.2</u> Perform SR 3.8.1.2 for OPERABLE DG(s).</p>	<p>24 hours</p>
	<p><u>AND</u></p>	<p>(continued)</p>

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
<p>B. (continued)</p>	<p><u>B.5</u> <u>Ensure availability of Emergency Supplemental Power Source (ESPS).</u></p> <p><u>AND</u></p> <p><u>B.4B.6</u> Restore DG to OPERABLE status.</p>	<p><u>Prior to entering the extended Completion Time of ACTION B.6</u></p> <p><u>AND</u></p> <p><u>Once per 12 hours thereafter</u></p> <p>72 hours <u>from discovery of unavailable ESPS</u> **</p> <p><u>AND</u></p> <p><u>6 days from discovery of failure to meet LCO</u></p> <p><u>24 hours from discovery of unavailable ESPS when in extended Completion Time</u></p> <p><u>AND</u></p> <p><u>14 days</u></p> <p><u>AND</u></p> <p><u>17 days from discovery of failure to meet LCO 3.8.1.a or LCO 3.8.1.b</u></p>

ACTIONS

<p><u>C. Required Action and associated Completion Time of Required Action B.1 not met.</u></p>	<p><u>C.1.1 Restore LCO 3.8.1.d DG to OPERABLE status.</u></p> <p><u>OR</u></p> <p><u>C.1.2 Restore LCO 3.8.1.b DG to OPERABLE status.</u></p>	<p><u>72 hours</u></p>
<p><u>D. One LCO 3.8.1.c offsite circuit inoperable.</u></p>	<p>-----NOTE-----  <u>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 a train.</u>          -----</p> <p><u>D.1 Perform SR 3.8.1.1 for the required offsite circuit(s).</u></p> <p><u>AND</u></p> <p><u>D.2 Declare NSW, CRAVS, CRACWS or ABFVES with no offsite power available inoperable when the redundant NSW, CRAVS, CRACWS or ABFVES is inoperable.</u></p> <p><u>AND</u></p> <p><u>D.3 Declare NSW, CRAVS, CRACWS and ABFVES supported by the inoperable offsite circuit inoperable.</u></p>	<p><u>1 hour</u></p> <p><u>AND</u></p> <p><u>Once per 8 hours thereafter</u></p> <p><u>24 hours from discovery of no offsite power to one train concurrent with inoperability of redundant required feature(s)</u></p> <p><u>72 hours</u></p>

ACTIONS

<p><u>E. One LCO 3.8.1.d DG inoperable.</u></p>	<p>-----NOTE-----  <u>Enter applicable Conditions and Required Actions of LCO 3.8.9, "Distribution Systems - Operating," when Condition E is entered with no AC power source to a train.</u>          -----</p> <p><u>E.1 Verify both LCO 3.8.1.b DGs OPERABLE and ESPS available.</u></p> <p><u>AND</u></p> <p><u>E.2 Perform SR 3.8.1.1 for the required offsite circuit(s).</u></p> <p><u>AND</u></p> <p><u>E.3 Declare NSW, CRAVS, CRACWS or ABFVES supported by the inoperable DG inoperable when the redundant NSW, CRAVS, CRACWS or ABFVES is inoperable.</u></p> <p><u>AND</u></p>	<p><u>1 hour</u></p> <p><u>AND</u></p> <p><u>Once per 12 hours thereafter</u></p> <p><u>1 hour</u></p> <p><u>AND</u></p> <p><u>Once per 8 hours thereafter</u></p> <p><u>4 hours from discovery of Condition E concurrent with inoperability of redundant required feature(s)</u></p> <p><u>(continued)</u></p>
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ACTIONS

<p><u>E. (continued)</u></p>	<p><u>E.4.1 Determine OPERABLE DG(s) is not inoperable due to common cause failures.</u></p> <p><u>OR</u></p> <p><u>E.4.2 Perform SR 3.8.1.2 for OPERABLE DG(s).</u></p> <p><u>AND</u></p> <p><u>E.5 Declare NSWS, CRAVS, CRACWS and ABFVES supported by the inoperable DG inoperable.</u></p>	<p><u>24 hours</u></p>  <p><u>24 hours</u></p>  <p><u>14 days</u></p>
<p><u>F. Required Action and associated Completion Time of Required Action E.1 not met.</u></p>	<p><u>F.1.1 Restore both LCO 3.8.1.b DGs to OPERABLE status and ESPS to available status.</u></p> <p><u>OR</u></p> <p><u>F.1.2 Restore LCO 3.8.1.d DG to OPERABLE status.</u></p> <p><u>OR</u></p> <p><u>F.1.3 Declare NSWS, CRAVS, CRACWS and ABFVES supported by the inoperable DG inoperable.</u></p>	<p><u>72 hours</u></p>



ACTIONS

<p><u>GG.</u> Two <u>LCO 3.8.1.a</u> offsite circuits inoperable.</p> <p><u>OR</u></p> <p><u>One LCO 3.8.1.a offsite circuit that provides power to the NSWS, CRAVS, CRACWS and ABFVES inoperable and one LCO 3.8.1.c offsite circuit inoperable.</u></p> <p><u>OR</u></p> <p><u>Two LCO 3.8.1.c offsite circuits inoperable.</u></p>	<p><u>GG.1</u> Declare required feature(s) inoperable when its redundant required feature(s) is inoperable.</p> <p><u>AND</u></p> <p><u>GG.2</u> Restore one offsite circuit to OPERABLE status.</p>	<p>12 hours from discovery of Condition <u>GG</u> concurrent with inoperability of redundant required feature(s)</p> <p>24 hours</p>
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(continued)

\*\* 'A' Train EDGs are allowed to be inoperable for a total of 14 days to address a non-conforming condition on the 'A' Train supply piping from the Standby Nuclear Service Water Pond (SNSWP). The 14 days may be taken consecutively or in parts until completion of the activity, or by March 31, 2019, whichever occurs first. During the period in which the 'A' Train NSWS supply piping from the SNSWP is not available, the 'A' Train NSWS will remain aligned to Lake Norman until the system is ready for post maintenance testing. Any maintenance that is performed on the remaining portions of 'A' Train NSWS during the period in which the 'A' NSWS from the SNSWP supply piping is not available will be limited to a 72 hour completion time. The latter will not count against the 14 day completion time. Allowance of the extended Completion Time is contingent on meeting the Compensatory Measures as described in MNS LAR submittal correspondence letter MNS-17-031.



ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
<p><b>DH.</b> One <u>LCO 3.8.1.a</u> offsite circuit inoperable.</p> <p><u>AND</u></p> <p>One <u>LCO 3.8.1.b</u> DG inoperable.</p>	<p>-----NOTE-----</p> <p>Enter applicable Conditions and Required Actions of LCO 3.8.9, "Distribution Systems — Operating," when Condition <b>DH</b> is entered with no AC power source to any train.</p> <p>-----</p> <p><b>DH.1</b> Restore offsite circuit to OPERABLE status.</p> <p><u>OR</u></p> <p><b>DH.2</b> Restore DG to OPERABLE status.</p>	<p>12 hours</p> <p>12 hours</p>
<p><b>EJ.</b> Two <u>LCO 3.8.1.b</u> DGs Inoperable.</p> <p><u>OR</u></p> <p><u>LCO 3.8.1.b DG that provides power to the NSWS, CRAVS, CRACWS and ABFVES inoperable and one LCO 3.8.1.d DG inoperable.</u></p> <p><u>OR</u></p> <p><u>Two LCO 3.8.1.d DGs inoperable.</u></p>	<p><b>EJ.1</b> Restore one DG to OPERABLE status.</p>	<p>2 hours</p>
<p><b>FJ.</b> One automatic load sequencer inoperable.</p>	<p><b>FJ.1</b> Restore automatic load sequencer to OPERABLE status.</p>	<p>12 hours</p>

ACTIONS (continued)

<p><del>GK.</del> Required Action and associated Completion Time of Condition A, <del>B, C, D, E, or J</del>, <u>C, F, G, H, I, or J</u> not met.</p> <p><u>OR</u></p> <p><u>Required Action and associated Completion Time of Required Action B.2, B.3, B.4.1, B.4.2, or B.6 not met.</u></p> <p><u>OR</u></p> <p><u>Required Action and associated Completion Time of Required Action E.2, E.3, E.4.1, E.4.2, or E.5 not met.</u></p>	<p><del>GK.1</del> Be in MODE 3.</p> <p><u>AND</u></p> <p><del>GK.2</del> Be in MODE 5.</p>	<p>6 hours</p> <p>36 hours</p>
<p><del>HL.</del> Three or more <u>LCO 3.8.1.a and LCO 3.8.1.b</u> AC sources inoperable.</p> <p><u>OR</u></p> <p><u>Three or more LCO 3.8.1.c and LCO 3.8.1.d</u> AC sources inoperable.</p>	<p><del>HL.1</del> Enter LCO 3.0.3.</p>	<p>Immediately</p>

SURVEILLANCE REQUIREMENTS

NOTE

SR 3.8.1.1 through SR 3.8.1.20 are only applicable to LCO 3.8.1.a and LCO 3.8.1.b AC sources. SR 3.8.1.21 is only applicable to LCO 3.8.1.c and LCO 3.8.1.d AC sources.

SURVEILLANCE	FREQUENCY
SR 3.8.1.1 Verify correct breaker alignment and indicated power availability for each offsite circuit.	In accordance with the Surveillance Frequency Control Program
SR 3.8.1.2 <u>NOTES</u> 1. Performance of SR 3.8.1.7 satisfies this SR. 2. All DG starts may be preceded by an engine prelube period and followed by a warmup period prior to loading. 3. A modified DG start involving idling and gradual acceleration to synchronous speed may be used for this SR as recommended by the manufacturer. When modified start procedures are not used, the time, voltage, and frequency tolerances of SR 3.8.1.7 must be met. ----- Verify each DG starts from standby conditions and achieves steady state voltage $\geq 3740$ V and $\leq 4580$ V, and frequency $\geq 58.8$ Hz and $\leq 61.2$ Hz.	In accordance with the Surveillance Frequency Control Program

(continued)

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE	FREQUENCY
<p>SR 3.8.1.3 -----NOTES-----</p> <ol style="list-style-type: none"> <li>1. DG loadings may include gradual loading as recommended by the manufacturer.</li> <li>2. Momentary transients outside the load range do not invalidate this test.</li> <li>3. This Surveillance shall be conducted on only one DG at a time.</li> <li>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.</li> </ol> <p>-----</p> <p>Verify each DG is synchronized and loaded and operates for <math>\geq 60</math> minutes at a load <math>\geq 3600</math> kW and <math>\leq 4000</math> kW.</p>	<p>In accordance with the Surveillance Frequency Control Program</p>
<p>SR 3.8.1.4 Verify each day tank contains <math>\geq 39</math> inches of fuel oil.</p>	<p>In accordance with the Surveillance Frequency Control Program</p>
<p>SR 3.8.1.5 Check for and remove accumulated water from each day tank.</p>	<p>In accordance with the Surveillance Frequency Control Program</p>
<p>SR 3.8.1.6 Verify the fuel oil transfer system operates to automatically transfer fuel oil from storage tank to the day tank.</p>	<p>In accordance with the Surveillance Frequency Control Program</p>

(continued)

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE	FREQUENCY
<p>SR 3.8.1.7 -----NOTES-----  All DG starts may be preceded by an engine prelube period.  -----  Verify each DG starts from standby condition and achieves in <math>\leq 11</math> seconds voltage of <math>\geq 3740</math> V and frequency of <math>\geq 57</math> Hz and maintains steady state voltage <math>\geq 3740</math> V and <math>\leq 4580</math> V, and frequency <math>\geq 58.8</math> Hz and <math>\leq 61.2</math> Hz.</p>	<p>In accordance with the Surveillance Frequency Control Program</p>
<p>SR 3.8.1.8 -----NOTES-----  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.  -----  Verify automatic and manual transfer of AC power sources from the normal offsite circuit to each alternate offsite circuit.</p>	<p>In accordance with the Surveillance Frequency Control Program</p>

(continued)

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE	FREQUENCY
<p>SR 3.8.1.9 Verify each DG, when connected to its bus in parallel with offsite power and operating with maximum kVAR loading that offsite power conditions permit, rejects a load greater than or equal to its associated single largest post-accident load, and:</p> <ul style="list-style-type: none"> <li>a. Following load rejection, the frequency is <math>\leq 63</math> Hz;</li> <li>b. Within 3 seconds following load rejection, the voltage is <math>\geq 3740</math> V and <math>\leq 4580</math> V; and</li> <li>c. Within 3 seconds following load rejection, the frequency is <math>\geq 58.8</math> Hz and <math>\leq 61.2</math> Hz.</li> </ul>	<p>In accordance with the Surveillance Frequency Control Program</p>
<p>SR 3.8.1.10 Verify each DG does not trip and voltage is maintained <math>\leq 4784</math> V during and following a load rejection of <math>\geq 3600</math> kW and <math>\leq 4000</math> kW.</p>	<p>In accordance with the Surveillance Frequency Control Program</p>

(continued)

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE	FREQUENCY
<p>SR 3.8.1.11 -----NOTES-----</p> <ol style="list-style-type: none"> <li>1. All DG starts may be preceded by an engine prelube period.</li> <li>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.</li> </ol> <p>-----</p> <p>Verify on an actual or simulated loss of offsite power signal:</p> <ol style="list-style-type: none"> <li>a. De-energization of emergency buses;</li> <li>b. Load shedding from emergency buses;</li> <li>c. DG auto-starts from standby condition and:               <ol style="list-style-type: none"> <li>1. energizes the emergency bus in <math>\leq 11</math> seconds,</li> <li>2. energizes auto-connected blackout loads through automatic load sequencer,</li> <li>3. maintains steady state voltage <math>\geq 3740</math> V and <math>\leq 4580</math> V,</li> <li>4. maintains steady state frequency <math>\geq 58.8</math> Hz and <math>\leq 61.2</math> Hz, and</li> <li>5. supplies auto-connected blackout loads for <math>\geq 5</math> minutes.</li> </ol> </li> </ol>	<p>In accordance with the Surveillance Frequency Control Program</p>

(continued)

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE	FREQUENCY
<p>SR 3.8.1.12 -----NOTES-----  All DG starts may be preceded by prelube period.  -----  Verify on an actual or simulated Engineered Safety Feature (ESF) actuation signal each DG auto-starts from standby condition and:</p> <ul style="list-style-type: none"> <li>a. In <math>\leq 11</math> seconds after auto-start signal achieves voltage of <math>\geq 3740</math> and during tests, achieves steady state voltage <math>\geq 3740</math> V and <math>\leq 4580</math> V;</li> <li>b. In <math>\leq 11</math> seconds after auto-start signal achieves frequency of <math>\geq 57</math> Hz and during tests, achieves steady state frequency <math>\geq 58.8</math> Hz and <math>\leq 61.2</math> Hz;</li> <li>c. Operates for <math>\geq 5</math> minutes; and</li> <li>d. The emergency bus remains energized from the offsite power system.</li> </ul>	<p>In accordance with the Surveillance Frequency Control Program</p>

(continued)



SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE	FREQUENCY
<p>SR 3.8.1.13 Verify each DG's non-emergency automatic trips are bypassed on actual or simulated loss of voltage signal on the emergency bus concurrent with an actual or simulated ESF actuation signal.</p>	<p>In accordance with the Surveillance Frequency Control Program</p>
<p>SR 3.8.1.14 -----NOTES-----</p> <ol style="list-style-type: none"> <li>1. Momentary transients outside the load range do not invalidate this test.</li> <li>2. DG loadings may include gradual loading as recommended by the manufacturer.</li> </ol> <p>-----</p> <p>Verify each DG, when connected to its bus in parallel with offsite power and operating with maximum kVAR loading that offsite power conditions permit, operates for <math>\geq 24</math> hours:</p> <ol style="list-style-type: none"> <li>a. For <math>\geq 2</math> hours loaded <math>\geq 4200</math> kW and <math>\leq 4400</math> kW; and</li> <li>b. For the remaining hours of the test loaded <math>\geq 3600</math> kW and <math>\leq 4000</math> kW.</li> </ol>	<p>In accordance with the Surveillance Frequency Control Program</p>

(continued)

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE	FREQUENCY
<p>SR 3.8.1.15 -----NOTES-----</p> <p>1. This Surveillance shall be performed within 5 minutes of shutting down the DG after the DG has operated <math>\geq 2</math> hours loaded <math>\geq 3600</math> kW and <math>\leq 4000</math> kW.</p> <p>Momentary transients outside of load range do not invalidate this test.</p> <p>2. All DG starts may be preceded by an engine prelube period.</p> <p>-----</p> <p>Verify each DG starts and achieves, in <math>\leq 11</math> seconds, voltage <math>\geq 3740</math> V, and frequency <math>\geq 57</math> Hz and maintains steady state voltage <math>\geq 3740</math> V and <math>\leq 4580</math> V and frequency <math>\geq 58.8</math> Hz and <math>\leq 61.2</math> Hz.</p>	<p>In accordance with the Surveillance Frequency Control Program</p>
<p>SR 3.8.1.16 -----NOTES-----</p> <p>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.</p> <p>-----</p> <p>Verify each DG:</p> <p>a. Synchronizes with offsite power source while loaded with emergency loads upon a simulated restoration of offsite power;</p> <p>b. Transfers loads to offsite power source; and</p> <p>c. Returns to standby operation.</p>	<p>In accordance with the Surveillance Frequency Control Program</p>

(continued)

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE	FREQUENCY
<p>SR 3.8.1.17 -----NOTES-----  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, with a DG operating in test mode and connected to its bus, an actual or simulated ESF actuation signal overrides the test mode by:</p> <ul style="list-style-type: none"> <li>a. Returning DG to standby operation; and</li> <li>b. Automatically energizing the emergency load from offsite power.</li> </ul>	<p>In accordance with the Surveillance Frequency Control Program</p>
<p>SR 3.8.1.18 Verify interval between each sequenced load block is within design interval for each automatic load sequencer.</p>	<p>In accordance with the Surveillance Frequency Control Program</p>

(continued)

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE	FREQUENCY
<p>SR 3.8.1.19 -----NOTES-----</p> <ol style="list-style-type: none"> <li>1. All DG starts may be preceded by an engine prelube period.</li> <li>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.</li> </ol> <p>-----</p> <p>Verify on an actual or simulated loss of offsite power signal in conjunction with an actual or simulated ESF actuation signal:</p> <ol style="list-style-type: none"> <li>a. De-energization of emergency buses;</li> <li>b. Load shedding from emergency buses; and</li> <li>c. DG auto-starts from standby condition and:               <ol style="list-style-type: none"> <li>1. energizes the emergency bus in <math>\leq 11</math> seconds,</li> <li>2. energizes auto-connected emergency loads through load sequencer,</li> <li>3. achieves steady state voltage <math>\geq 3740</math> V and <math>\leq 4580</math> V,</li> <li>4. achieves steady state frequency <math>\geq 58.8</math> Hz and <math>\leq 61.2</math> Hz, and</li> <li>5. supplies auto-connected emergency loads for <math>\geq 5</math> minutes.</li> </ol> </li> </ol>	<p>In accordance with the Surveillance Frequency Control Program</p>

(continued)

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE	FREQUENCY
<p>SR 3.8.1.20 -----NOTES-----  All DG starts may be preceded by an engine prelube period.  -----  Verify when started simultaneously from standby condition, each DG achieves, in <math>\leq 11</math> seconds, voltage of <math>\geq 3740</math> V and frequency of <math>\geq 57</math> Hz and maintains steady state voltage <math>\geq 3740</math> V and <math>\leq 4580</math> V, and frequency <math>\geq 58.8</math> Hz and <math>\leq 61.2</math> Hz.</p>	<p>In accordance with the Surveillance Frequency Control Program</p>
<p><u>SR 3.8.1.21 For the LCO 3.8.1.c and LCO 3.8.1.d AC electrical sources, SR 3.8.1.1, SR 3.8.1.2, SR 3.8.1.4, SR 3.8.1.5, and SR 3.8.1.6 are required to be met.</u></p>	<p><u>In accordance with the Surveillance Frequency Control Program</u></p>