

VIRGINIA ELECTRIC AND POWER COMPANY  
RICHMOND, VIRGINIA 23261

August 13, 2001

U.S. Nuclear Regulatory Commission  
Attention: Document Control Desk  
Washington, D.C. 20555

Serial No.: 01- 334  
CM/RAB R0  
Docket Nos.: 50-338  
50-339  
License Nos.: NPF-4  
NPF-7

Gentlemen:

**VIRGINIA ELECTRIC AND POWER COMPANY**  
**NORTH ANNA POWER STATION UNITS 1 AND 2**  
**PROPOSED IMPROVED TECHNICAL SPECIFICATIONS**  
**REQUEST FOR ADDITIONAL INFORMATION – ITS SECTION 3.8**

This letter transmits responses to the NRC's request for additional information regarding Section 3.8 of the North Anna Power Station Units 1 and 2 proposed Improved Technical Specifications (ITS). The North Anna ITS license amendment request was submitted to the NRC in a December 11, 2000 letter (Serial No. 00-606). The NRC requested additional information on ITS Section 3.8 in a letter dated May 21, 2001 (TAC Nos. MB0799 and MB0800). This letter also transmits minor changes to ITS Section 3.8, which are a result of internal comments.

The attachment includes each NRC question, the response to each question, and the required revisions to the original ITS license amendment request, based on the response to each question. Following the responses to the NRC's questions is a summary of the changes that are not associated with the NRC's questions, and the affected ITS submittal pages.

If you have any further questions or require additional information, please contact us.

Very truly yours,



Leslie N. Hartz  
Vice President - Nuclear Engineering

Attachment

Commitments made in this letter: None

*Acad*

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**North Anna Improved Technical Specifications (ITS) Review Comments**  
**ITS Section 3.8, Electrical Power System**  
**3.8.1 AC Sources – Operating**

3.8-01 ITS Condition B

Standard Technical Specification (STS) Condition B  
Current Technical Specifications (CTS) Unit 1 3.8.1.1 Action b  
Discussion of Change (DOC) L.3 and L.14

**NRC RAI: Comment:** There seems to be a misunderstanding in the DOCs. A diesel generator (DG) cannot be returned to OPERABLE status until the cause of the failure is determined and corrected. If the cause of the failure is not determined within 24 hours, the OPERABLE DG must be tested. The DOC statement about the corrective action program continuing to assess the common cause evaluation for the inoperable DG is misleading because, as stated above, a DG cannot be considered OPERABLE unless the cause of the inoperability is determined and corrected. The licensee should consider revising the DOC to reflect the above.

**Response:** The Company will take the action proposed in the Comment. This will revise DOC L.3 to eliminate any reference to the plant's corrective action program and to specifically state that the cause of an EDG inoperability must be determined and corrected before the EDG can be returned to OPERABLE status. Also see the response to Question 11.

**DISCUSSION OF CHANGES**  
**ITS 3.8.1 - AC SOURCES - OPERATING**

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feature on the other train. If at any time during the existence of ITS Condition A, a redundant required feature becomes inoperable, the Completion Time begins. The required feature with its emergency power supplies remain OPERABLE. Twenty-four hours is acceptable because it allows time for restoration before subjecting the unit to transients associated with shutting down. This change is designated as less restrictive because additional time is allowed to restore parameters to within the LCO limits than was allowed in the CTS.

- L.2 (Category 3 – Relaxation of Completion Time) CTS LCO 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 normal or emergency power source is OPERABLE and its redundant system(s), subsystem(s), train(s), component(s), and device(s) are OPERABLE. If the redundant feature is not OPERABLE, a shutdown to a MODE in which the feature is not required must be started within one hour. ITS Required Action B.2 requires the declaration of required feature(s), with no EDG available, inoperable when its redundant required feature(s) is inoperable. The Completion Time allowed by the new action is 4 hours from discovery of inoperable EDG on one train concurrent with inoperability of redundant required feature(s). This changes the CTS to allow 4 hours before declaring a required feature inoperable, with an EDG and a redundant required feature inoperable.

The purpose of this change is to allow the operator time to evaluate and repair a discovered inoperability. The Required Action and Completion Time only begin on discovery of both the inoperability of the EDG and the required feature on the other train. If at any time during the existence of ITS Condition B (one EDG inoperable) a redundant required feature becomes inoperable, the Completion Time begins to be tracked. 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. The required feature with its emergency power supply remains capable of providing 100% of that requirement for accident mitigation. Four hours is acceptable because it allows time for restoration before subjecting the unit to transients associated with shutting down. This change is designated as less restrictive because additional time is allowed to restore parameters to within the LCO limits than was allowed in the CTS.

- L.3 (Category 4 – Relaxation of Required Action) CTS 3.8.1.1 Action b requires that within the next twenty-four hours of one EDG becoming inoperable, the other train's OPERABLE EDG must be started and fully loaded for one hour in accordance with CTS SR 4.8.1.1.2.a.4. This is required regardless of whether or not the inoperable EDG is restored to OPERABLE status. This is not required to be performed if the absence of any potential for common mode failure can be demonstrated for the OPERABLE EDG. ITS Action B.3 requires a determination that the OPERABLE EDG is not inoperable due to a common cause failure. This evaluation is required to

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**DISCUSSION OF CHANGES**  
**ITS 3.8.1 - AC SOURCES - OPERATING**

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be completed within twenty-four hours or the performance of ITS SR 3.8.1.2 is required. This Surveillance only requires the start of the OPERABLE EDG. This changes the CTS requirements by not requiring the OPERABLE EDG to be run at full load for one hour and eliminates the requirement that the test for the OPERABLE EDG be completed regardless of whether the inoperable EDG is restored to OPERABLE status.

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. A start of the OPERABLE EDG is sufficient to assure continued OPERABILITY of that EDG. The OPERABLE EDG will be declared inoperable and additional Actions will be required if the cause of inoperability on the inoperable EDG exists on the OPERABLE EDG. The cause of the inoperability for the EDG must be determined and corrected before that EDG may be returned to OPERABLE status. This change is designated as less restrictive because less stringent Required Actions are being applied in the ITS than were applied in the CTS.

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- L.4 (*Category 3 – Relaxation of Completion Time*) CTS LCO 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 normal or emergency power source is OPERABLE and its redundant system(s), subsystem(s), train(s), component(s), and device(s) are OPERABLE. LCO 3.0.5 requires a unit shutdown to start within one hour with two offsite circuits inoperable. ITS 3.8.1 Required Action G.1 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 G.1 is 12 hours from discovery of no offsite power concurrent with inoperability of redundant required feature(s). This changes the CTS by allowing 12 hours before declaring a required feature inoperable.

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. The required feature with its emergency power supplies remains OPERABLE. Twelve hours is acceptable because it minimizes risk while allowing time for restoration before subjecting the unit to a transient associated with a unit shutdown. This change is designated as less restrictive because additional time is allowed to restore parameters to within the LCO limits than was allowed in the CTS.

**North Anna Improved Technical Specifications (ITS) Review Comments**  
**ITS Section 3.8, Electrical Power System**  
**3.8.1 AC Sources – Operating**

3.8.1-02 ITS SRs 3.8.1.8, 3.8.1.9, 3.8.1.12, and 3.8.1.13  
STS SRs 3.8.1.8, 3.8.1.9, 3.8.1.13, and 3.8.1.14  
CTS Unit 1 SR 4.8.1.1.1.b, 4.8.1.1.2.d.1, 4.8.1.1.2.d.5.c, and 3.8.1.1.2.d.6  
DOC L.10

**NRC RAI: Comment:** The proposed change is beyond scope. The licensee will have to provide more information on the proposed changes to allow for a thorough staff review. The information should include details on system design and how the transfer to the alternate offsite is made, specific details regarding the single largest load reject test, information on how it is determined that EDG trips are bypassed, and a discussion of why it is safe to conduct the 24-hour run at power.

**Response:** The Company agrees with the Comment and withdraws the proposed change. The Company proposes a change to the SRs that incorporates TSTF-283 Rev. 3. This will restore the MODE restrictions in the Note to the SRs and modifies the Note to read, "This Surveillance shall not normally be performed in MODES 1 and 2. However, this Surveillance may be performed to reestablish OPERABILITY provided an assessment determines the safety of the unit is maintained or enhanced." This change requires a modification to DOC L.10 and the creation of DOC L.18. Also see the response to Questions 5, 6, 9, 17, 18, 21, and 30.

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.8.1.4	Verify each required day tank contains $\geq 450$ gal of fuel oil.	31 days
SR 3.8.1.5	Check for and remove accumulated water from each required day tank.	92 days
SR 3.8.1.6	Verify each required fuel oil transfer pump operates to transfer fuel oil from the storage tank to the day tank.	92 days
SR 3.8.1.7	<p>-----NOTE-----                      All EDG starts may be preceded by an engine prelube period.                      -----</p> <p>Verify each required EDG starts from standby condition and achieves in</p> <p>a. In <math>\leq 10</math> seconds, voltage <math>\geq 3960</math> V and frequency <math>\geq 59.5</math> Hz; and</p> <p>b. Steady state voltage <math>\geq 3740</math> V and <math>\leq 4580</math> V, and frequency <math>\geq 59.5</math> Hz and <math>\leq 60.5</math> Hz.</p>	184 days
SR 3.8.1.8	<p>-----NOTES-----</p> <p>1. This Surveillance is only applicable to Unit 1.</p> <p>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 unit is maintained or enhanced.</p> <p>-----</p> <p>Verify manual transfer of AC power sources from the normal offsite circuit to the alternate required offsite circuit.</p>	18 months

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SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
<p>SR 3.8.1.9 -----NOTES-----</p> <ol style="list-style-type: none"> <li>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 unit is maintained or enhanced.</li> <li>2. If performed with EDG synchronized with offsite power, it shall be performed at a power factor <math>\leq 0.9</math>. 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.</li> </ol> <p>-----</p> <p>Verify each required EDG rejects a load greater than or equal to its associated single largest post-accident load, and:</p> <ol style="list-style-type: none"> <li>a. Following load rejection, the frequency is <math>\leq 66</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 59.5</math> Hz and <math>\leq 60.5</math> Hz.</li> </ol>	<p>RAI 3.8.1-02 R3</p> <p>18 months</p>

SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
<p>SR 3.8.1.12 -----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 unit is maintained or enhanced.            -----            Verify each required EDG's automatic trips are bypassed on actual or simulated automatic start signals except:</p> <ul style="list-style-type: none"> <li>a. Engine overspeed; and</li> <li>b. Generator differential current.</li> </ul>	<p>18 months</p>

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SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
<p>SR 3.8.1.13 -----NOTES-----</p> <ol style="list-style-type: none"> <li>1. Momentary transients outside the load and power factor ranges do not invalidate this test.</li> <li>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 unit is maintained or enhanced.</li> <li>3. If performed with EDG synchronized with offsite power, it shall be performed at a power factor <math>\leq 0.9</math>. 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.</li> </ol> <p>-----</p> <p>Verify each required EDG 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 2900</math> kW and <math>\leq 3000</math> kW; and</li> <li>b. For the remaining hours of the test loaded <math>\geq 2500</math> kW and <math>\leq 2600</math> kW.</li> </ol>	<p style="text-align: right;">RA1 3.8.1-02 R3</p> <p>18 months</p>

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SURVEILLANCE  
REQUIREMENTS

SR 3.8.1.6 (continued)

intact, the fuel delivery piping is not obstructed, and the controls and control systems for fuel transfer systems are OPERABLE.

The 92 day Frequency corresponds to the testing requirements of pumps as contained in the ASME Code, Section XI (Ref. 10). The fuel oil transfer system is such that the pumps must be started manually in order to maintain an adequate volume of fuel in the day tank during or following EDG testing, and a 92 day Frequency is appropriate.

SR 3.8.1.7

See SR 3.8.1.2.

SR 3.8.1.8

Transfer of each 4.16 kV ESF bus power supply from the normal offsite circuit to the alternate offsite circuit demonstrates the OPERABILITY of the alternate circuit distribution network to power the shutdown loads for Unit 1 only. The 18 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 month Frequency. Therefore, the Frequency was concluded to be acceptable from a reliability standpoint.

This SR is modified by two Notes. Note 1 states that the SR is applicable to Unit 1 only. The SR is not applicable to Unit 2 because it does not have an alternate offsite feed for the emergency buses. The reason for Note 2 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 unit  
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SURVEILLANCE  
REQUIREMENTS

SR 3.8.1.8 (continued)

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 unit shutdown and startup to determine that unit 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.

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SR 3.8.1.9

Each EDG 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 EDG load response characteristics and capability to reject the largest single load without exceeding predetermined voltage and frequency and while maintaining a specified margin to the overspeed trip. For this unit, the single load for each EDG is 610 kW. This Surveillance may be accomplished by:

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

As required by IEEE-308 (Ref. 11), 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.

The time, voltage, and frequency tolerances specified in this SR are derived from Safety Guide 9 (Ref. 3) recommendations for response during load sequence intervals.  
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SURVEILLANCE  
REQUIREMENTS

SR 3.8.1.9 (continued)

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 EDG. 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 following load rejection. The 18 month Frequency is consistent with the recommendation of Regulatory Guide 1.108 (Ref. 8).

This SR is modified by two Notes. The reason for Note 1 is that during operation with the reactor critical, performance of the 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 unit 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 unit shutdown and startup to determine that unit 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. Note 2 ensures that the EDG 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  $\leq 0.9$ . This power factor is representative of the actual inductive loading an EDG 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  $\leq 0.9$ . These conditions occur when grid voltage is high, and the additional field excitation needed to get the power factor to  $\leq 0.9$  results in voltages on the emergency busses that

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3.8.1-02  
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SURVEILLANCE  
REQUIREMENTS

SR 3.8.1.11 (continued)

modification, deficient or incomplete surveillance testing, and other unanticipated OPERABILITY concerns) provided an assessment determines unit 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 the unit shutdown and startup to determine that unit 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 this assessment.

SR 3.8.1.12

This Surveillance demonstrates that EDG noncritical protective functions (e.g., high jacket water temperature) are bypassed on actual or simulated signals from an ESF actuation, a loss of voltage, or a loss of voltage signal concurrent with an ESF actuation test signal, and critical protective functions (engine overspeed and generator differential current) trip the EDG to avert substantial damage to the EDG unit. The noncritical trips are bypassed during DBAs and provide an alarm on an abnormal engine condition. This alarm provides the operator with sufficient time to react appropriately. The EDG 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 EDG.

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.

This SR is modified by a Note. The reason for the Note is that performing the Surveillance would remove a required EDG from service. This restriction from normally performing the  
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SURVEILLANCE  
REQUIREMENTS

SR 3.8.1.12 (continued)

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 unit 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 unit shutdown and startup to determine that unit 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.

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SR 3.8.1.13

Regulatory Guide 1.108 (Ref. 8), paragraph 2.a.(3), provides an acceptable method to demonstrate once per 18 months that the EDGs can start and run continuously at full load capability for an interval of not less than 24 hours,  $\geq 2$  hours of which is at a load equivalent from 105% to 110% of the continuous duty rating and the remainder of the time at a load equivalent from 90% to 100% of the continuous duty rating of the EDG. The EDG 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.

The load band is provided to avoid routine overloading of the EDG. Routine overloading may result in more frequent teardown inspections in accordance with vendor recommendations in order to maintain EDG OPERABILITY.

The 18 month Frequency is consistent with the recommendations of Regulatory Guide 1.108 (Ref. 8), 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.

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SURVEILLANCE  
REQUIREMENTS

SR 3.8.1.13 (continued)

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. 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 unit 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 unit shutdown and startup to determine that unit 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. Note 3 ensures that the EDG 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  $\leq 0.9$ . This power factor is representative of the actual inductive loading an EDG 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  $\leq 0.9$ . These conditions occur when grid voltage is high, and the additional field excitation needed to get the power factor to  $\leq 0.9$  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 EDG 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

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CTS SURVEILLANCE REQUIREMENTS (continued)

4.8.1.1.2  
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SURVEILLANCE	FREQUENCY
<p>(E) -----NOTE----- All DG starts may be preceded by an engine pre-lube period.</p> <p>(E) Verify each DG starts from standby condition and achieves <del>(in 10 seconds)</del> <u>required</u> 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. <u>59.5</u>                      <u>60.5</u></p>	<p>184 days</p> <p><u>at</u> <math>\leq 10</math> seconds, <u>at</u> <math>\geq 3960</math> V and frequency <math>\geq 59.5</math> Hz; and <u>at</u> steady state</p>

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(12) (2)  
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UNIT 1  
4.8.1.1.1  
b

<p>SR 3.8.1.8</p> <p>(2) This Surveillance shall not be performed in MODE 1 or 2. <u>However, credit may be taken for unplanned events that satisfy this SR.</u></p> <p>(3) <u>Normally</u></p>	<p>TSTF 8</p>
<p>Verify <del>(automatic and)</del> manual transfer of AC power sources from the normal offsite circuit to <u>each</u> alternate <u>(required)</u> offsite circuit: <u>The</u></p>	<p>(18 months)</p>

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(12) TSTF 283  
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1. This Surveillance is only applicable to Unit 1.

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**ITS 3.8.1 - AC SOURCES - OPERATING**

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However, this Surveillance may be performed to reestablish OPERABILITY provided an assessment determines the safety of the unit is maintained or enhanced.

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CTS

SURVEILLANCE REQUIREMENTS (continued)

1.8.1.1.2  
d.1

SURVEILLANCE	FREQUENCY
<p>SR 3.8.1.9</p> <p>NOTES</p> <p>1. This Surveillance shall not be performed in MODE 1 or 2. <sup>Normally</sup> However, credit may be taken for unplanned events that satisfy this SR.</p> <p>2. If performed with the DG synchronized with offsite power, it shall be performed at a power factor <math>\leq 0.90</math>.</p> <p>Verify each DG rejects a load greater than or equal to its associated single largest post-accident load, and:</p> <p>a. Following load rejection, the frequency is <math>\leq 66</math> Hz; <math>66</math></p> <p>b. Within <math>30</math> seconds following load rejection, the voltage is <math>\geq 3740</math> V and <math>\leq 4580</math> V; and</p> <p>c. Within <math>30</math> seconds following load rejection, the frequency is <math>\geq 59.5</math> Hz and <math>\leq 60.5</math> Hz.</p>	<p>[18 months]</p> <p>TSTF 283</p> <p>TSTF 276</p>
<p>SR 3.8.1.10</p> <p>NOTE</p> <p>This Surveillance shall not be performed in MODE 1 or 2. However, credit may be taken for unplanned events that satisfy this SR.</p> <p>Verify each DG operating at a power factor <math>\leq 0.9</math> does not trip and voltage is maintained <math>\leq 5000</math> V during and following a load rejection of <math>\geq 4500</math> kW and <math>\leq 5000</math> kW.</p>	<p>[18 months]</p>

TSTF #

①	RAI 3.8.1-
②	02
①	R3
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①	RAI 3.8.1-
②	02
①	R3
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(continued)

**ITS 3.8.1 - AC SOURCES - OPERATING**

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**INSERT 1**

However, this Surveillance may be performed to reestablish OPERABILITY provided an assessment determines the safety of the unit is maintained or enhanced.

RAI  
3.8.1-  
02  
R3

**INSERT 2**

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.

CTS SURVEILLANCE REQUIREMENTS (continued)

4.8.1.1.2  
d.5.c)

SURVEILLANCE	FREQUENCY
<p>SR 3.8.1.13</p> <p><sup>2</sup> NOTE: This Surveillance shall not be performed in MODE 1 or 2. However, credit may be taken for unplanned events that satisfy this SR.</p> <p><sup>1</sup> Verify each DG's automatic trips are bypassed on <sup>E</sup> actual or simulated loss of voltage signal on the emergency bus concurrent with an actual or simulated ESF actuation signal except:</p> <p><sup>1</sup> a. Engine overspeed; and</p> <p>b. Generator differential current</p> <p>c. [Low lube oil pressure;]</p> <p>d. [High crankcase pressure;] and</p> <p>e. [Start failure relay].</p>	<p>&lt;INSERT&gt;</p> <p>18 months</p>

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(continued)

**ITS 3.8.1 - AC SOURCES - OPERATING**

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**INSERT**

However, this Surveillance may be performed to reestablish OPERABILITY provided an assessment determines the safety of the unit is maintained or enhanced.

RAI  
3.8.1-02  
R3

CT5 SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE	FREQUENCY
<p>4.8.1.1.2 d.6</p> <p>SR 3.8.1.1<sup>3</sup> .....NOTES.....</p> <p>1. Momentary transients outside the load and power factor ranges do not invalidate this test.</p> <p>2. This Surveillance shall not be performed in MODE 1 or 2. However, credit may be taken for unplanned events that satisfy this SR.</p> <p>Verify each DG operating at a power factor <math>\leq 0.9</math> operates for <math>\geq 24</math> hours:</p> <p>a. For <math>\geq 20</math> hours loaded <math>\geq 15250</math> kW and <math>\leq 5500</math> kW; and <math>2900</math></p> <p>b. For the remaining hours of the test loaded <math>\geq 4500</math> kW and <math>\leq 5000</math> kW.</p>	<p>← INSERT → TSTF 283</p> <p>← INSERT 2 → TSTF 276</p> <p>18 months</p>
<p>4.8.1.1.2 d.10</p> <p>SR 3.8.1.1<sup>4</sup> .....NOTES.....</p> <p>1. This Surveillance shall be performed within 5 minutes of shutting down the DG after the DG has operated <math>\geq 20</math> hours loaded <math>\geq 4500</math> kW and <math>\leq 5000</math> kW. <i>after operating temperatures have stabilized</i></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 prelude period.</p> <p>Verify each DG starts and achieves <math>\leq 10</math> seconds, voltage <math>\geq 3740</math> V, and <math>\leq 4580</math> V and frequency <math>\geq 58.8</math> Hz and <math>\leq 60.5</math> Hz.</p>	<p>18 months</p> <p>TSTF 163</p> <p>a. In <math>\leq 10</math> seconds, voltage <math>\geq 3960</math> V and frequency <math>\geq 59.5</math> Hz; and</p> <p>b. Steady state</p>

(continued)

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RAI 3.8.1  
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TSTF 8  
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**ITS 3.8.1 - AC SOURCES - OPERATING**

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**INSERT 1**

However, this Surveillance may be performed to reestablish OPERABILITY provided an assessment determines the safety of the unit is maintained or enhanced.

RAI  
3.8.1  
-02 R3

**INSERT 2**

If performed with EDG synchronized with offsite power, it shall be performed at a power factor  $\leq 0.9$ . 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.

**JUSTIFICATION FOR DEVIATIONS**  
**ITS 3.8.1 - AC SOURCES - OPERATING**

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1. The brackets are removed and the proper plant specific information/value is provided.
2. Changes are made (additions, deletions, and/or changes) to the ISTS, which reflect the plant specific nomenclature, number, reference, system description, analysis, or licensing basis description. This change includes the diesel generator (DG) to emergency diesel generator (EDG), automatic load sequencer to sequencing timing relays, plant to unit, and Trains A and B to Trains H and J. R3
3. Editorial change made with the removal of the Reviewer's Note to be consistent with the ISTS Writers Guide.
4. The bracketed requirement ISTS SR 3.8.1.17 is deleted. This is acceptable because the North Anna electrical design does not incorporate an override from an actual or simulated ESF signal of the EDG operating in a test mode. The following requirements are renumbered, where applicable, to reflect this deletion.
5. ISTS SR 3.8.1.8 requires the automatic or manual transfer of the AC power sources from the normal offsite circuit to each alternate offsite circuit every 18 months. North Anna Unit 2 design does not include an alternate circuit from the offsite AC source as tested by SR 3.8.1.8. To perform this testing, H and J emergency buses would be tied electrically together with breaker 25H1. This alignment is not allowed by GDC 17 requirements in MODES 1, 2, 3, and 4. Note 1 modifies ITS SR 3.8.1.8 and states, "The Surveillance is only applicable to Unit 1." Note 2 to the SR specifies MODE restrictions for the performance of the SR. This is acceptable because North Anna Unit 1 does have an alternate offsite circuit and the test can be performed and the test cannot be performed on Unit 2 without jeopardizing electrical independence. RAI  
3.8.1-02  
R3
6. ITS Action C is added to the ISTS and applies when an EDG is inoperable and one or more of the opposite unit's EDG(s) or the Alternate AC (AAC DG) is inoperable. This change is acceptable because it limits the Completion Time for ITS Action C with an inoperable EDG to 72 hours without both opposite unit EDGs and the AAC DG OPERABLE. CTS Action b.2 allows the removal of an EDG for a period up to 14 days provided the opposite unit's EDGs and the AAC DG are OPERABLE. ITS Required Action B.4 sets the Completion Time for an inoperable EDG to 14 days. This is acceptable because ITS Action C provides adequate remedial Required Actions and appropriate associated Completion Times. The 14-day allowance provided by ITS Action B, Required Actions A.3 and B.4 Completion Times are modified to allow 17 days from failure to meet the LCO from the ISTS requirement of 6 days. The ITS Actions following Action C are renumbered to reflect this addition.
7. CTS Surveillance Requirement 4.8.1.1.2.d.10 requires each EDG to be fast started within 5 minutes of shutting down from 2 hours of operation loaded between 2500 and 2600 kW or until the EDG obtains stable operating temperatures. ISTS SR 3.8.1.15 is modified to retain the allowance to operate an EDG until "operating temperatures have stabilized," in the ITS SR 3.8.1.14 Note 1. This change is acceptable because the function of the Note is

**JUSTIFICATION FOR DEVIATIONS**  
**ITS 3.8.1 - AC SOURCES - OPERATING**

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to ensure the EDG is at normal operating conditions before it is shutdown, and restarted within 10-seconds to the required voltage and frequency.

8. ISTS LCO part c, Action F and SR 3.8.1.18 are constructed for a load sequencer that coordinates supplying electrical power for a train of equipment. The assumed type of sequencer operates differently depending on the source of electrical power for the emergency bus (EDG or offsite circuit). Failure of the sequencer would affect all components powered by the emergency electrical bus. Therefore, a sequencer is typically allowed to be inoperable for only 12 hours, the same Completion Time allowed for a loss of an EDG concurrent with the loss of an offsite circuit. The North Anna electrical design does not utilize this type of device, but uses individual sequencing timing relays for each component to be loaded onto an emergency bus. The components served by the sequencing timing relays are not dependent on the source of power supplying the emergency bus. The ITS is modified to reflect the North Anna design. An inoperable sequencing timing relay requires entry into the Condition K. ITS Required Action K.1 requires the affected system, subsystem, or component to be declared inoperable immediately, while Required Action K.2.1 requires the component be placed in a condition that inhibits the automatic loading to the emergency bus and K.2.2 allows the associated EDG to be declared inoperable. These Required Actions are appropriate to ensure the electrical bus is protected and degraded safety functions are tracked. ITS SR 3.8.1.16 verifies each sequenced load is within design tolerance for each sequencing timing relay every 18 months. This change is acceptable because a sequencing timing relay can affect an individual function and the emergency bus.
  
9. ISTS SR 3.8.1.10 requires verification every 18 months that each EDG will not trip and will maintain voltage within a maximum limit on a full load rejection test. A full load rejection test is not required by the CTS requirements, and is not included in the ITS requirements. Each EDG will continue to perform the largest post-accident load rejection test every 18 months. This change is acceptable because the North Anna electrical design utilizes a higher current trip on the EDG output breaker than from individual loads. The SRs following ISTS SR 3.8.1.10 are re-numbered to reflect this deletion.
  
10. Not used.
  
11. Not used.
  
12. CTS electrical source requirements for Service Water (SW) pumps, Main Control Room/Emergency Switchgear Room fans, and Auxiliary Building central exhaust fans (shared components) are incorporated into the ITS 3.8.1 requirements. The electrical requirements for a unit's shared functions may include EDG(s) and offsite circuit(s) of the other unit. CTS 3.7.1.4 requirements for shared components require both normal and emergency electrical power sources to be OPERABLE for the shared components to be considered OPERABLE. The translation of these requirement into the ITS format results in the modification of the ISTS LCO 3.8.1, Actions D, E, F, and J to require the all electrical sources needed to support the unit's required safety functions. The ITS

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3.8.1  
-02  
R3

**JUSTIFICATION FOR DEVIATIONS**  
**ITS 3.8.1 - AC SOURCES - OPERATING**

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electrical requirements for a unit are constructed to require all AC Sources, including the other unit's electrical sources, to be OPERABLE to support the required safety functions. With the addition of new Actions, the subsequent Actions are re-lettered. The word "required" is added to SRs 3.8.1.1 to 3.8.1.10 and SRs 3.8.1.12 to 3.8.1.16 to ensure the OPERABILITY of the other unit's AC sources for this unit for the support of the shared components. This change is acceptable because the CTS requirements are maintained in the ITS format.

13. ISTS SR 3.8.1.5 is added to the CTS. This SR requires a check for and removal of accumulated water from the EDG's day tank. The Frequency is 92 days. This Frequency is acceptable because it is the same as the frequency used to detect water in the underground fuel storage tanks (ITS SR 3.8.3.4). The underground fuel oil tanks supply fuel oil to the EDG day tanks. The 92-day Frequency has shown to be adequate for monitoring for water in the diesel fuel oil storage tanks.

14. Not used.

15. Not used.

RAI  
3.8.1  
-02

BASES

SURVEILLANCE  
REQUIREMENTS

SR 3.8.1.6 (continued)

Section XI (Ref. 10) <sup>(E)</sup> however, <sup>(E)</sup> the <sup>(E)</sup> design of fuel transfer systems is such that pumps ~~operate automatically or~~ must be started manually in order to maintain an adequate volume of fuel oil in the day ~~(and engine mounted)~~ tanks during or following DG testing. ~~In such a case, a 30 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 <sup>(E)</sup> and <sup>(E)</sup>

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(2)

SR 3.8.1.7

See SR 3.8.1.2.

SR 3.8.1.8

Transfer of each ~~4.16 kV ESF bus~~ power supply from the normal offsite circuit to the alternate offsite circuit demonstrates the OPERABILITY of the alternate circuit distribution network to power the shutdown loads. The ~~18-month~~ Frequency of the Surveillance is based on engineering judgment, taking into consideration the 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.

for Unit 1 only (5)

(2)

<INSERT> (5)

This SR is modified by <sup>(E)</sup> Note. <sup>(E)</sup> The reason for <sup>(E)</sup> the <sup>(E)</sup> 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. <sup>(E)</sup> Credit may be taken for unplanned events that satisfy this SR.

RAI 3.8.1 02 R3

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<INSERT 2> TSTF 283

RAI 3.8.1 02 R3

(1)

SR 3.8.1.9

Each <sup>(E)</sup> 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

(continued)

Rev 3

## ITS 3.8.1 - AC SOURCES - OPERATING

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### INSERT 1

Note 1 states that the SR is applicable to Unit 1 only. The SR is not applicable to Unit 2 because it does not have an alternate offsite feed for the emergency buses.

### INSERT 2

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 unit 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 unit shutdown and startup to determine that unit 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.

RA1  
3.8.1-02  
R3

BASES

SURVEILLANCE  
REQUIREMENTS

SR 3.8.1.9 (continued)

overspeed, which, if excessive, might result in a trip of the engine. This Surveillance demonstrates the ADG load response characteristics and capability to reject the largest single load without exceeding predetermined voltage and frequency and while maintaining a specified margin to the overspeed trip. For this unit, the single load for each ADG and its horsepower rating is as follows: This Surveillance may be accomplished by:

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

As required by IEEE-308 (Ref. 12), 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.

The time, voltage, and frequency tolerances specified in this SR are derived from Safety 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 ADG. 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 following load rejection. The 18 month Frequency is consistent with the recommendation of Regulatory Guide 1.108 (Ref. 9). 8

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.

~~Credit may be taken for unplanned events that satisfy this SR. In order to ensure that the ADG is tested under load~~

~~(INSERT 1) TSTF 283~~ RAI  
TSTF-8 3.8.1  
~~(INSERT 2) TSTF 276~~ -02  
R3

(continued)

**INSERT 1**

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 unit 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 unit shutdown and startup to determine that unit 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.

RA1  
3.8.1-02  
R3

**INSERT 2**

Note 2 ensures that the EDG 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  $\leq 0.9$ . This power factor is representative of the actual inductive loading an EDG would see under design basis accident conditions. Under certain conditions, however, the Note allows the surveillance to be conducted at a power factor other than  $\leq 0.9$ . These conditions occur when grid voltage is high, and the additional field excitation needed to get the power factor to  $\leq 0.9$  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 EDG 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 EDG. In such cases, the power factor shall be maintained as close as practicable to 0.9 without exceeding the EDG excitation limits.

BASES

SURVEILLANCE  
REQUIREMENTS

SR 3.8.1.12<sup>①</sup> (continued) | ⑤

This SR is modified by two Notes. The reason for Note 1 is to minimize wear and tear on the DGs during testing. For the purpose of this testing, the DGs 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. Credit may be taken for unplanned events that satisfy this SR.

TSTF-8

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TSTF 283

TSTF 8

SR 3.8.1.13<sup>②</sup> | ⑤

This Surveillance demonstrates that DG noncritical protective functions (e.g., high jacket water temperature) are bypassed on a loss of voltage signal concurrent with an ~~ESF actuation test signal~~, and critical protective functions (engine overspeed, generator differential current, low lube oil pressure, high crankcase pressure, and start failure relay) trip the DG to avert substantial damage to the DG unit. The noncritical trips are bypassed during DBAs and provide an alarm on an abnormal engine condition. This alarm provides the operator with sufficient time to react appropriately. The DG availability to mitigate the DBA is more critical than protecting the engine against minor problems that are not immediately detrimental to emergency operation of the DG.

The 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.

The SR is modified by a Note. The reason for the Note is that performing the Surveillance would remove a required DG from service. Credit may be taken for unplanned events that satisfy this SR.

(continued)

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RAI 3.8.1-02

TSTF 283

TSTF 8

INSERT 3

Rev 3

## ITS 3.8.1 - AC SOURCES - OPERATING

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### INSERT 1

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 unit 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 unit shutdown and startup to determine that unit 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 this assessment.

### INSERT 2

on actual or simulated signals from an ESF actuation, a loss of voltage, or a loss of voltage signal concurrent with an ESF actuation

### INSERT 3

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 unit 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 unit shutdown and startup to determine that unit 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.

RAI  
3.8.1-  
02  
R3

BASES

SURVEILLANCE  
REQUIREMENTS

SR 3.8.1.14<sup>(3)</sup> (continued)

The ~~(18-month)~~<sup>(3)</sup> Frequency is consistent with the recommendations of Regulatory Guide 1.108 (Ref. ~~8~~<sup>8</sup>) 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.

This Surveillance is modified by ~~two~~<sup>three</sup> 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. ~~A Credit may be taken for unplanned events that satisfy this SR.~~ Credit may

RAI 3.8.1-02 R3  
TSTF 383  
INSERT 1  
TSTF 276  
INSERT 2  
TSTF 8

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SR 3.8.1.15<sup>(4)</sup>

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 ~~(100)~~<sup>(100)</sup> seconds. The ~~(100)~~<sup>(100)</sup> second time is derived from the requirements of the accident analysis to respond to a design basis large break LOCA. The ~~(18 month)~~<sup>(18 month)</sup> Frequency is consistent with the recommendations of Regulatory Guide 1.108 (Ref. ~~9~~<sup>9</sup>) paragraph 2.a.(5).

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 ~~EDG~~<sup>EDG</sup>. Routine overloads may result in more frequent teardown inspections in accordance with vendor recommendations in order to maintain ~~EDG OPERABILITY~~<sup>EDG OPERABILITY</sup>. The requirement that the diesel has operated for at least ~~(20)~~<sup>(20)</sup> 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 ~~EDG~~<sup>EDG</sup> starts to be preceded by an engine prelube period to minimize wear and tear on the diesel during testing.

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(continued)

**INSERT 1**

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 unit 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 unit shutdown and startup to determine that unit 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.

RAI  
3.8.1-02  
R3

**INSERT 2**

Note 3 ensures that the EDG 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  $\leq 0.9$ . This power factor is representative of the actual inductive loading an EDG 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  $\leq 0.9$ . These conditions occur when grid voltage is high, and the additional field excitation needed to get the power factor to  $\leq 0.9$  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 EDG 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 EDG. In such cases, the power factor shall be maintained as close as practicable to 0.9 without exceeding the EDG excitation limits.

**INSERT 3**

, or after operating temperatures reach a stabilized state,

A.11

ITS 3.8.1  
12-10-98

ITS

ELECTRICAL POWER SYSTEMS  
SURVEILLANCE REQUIREMENTS

4.8.1.1.1 Each of the above required physically independent circuits between the offsite transmission network and the onsite Class 1E distribution system shall be:

SR  
3.8.1.1  
3.8.1.1.1

- a. Determined OPERABLE at least once per 7 days by verifying correct breaker alignment indicating power availability.
- b. Demonstrated OPERABLE at least once per 18 months during shutdown by manually transferring the onsite Class 1E power supply from the normal circuit to the alternate circuit.

A.17  
L.10  
RAI  
3.8.1-02

4.8.1.1.2 Each emergency diesel generator (EDG) shall be demonstrated OPERABLE every 31 days

L.5

a. In accordance with the frequency specified in Table 4.8.2 on a STAGGERED TEST BASIS by:

SR  
3.8.1.4

1. Verifying the fuel level in the day tank. Contains 450 gallons <FROM LCO 3.8.1.1.6.1>

2. Verifying the fuel level in the fuel storage tank. <SEE ITS 3.8.3>

SR  
3.8.1.6

3. Verifying the fuel transfer pump can be started and transfers fuel from the storage system to the day tank. EVERY 92 days

L.16  
A.10

Insert Proposed Notes to SR 3.8.1.2

4. Verifying the EDG can start and gradually accelerate to a steady state voltage and frequency of  $4160 \pm 420$  volts and  $60 \pm 0.5$  Hz. Subsequently, verifying the generator is synchronized, gradually loaded\*\* to an indicated 2500-2600 kw and operates for at least 60 minutes. INSERT Proposed Note to SR 3.8.1.3

A.11  
M.6  
L.A.2

SR  
3.8.1.2  
SR  
3.8.1.3

5. Verifying the EDG is aligned to provide standby power to the associated emergency busses.

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 D975-74 when checked for viscosity, water and sediment. <SEE ITS 3.8.3>

SR  
3.8.1.5

INSERT PROPOSED SR 3.8.1.5

M.2

\*\* This test shall be conducted in accordance with the manufacturer's recommendations regarding engine prelube and warmup procedures, and as applicable regarding loading recommendations.

A.10

\*\*\* This band is meant as guidance to avoid routine overloading of the engine. Loads in excess of this band for special testing under direct monitoring of the manufacturer or momentary variations due to changing bus loads shall not invalidate the test.

A.11

A.1

ELECTRICAL POWER SYSTEMS  
SURVEILLANCE REQUIREMENTS

ITS

RAI 3.8.1-04  
REV 3

4.8.1.1.2 (Continued)

SR  
3.8.1.7

~~INSERT PROPOSED NOTE TO SR 3.8.1.7~~

c. At least once per 184 days, the EDG shall be started in less than or equal to 10 seconds after the start signal and achieve voltage greater than or equal to 3960 volts and frequency greater than or equal to 59.5 Hz. The generator steady state voltage and frequency shall be  $4160 \pm 420$  volts and  $60 \pm 0.5$  Hz. The EDG shall be manually synchronized to its appropriate emergency bus, gradually loaded\*\* to an indicated 2500 to 2600 kw\*\*\*, and operated for at least 60 minutes. The EDG shall be started for this test by using one of the following signals on a rotating test basis:

L.19

A.13

- a) Simulated loss of offsite power by itself.
- b) Simulated loss of offsite power in conjunction with an ESF actuation test signal.
- c) An ESF actuation test signal by itself.

L.17

This test, if it is performed so it coincides with the testing required by Surveillance Requirement 4.8.1.1.2.a.4, may also serve to concurrently meet those requirements as well.

RAI 3.8.1-02  
REV 3

L.10  
M.7

d. At least once per 18 months during shutdown by:

SR  
3.8.1.9

Insert proposed Notes

1. Verifying, on rejection of a load of greater than or equal to 610 kw the frequency remains less than or equal to 66 Hz, and within 3 seconds, the voltage and frequency are  $4160 \pm 420$  volts and  $60 \pm 0.5$  Hz.
2. Verifying that the load sequencing timers are OPERABLE with times within the tolerances shown in Table 4.8-1.

single largest post ACCIDENT LOAD

LA.9

L.15

A.14

LA.4

design

SR  
3.8.1.16

RAI 3.8.1-04  
REV 3

\*\* This test shall be conducted in accordance with the manufacturer's recommendations regarding engine pre-lube and warm-up procedures, and as applicable regarding loading recommendations.

L.19

\*\*\* This band is meant as guidance to avoid routine overloading of the engine. Loads in excess of this band for special testing under direct monitoring of the manufacturer or momentary variations due to changing bus loads shall not invalidate the test.

A.13

A.1

ELECTRICAL POWER SYSTEMS  
SURVEILLANCE REQUIREMENTS

RAI 3.8.1-04  
REV 3  
L.15  
L.19  
A.14

ITS  
SR  
3.8.1.10

4.8.1.1.2 (Continued)

- 3. ~~INSERT PROPOSED NOTES~~ Verify on an actuator (L.6)
  - a. Verifying de-energization of the emergency busses and load shedding from the emergency busses.
  - b. Verifying the EDG starts ~~on~~ on the auto-start signal, energizes the emergency busses with permanently connected loads within 10 seconds, energizes the auto-connected shutdown loads through the sequencing timers and operates for greater than or equal to 5 minutes while its generator is loaded with the shutdown loads. After energization of these loads, the steady state voltage and frequency shall be maintained at 4160 ± 420 volts and 60 ± 0.5 Hz. (L.15)
    - RAI 3.8.1-04  
REV 3  
L.19
- 4. ~~INSERT PROPOSED NOTES~~ Verifying that on an ESF actuation ~~test~~ signal (without loss of offsite power) the EDG starts ~~on~~ on the auto-start signal and achieves voltage greater than or equal to 3960 volts and frequency greater than or equal to 59.5 Hz within 10 seconds and operates on standby for greater than or equal to 5 minutes with a steady state voltage of 4160 ± 420 volts and a steady state frequency of 60 ± 0.5 Hz. (L.15)
  - actuator simulated (L.6)
  - M.4
- 5. ~~INSERT PROPOSED NOTES~~ Verify an actuator (L.15)
  - a. Verifying de-energization of the emergency busses and load shedding from the emergency busses.
  - b. Verifying the EDG starts ~~on~~ on the auto-start signal, energizes the emergency busses with permanently connected loads within 10 seconds, energizes the auto-connected emergency (accident) loads through the sequencing timers and operates for greater than or equal to 5 minutes and maintains the steady state voltage and frequency at 4160 ± 420 volts and 60 ± 0.5 Hz. (L.6)
    - RAI 3.8.1-04  
REV 3  
L.19
    - RAI 3.8.1-02  
REV 3  
L.6
  - c. Verifying that all EDG trips, except engine overspeed, generator differential and breaker overcurrent are automatically bypassed upon loss of voltage on the emergency bus and/or a safety injection actuation signal. (L.10)
    - actual or simulated automatic start (L.10)
    - A.20
    - LA.1
- 6. ~~INSERT PROPOSED NOTES~~ (A.12) (M.8) Verifying the EDG operates ~~for~~ for at least 24 hours. During the first 2 hours of this test, the EDG shall be loaded to an indicated target value of 2950 kw (between 2900-3000 kw) and during the remaining 22 hours of this test, the EDG shall be loaded to an indicated 2500-2600 kw. (A.15)
  - RAI 3.8.1-19  
REV 3  
L.10
  - Rev 3 RAI 3.8.1-02

SR  
3.8.1.11

SR  
3.8.1.17

SR  
3.8.1.12

SR  
3.8.1.13

\*\* This test shall be conducted in accordance with the manufacturer's recommendations regarding engine prelude and warmup procedures, and as applicable regarding loading recommendations. (L.19)

\*\*\* This band is meant as guidance to avoid routine overloading of the engine. Loads in excess of this band for special testing under direct monitoring of the manufacturer or momentary variations due to changing bus loads shall not invalidate the test. (A.15)

A.1

ITS 3.8.1  
12-10-98

ELECTRICAL POWER SYSTEMS  
SURVEILLANCE REQUIREMENTS

ITS

4.8.1.1.2 (Continued)

SR  
3.8.1.15

7. Verifying that the auto-connected loads to each EDG do not exceed the 2000 hour rating of 3000 kw.

L.13

8. Verifying the EDG's capability to: INSERT PROPOSED NOTE

L.15 A.14

a) Synchronize with the offsite power source while the EDG is loaded with its emergency loads upon a simulated restoration of offsite power,

b) Transfer its loads to the offsite power source, and

c) Proceed through its shutdown sequence Returns to ready-to-load operation

M.3

9. Verifying that the following EDG lockout features prevent EDG starting only when required:

LA.6

a) Remote Local Selection Switch

b) Emergency Stop Switch

INSERT PROPOSED NOTES

L.19  
A.16

SR  
3.8.1.14

10. Verifying the EDG's hot restart capability by:

L.19  
A.16

a) Operating the EDG loaded to an indicated 2500 to 2600 kw\*\* for 2 hours or until operating temperatures have stabilized, and

b) Within 5 minutes of shutdown verify the EDG can be started\*\* in less than or equal to 10 seconds of the start signal with voltage greater than or equal to 3960 volts and frequency greater than or equal to 59.5 Hz. The generator steady state voltage and frequency shall be 4160 ± 420 volts and 60 ± 0.5 Hz.

RAI  
3.8.1-04  
REV 3

SR  
3.8.1.18

e. At least once per 10 years or after any modifications which could affect EDG interdependence by starting both EDGs simultaneously during shutdown, and verifying that both EDGs start in less than or equal to 10 seconds of the start signal and achieve a voltage of greater than or equal to 3960 volts and a frequency of greater than or equal to 59.5 Hz. ↑

L.8

L.19

L.18

M.5

Insert steady state limit requirements

f. At least once per 24 months during any mode of operation, by subjecting each EDG to a preventive maintenance inspection in accordance with maintenance procedures appropriate for diesels used for this class of standby service.

LA.7

REV 3 RAI  
3.8.1-02

\*\* This test shall be conducted in accordance with the manufacturer's recommendations regarding engine prelube and warmup procedures, and as applicable regarding loading recommendations.

L.19

\*\*\* This band is meant as guidance to avoid routine overloading of the engine. Loads in excess of this band for special testing under direct monitoring of the manufacturer or momentary variations due to changing bus loads shall not invalidate the test.

A.16

A.11

12-10-98

ELECTRICAL POWER SYSTEMS

ITS SURVEILLANCE REQUIREMENTS

4.8.1.1.2 (Continued)

The EDG shall be manually synchronized to its appropriate emergency bus, gradually loaded\*\* to an indicated 2500 to 2600 kw\*\*\* and operated for at least 60 minutes. The EDG shall be started for this test by using one of the following signals on a rotating test basis:

A.13

- a) Simulated loss of offsite power by itself.
- b) Simulated loss of offsite power in conjunction with an ESF actuation test signal.
- c) An ESF actuation test signal by itself.

L.17

This test, if it is performed so it coincides with the testing required by Surveillance Requirement 4.8.1.1.2.a.4, may also serve to concurrently meet those requirements as well

RAI  
Rev 3 3.8.1  
02

L.10  
M.7

d. At least once per 18 months during shutdown by:

single largest Post Accident Load

LA.9

1. ~~VERIFYING~~ ~~ON REJECTION~~ OF A LOAD OF GREATER THAN OR EQUAL TO 610 KW, THE FREQUENCY REMAINS LESS THAN OR EQUAL TO 66 HZ, AND WITHIN 3 SECONDS, THE VOLTAGE AND FREQUENCY ARE 4160 ± 420 VOLTS AND 60 ± 0.5 HZ.

L.15 A.14

2. ~~VERIFYING~~ THAT THE LOAD SEQUENCING TIMERS ARE OPERABLE WITH TIMES WITHIN THE TOLERANCES SHOWN IN TABLE 4.8-1

LA.4

3. ~~VERIFYING~~ A LOSS OF OFFSITE POWER BY ITSELF, AND; ~~VERIFYING~~ ~~THE~~ ~~EDG~~ ~~STARTS~~ ~~ON~~ ~~THE~~ ~~AUTO-START~~ ~~SIGNAL~~, ENERGIZES THE EMERGENCY BUSES WITH PERMANENTLY CONNECTED LOADS WITHIN 10 SECONDS, ENERGIZES THE AUTO-CONNECTED SHUTDOWN LOADS THROUGH THE SEQUENCING TIMERS AND OPERATES FOR GREATER THAN OR EQUAL TO 5 MINUTES WHILE ITS GENERATOR IS LOADED WITH THE SHUTDOWN LOADS. AFTER ENERGIZATION OF THESE LOADS, THE STEADY STATE VOLTAGE AND FREQUENCY SHALL BE MAINTAINED AT 4160 ± 420 VOLTS AND 60 ± 0.5 HZ.

L.15 L.19  
A.14

a) VERIFYING DE-ENERGIZATION OF THE EMERGENCY BUSES AND LOAD SHEDDING FROM THE EMERGENCY BUSES ~~ON~~ ~~THE~~ ~~AUTO-START~~ ~~SIGNAL~~ ~~AND~~ ~~OPERATES~~ ~~FOR~~ ~~GREATER~~ ~~THAN~~ ~~OR~~ ~~EQUAL~~ ~~TO~~ ~~5~~ ~~MINUTES~~ ~~WHILE~~ ~~ITS~~ ~~GENERATOR~~ ~~IS~~ ~~LOADED~~ ~~WITH~~ ~~THE~~ ~~SHUTDOWN~~ ~~LOADS~~. AFTER ENERGIZATION OF THESE LOADS, THE STEADY STATE VOLTAGE AND FREQUENCY SHALL BE MAINTAINED AT 4160 ± 420 VOLTS AND 60 ± 0.5 HZ.

L.6

b) VERIFYING THE EDG STARTS ~~ON~~ ~~THE~~ ~~AUTO-START~~ ~~SIGNAL~~, ENERGIZES THE EMERGENCY BUSES WITH PERMANENTLY CONNECTED LOADS WITHIN 10 SECONDS, ENERGIZES THE AUTO-CONNECTED SHUTDOWN LOADS THROUGH THE SEQUENCING TIMERS AND OPERATES FOR GREATER THAN OR EQUAL TO 5 MINUTES WHILE ITS GENERATOR IS LOADED WITH THE SHUTDOWN LOADS. AFTER ENERGIZATION OF THESE LOADS, THE STEADY STATE VOLTAGE AND FREQUENCY SHALL BE MAINTAINED AT 4160 ± 420 VOLTS AND 60 ± 0.5 HZ.

L.19

RAI  
3.8.1-04  
REV 3

\*\* This test shall be conducted in accordance with the manufacturer's recommendations regarding engine prelude and warmup procedures, and as applicable regarding loading recommendations.

L.19

\*\*\* This band is meant as guidance to avoid routine overloading of the engine. Loads in excess of this band for special testing under direct monitoring of the manufacturer or momentary variations due to changing bus loads shall not invalidate the test.

A.15

JR  
3.8.1.9

SR  
3.8.1.16

SR  
3.8.1.10

A.1

ELECTRICAL POWER SYSTEMS  
SURVEILLANCE REQUIREMENTS

RAI 3.8.1-04  
REV 3

L.9  
L.15  
L.19

L.6

L.19

INSERT 5 parts  
I and E

M.4

A.14  
L.15  
L.19

L.6

L.19

RAI 3.8.1-04  
REV 3

RAI 3.8.1-02  
REV 3

L.10

A.18

A.20

RAI 3.8.1-14  
REV 3

L.6

A.15

L.10 M.8

L.19

A.15

L.13

L.15

A.14

RAI 3.8.1-04  
REV 3

M.3

L.19

A.15

4.8.1.1.2 (Continued)

SR  
3.8.1.11

4. Verifying that on an ESF actuation ~~(test)~~ <sup>ACTUAL or SIMULATED</sup> signal (without loss of offsite power) the EDG starts ~~(\*\*)~~ on the auto-start signal and achieves voltage greater than or equal to 3960 volts and frequency greater than or equal to 59.5 Hz within 10 seconds and operates on standby for greater than or equal to 5 minutes with a steady state voltage of  $4160 \pm 420$  volts and a steady state frequency of  $60 \pm 0.5$  Hz.

SR  
3.8.1.17

5. Simulating a loss of offsite power in conjunction with an ESF actuation test signal, and <sup>Verify an actual or</sup>  
a) Verifying de-energization of the emergency busses and load shedding from the emergency busses.  
b) Verifying the EDG starts ~~(\*)~~ on the auto-start signal, energizes the emergency busses with permanently connected loads within 10 seconds, energizes the auto-connected emergency (accident) loads through the sequencing timers and operates for greater than or equal to 5 minutes and maintains the steady state voltage and frequency at  $4160 \pm 420$  volts and  $60 \pm 0.5$  Hz.

SR  
3.8.1.12

c) Verifying that all EDG trips, except engine overspeed, generator differential and ~~breaker overcurrent~~ are automatically bypassed upon loss of voltage on the emergency bus and/or a safety injection actuation signal.

SR  
3.8.1.13

6. Verifying the EDG operate ~~(\*)~~ for at least 24 hours. During the first 2 hours of this test, the EDG shall be loaded to an indicated target value of 2950 kw (between 2900-3000 kw) ~~(\*)~~ and during the remaining 22 hours of this test, the EDG shall be loaded to an indicated 2500-2600 kw ~~(\*)~~.

SR  
3.8.1.15

7. Verifying that the auto-connected loads to each EDG do not exceed the 2000 hour rating of 3000 kw.

8. Verifying the EDG's capability to: <sup>INSERT PROPOSED NOTE</sup>  
a) Synchronize with the offsite power source while the EDG is loaded with its emergency loads upon a simulated restoration of offsite power.  
b) Transfer its loads to the offsite power source, and  
c) ~~Proceed through its shutdown sequence~~ <sup>Returns to ready-to-load operation</sup>

\*\* This test shall be conducted in accordance with the manufacturer's recommendations regarding engine prelube and warmup procedures, and as applicable regarding loading recommendations.

\*\*\* This band is meant as guidance to avoid routine overloading of the engine. Loads in excess of this band for special testing under direct monitoring of the manufacturer or momentary variations due to changing bus loads shall not invalidate the test.

A.1

ITS

ELECTRICAL POWER SYSTEMS  
SURVEILLANCE REQUIREMENTS

4.8.1.1.2 (Continued)

- 9. Verifying that the following EDG lockout features prevent EDG starting only when required:
  - a) Remote Local Selection Switch
  - b) Emergency Stop Switch
- 10. Verifying the EDG's hot restart capability by:
  - a) Operating the EDG ~~loaded~~ to an indicated 2500 to 2600 kw\*\* for 2 hours or until operating temperatures have stabilized, and
  - b) Within 5 minutes of shutdown verify the EDG can be started\*\* in less than or equal to 10 seconds of the start signal with voltage greater than or equal to 3960 volts and frequency greater than or equal to 59.5 Hz. The generator steady state voltage and frequency shall be  $4160 \pm 420$  volts and  $60 \pm 0.5$  Hz.
- e. At least once per 10 years ~~or after any modifications which could affect EDG interdependence by starting both EDGs simultaneously during shutdown~~ and verifying that both EDGs start in less than or equal to 10 seconds of the start signal and achieve a voltage of greater than or equal to 3960 volts and a frequency of greater than or equal to 59.5 Hz. ~~Y~~ INSERT STEADY STATE limit requirements
- f. At least once per 24 months during any mode of operation, by subjecting each EDG to a preventive maintenance inspection in accordance with maintenance procedures appropriate for diesels used for this class of standby service.

SR  
3.8.1.14

SR  
3.8.1.18

L.A.6

L.19  
A.16

A.16  
L.19

RAI  
3.8.1-04  
Rev 3

L.8

L.19

L.18

M.5

L.A.7

RAI  
3.8.1-02  
Rev 3

4.8.1.1.3 Each emergency diesel generator 125-volt battery bank and charger shall be demonstrated OPERABLE:

- a. At least once per 7 days by verifying that
  - 1. The parameters in Table 4.8-3 meet Category A limits and
  - 2. The total battery terminal voltage is  $\geq 129$  volts on a float charge.

See  
3.8.4

\*\* This test shall be conducted in accordance with the manufacturer's recommendations regarding engine prelube and warmup procedures, and as applicable regarding loading recommendations.

L.19

\*\*\* This band is meant as guidance to avoid routine overloading of the engine. Loads in excess of this band for special testing under direct monitoring of the manufacturer or momentary variations due to changing bus loads shall not invalidate the test.

A.16

**DISCUSSION OF CHANGES**  
**ITS 3.8.1 - AC SOURCES - OPERATING**

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This change is acceptable because the CTS requirements for testing the AC sources do not specifically state the MODES in which the tests must be performed, but simply state "during shutdown." The ITS SRs' Note provides specific MODES in which test is not to be performed. With the unit in MODE 5, 6, or defueled (no MODE), the performance of these required tests can be conducted with minimum effects on the electrical system for the EDG that is not required to be OPERABLE. This change is designated as administrative because it does not result in a technical change to the CTS.

- A.15 CTS SR 4.8.1.1.2.a.6 states, in part, that the EDG shall be operated to an indicated load of 2500 - 2600 kW and is modified by a footnote labeled \*\*\*. CTS note \*\*\* allows momentary variations in loads, due to changing in bus loads, to not invalidate the test. ITS SR 3.8.1.13 states in Note 1, "Momentary transients outside the load range to not invalidate the test." The portion of the Note that addresses the power factor limitation is discussed later in these discussions of changes.

This change is acceptable because this portion of Note 1 in ITS SR maintains the allowance provided by the CTS note. The changes to the note are editorial and conform to the format of the ISTS. This change is designated as administrative because it does not result in a technical change to the CTS.

- A.16 CTS SR 4.8.1.1.2.a.10 states, in part, that the EDG shall be operated to an indicated load of 2500 - 2600 kW \*\*\* for 2 hours, or until operating temperatures have stabilized, then the EDG must be shutdown. Within 5 minutes of shutting down, verify the EDG can start and achieve the required voltage and frequency within 10 seconds. The CTS footnote \*\*\* allows momentary variations in loads, due to changes in bus loads to not invalidate the test. ITS SR 3.8.1.14 states in Note 1, "This Surveillance shall be performed within 5 minutes of shutting down the EDG after the EDG has operated  $\geq 2$  hours loaded  $\geq 2500$  kW and  $\leq 2600$  kW or after operating temperatures have stabilized." The Note 1 also allows, "Momentary transients outside the load range to not invalidate the test."

This change is acceptable because Note 1 of the ITS SR maintains the requirement provided in the CTS. The changes to the requirements and note are editorial and conform to the format of the ISTS. This change is designated as administrative because it does not result in a technical change to the CTS.

- A.17 Unit 1 CTS Surveillance Requirement 4.8.1.1.1.b states that the independent circuits between the offsite transmission network and the onsite Class 1E distribution system shall be demonstrated OPERABLE at least once per 18 months during shutdown by manually transferring the onsite Class 1E power supply from the normal circuit to the alternate circuit. This SR for unit 2 has been eliminated by DOC L.7. ITS SR 3.8.1.8 states, "Verify manual transfer of AC power sources from the normal offsite circuit to the alternate required offsite circuit. The SR is modified by a Note that states, "This

RAI  
3.8.1-  
02  
R3

**DISCUSSION OF CHANGES**  
**ITS 3.8.1 - AC SOURCES - OPERATING**

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Surveillance is only applicable to Unit 1.” This changes the CTS by specifically stating that the SR is only to Unit 1.

This change is acceptable because SR 4.8.1.1.1.b has been deleted for Unit 2. The purpose of the note is to limit the SR to be required for Unit 1. This change is designated as administrative because the addition of the Note does not result in a technical change to the Unit 1 CTS.

RAI  
3.8.1-  
02  
R3

- A.18 CTS Surveillance Requirement 4.8.1.1.2.d.5.c requires the verification that all EDG trips, except engine overspeed, generator differential and breaker overcurrent are automatically bypassed on an emergency start. The output breaker overcurrent for the EDG is not a trip for the diesel and should not be included in the exception. ITS SR 3.8.1.12 requires the verification of each EDG’s automatic trips are bypassed on an actual or simulated automatic start signal except for engine overspeed and generator differential current. This changes the CTS by eliminating the EDG output breaker overcurrent from the list of EDG trips.

This change is acceptable because the output breaker overcurrent does not provide a trip of the EDG. With the deletion of the output breaker overcurrent, no technical requirement is added or deleted with the conversion of the CTS requirements to the ITS requirements. The output breaker overcurrent should not have been included in the CTS requirements. This change is designated as administrative because it does not result in a technical change to the CTS.

- A.19 CTS LCO 3.7.4.1, Service Water System – Operating, states, “Two service water loops (shared with the other unit) shall be OPERABLE with each loop consisting of two OPERABLE service water pumps (excluding auxiliary service water pumps) with their associated normal and emergency power supplies, and an OPERABLE flow path.” Each unit’s service water system specification applies when either unit is operating in MODES 1, 2, 3, or 4. ITS LCO 3.7.10 specifies the requirements for the Main Control Room (MCR) / Emergency Switchgear Room (ESGR) Habitability System. This system requires the MCR and ESGR fans on both units to be OPERABLE in MODES 1, 2, 3, and 4 and during the movement of recently irradiated fuel assemblies. ITS LCO 3.7.12 requires the fans from the Auxiliary Building central exhaust system to be OPERABLE to support the Emergency Core Cooling System (ECCS) Pump Room Exhaust Air Cleanup System. This could require a fan powered from the other unit to be required for this unit. The SW pumps and the fans from the ventilation systems are components that may be required by either or both units. Therefore, these pumps and fans are classified as “shared components,” for the electrical power requirements. ITS 3.8.1 Action F states if the required offsite circuit and EDG on the other unit that support a required shared components become inoperable, the supported shared components will be declared inoperable immediately. The differences between the requirements for the shared systems of the CTS and the ITS are addressed in ITS LCOs 3.7.8, 3.7.10, and 3.7.12. This change maintains the CTS requirements in the ITS format.

**DISCUSSION OF CHANGES**  
**ITS 3.8.1 - AC SOURCES - OPERATING**

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actual SI signal ITS SR 3.8.1.11 does not result in any change in emergency bus voltage or frequency. This change is designated as less restrictive because less stringent Surveillance Requirements are being applied in the ITS than were applied in the CTS.

- L.10 (*Category 6 – Relaxation Of Surveillance Requirement Acceptance Criteria*) CTS Surveillance Requirements 4.8.1.1.1 and 4.8.1.1.2 contain requirements to perform various testing “during shutdown.” ITS SRs 3.8.1.8, 3.8.1.9, 3.8.1.12, and 3.8.1.13 add a Note that restricts performance of the SRs in MODES 1 and 2. The Note is modified with an allowance that the SR may be performed for the purpose of re-establishing OPERABILITY for inoperable equipment. This changes the CTS by allowing the specified surveillances to be performed in a MODE that is not currently allowed.

The purpose of the surveillance Notes is to allow the requirement to be performed without requiring the unit to be shutdown unnecessarily. 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. This change modifies when Surveillance Requirements may be performed. The performances of these SRs with the unit operating at full power will not significantly perturbate the electrical system. This change is designated as less restrictive because less stringent Surveillance Requirements are being applied in the ITS than were applied in the CTS.

RAI  
3.8.1-  
02  
R3

- L.11 (*Category 4 – Relaxation of Required Action*) CTS LCO 3.7.4.1, Service Water System – Operating, states, “Two service water loops (shared with the other unit) shall be OPERABLE with each loop consisting of two OPERABLE service water pumps (excluding auxiliary service water pumps) with their associated normal and emergency power supplies, and an OPERABLE flow path . . . .” Each unit’s service water system requirements consist of the above requirements for either unit operating in MODES 1, 2, 3, or 4. ITS LCO 3.7.10 specifies the requirements for the Main Control Room (MCR) / Emergency Switchgear Room (ESGR) Habitability System. This system requires the MCR and ESGR fans on both units to be OPERABLE in MODES 1, 2, 3, and 4 and during the movement of recently irradiated fuel assemblies. ITS LCO 3.7.12 requires the fans from the Auxiliary Building central exhaust system to be OPERABLE to support the Emergency Core Cooling System (ECCS) Pump Room Exhaust Air Cleanup System. This could require a fan powered from the other unit to be required for this unit. The SW pumps and the fans from the ventilation systems are components that may be required by either or both units. Therefore, these pumps and fans are classified as “shared components,” for the electrical power requirements. ITS LCO 3.8.1 Actions A, B, and C provide for an evaluation of all safety functions powered by this unit’s AC sources and provide 72 hours for an inoperable offsite circuit and up to 14 days for an inoperable EDG. ITS 3.8.1 Action D for one or more offsite circuit(s), and Actions E and F for an inoperable EDG on the other unit that is needed to support a shared components. This

**DISCUSSION OF CHANGES**  
**ITS 3.8.1 - AC SOURCES - OPERATING**

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under the requirements of the safety related pump program. The operation of both sets of level switches, which start and stop the two fuel oil transfer pumps, are calibrated on an 18 month frequency. The deletion of the STB is addressed by Discussion of Change L.5. This change is designated as less restrictive because Surveillances will be performed less frequently under the ITS than under the CTS.

- L.17 *(Category 6 – Relaxation Of Surveillance Requirement Acceptance Criteria)* CTS 4.8.1.1.2.c states that every 184 days the EDG will be started within 10 seconds by one of the following signals on a rotating test basis. The signals are a simulated loss of offsite power, simulated loss of offsite power with an ESF actuation, and an ESF actuation. The start requires specific values of voltage and frequency to be obtained within specified limits. ITS SR 3.8.1.7 states that each EDG is started within 10 seconds every 184 days. The start requires specific values of voltage and frequency to be obtained within specified limits. This changes the CTS by eliminating the specific start signals.

The purpose of ITS SR 3.8.1.7 is to perform a “fast start” on the EDG once every 184 days. 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 ITS SR for the EDG start must continue to meet the same requirements for time, voltage, and frequency that are required by the CTS. The type or specific start signal used to start the EDG does not affect the acceptability of the 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.

- L.18 *(Category 6 – Relaxation of Surveillance Requirement Acceptance Criteria)* CTS Surveillance Requirement 4.8.1.1.2 contains the requirement to perform various testing “during shutdown.” ITS SR 3.8.1.18 removes the MODE restrictions for performing the required testing. This changes the CTS requirements for testing of the AC sources by allowing this test to be performed in any MODE.

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 performance of the required test does not significantly perturbate the required electrical system. This SR only starts the two EDGs and does not perform any loading to perturbate the electrical system therefore the test may be performed at any time. This change is designated as less restrictive because less stringent Surveillance Requirements are being applied in the ITS than were applied in the CTS.

RAI  
3.8.1-  
02  
R3

- L.19 *(Category 6 – Relaxation Of Surveillance Requirement Acceptance Criteria)* CTS surveillance requirements 4.8.1.1.2 a.4, c, d.3, d.4, d.5.b, d.6, d.10, and e state that the EDG shall be started and are modified by a note labeled \*\*. The note requires the test to be conducted in accordance with the manufacturer’s recommendations, “regarding

**North Anna Improved Technical Specifications (ITS) Review Comments**  
**ITS Section 3.8, Electrical Power System**  
**3.8.1 AC Sources – Operating**

3.8.1-03 ITS SRs 3.8.1.6  
STS SRs 3.8.1.6  
CTS Unit 1 SR 4.8.1.1.2.a.3  
DOC L.16

**NRC RAI: Comment:** The DOC does not provide an adequate justification for changing the test frequency from 31 days to 92 days. The purpose of the surveillance requirement (SR) is to test the system as well as the pump. As such, it is not part of the safety-related pump testing program. The licensee should provide adequate justification, or retain the NUREG for 31 days. In responding to this RAI, the licensee should also consider the North Anna fuel oil system design. There are two pumps per EDG, each pump taking suction on a separate storage tank. Are both pumps required in order to supply adequate fuel for 7 days of operation? If so, when are the second pumps and control systems tested?

**Response:** The Company will take the action proposed in the Comment with certain modifications. Only one fuel oil pump is required to provide the necessary transfer rate of fuel oil from the underground tank to the EDG day tank. DOC L.16 is modified to explain that the monthly EDG start (SR 3.8.1.2) and loading to 2500 kW to 2600 kW for one hour (SR 3.8.1.3) may not consume sufficient fuel oil volume from the EDG's day tank to automatically start a makeup to the tank. Level switches on the EDG day tank control the starting and stopping of the lead fuel oil transfer pump. Redundant level switches positioned at lower elevations control the starting and stopping of the backup fuel oil transfer pump. Therefore, the automatic operation of fuel oil system cannot be tested as a part of this SR because the level of the day tank is not reduced sufficiently to initiate an automatic start of the lead or backup pump. The lead and backup fuel oil pump will be manually started to transfer fuel oil to the day tank each month. The Inservice Testing Program requires the testing of both fuel oil transfer pumps every 92 days. This testing is conducted with the pumps in manual and would satisfy SR 3.8.1.6. The ISTS Bases for this SR allow this because of various system designs by stating, "The Frequency for this SR is variable, depending on individual system design, with up to a [92] day interval." North Anna's design qualifies for this allowance because of the limited quantity of fuel oil used in the monthly test. The automatic makeup of the system can only be tested when the EDG is required to run an extended period of time. This is usually performed during the 24-hour run of each EDG every 18 months. ITS SR 3.8.1.6 is adequate to ensure the fuel oil system remain OPERABLE for each EDG. Also see the response to Questions 13 and 29.

**DISCUSSION OF CHANGES**  
**ITS 3.8.1 - AC SOURCES - OPERATING**

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less restrictive because less stringent Required Actions are being applied in the ITS than were applied in the CTS.

- L.15 *(Category 6 – Relaxation of Surveillance Requirement Acceptance Criteria)* CTS Surveillance Requirement 4.8.1.1.2 contains the requirement to perform various tests for the EDGs “during shutdown.” ITS SRs 3.8.1.10, 3.8.11, 3.8.1.15, 3.8.1.16, and 3.8.1.17 are modified in a Note that states the Surveillance shall not normally be performed in specific MODES. An additional statement modifies the Note. It allows a full or partial Surveillance to be performed to reestablish OPERABILITY provided an assessment determines the safety of the unit is maintained or enhanced. This changes the CTS requirements for testing of the EDGs by allowing the listed tests to be performed in MODES in which they are normally prohibited from being conducted.

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 required EDG tests may be performed in the indicated MODES without a significant perturbation of the required electrical system. An evaluation must be performed to determine that unit safety is maintained or enhanced with the full or partial performance of the Surveillance under specific conditions. This change is designated as less restrictive because less stringent Surveillance Requirements are being applied in the ITS than were applied in the CTS.

- L.16 *(Category 7 – Relaxation Of Surveillance Frequency)* CTS 4.8.1.1.2.a.3 states, “Verifying the fuel oil transfer pump can be started and transfers fuel from the storage tank to the day tank.” This requirement shall be performed with a frequency specified in Table 4.8-2 on a Staggered Test Basis (STB). Table 4.8-2 states that the EDG test schedule is once per 31 days when the number of test failures is less than one in the past 20 valid tests, and once per 7 days if the number of test failures is two or more in the previous 20 valid tests. ITS SR 3.8.1.6 states, “Verify each required fuel oil transfer pump operates to transfer fuel oil from the storage tank to the day tank,” and the requirement is required to be performed every 92 days. This changes the CTS by decreasing the SR Frequency from 7 or 31 days on a STB to every 92 days.

The purpose of SR Frequency is to confirm OPERABILITY of the equipment. This change is acceptable because the new Surveillance Frequency has been evaluated to ensure that it provides an acceptable level of equipment reliability. The monthly start required by ITS SR 3.8.1.2 and the one-hour loading of EDG by ITS SR 3.8.1.3 may not reduce the fuel oil level in the EDG day tank sufficiently to actuate the level switches that cause a fuel oil transfer pump to start. Therefore, a 92-day requirement to ensure the pump operates and fills the EDG day tank is more appropriate. The lead or backup fuel oil transfer pump is started every 31 days to refill the day tank after the performance of SR 3.8.1.3. This is done to maintain the EDG day tank in a “topped off” condition. The lead and backup fuel oil transfer pumps are tested every 3 months

RAI  
3.8.1-  
03  
R3

**DISCUSSION OF CHANGES**  
**ITS 3.8.1 - AC SOURCES - OPERATING**

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under the requirements of the safety related pump program. The operation of both sets of level switches, which start and stop the two fuel oil transfer pumps, are calibrated on an 18 month frequency. The deletion of the STB is addressed by Discussion of Change L.5. This change is designated as less restrictive because Surveillances will be performed less frequently under the ITS than under the CTS.

RAI  
3.8.1-03  
R3

- L.17 *(Category 6 – Relaxation Of Surveillance Requirement Acceptance Criteria)* CTS 4.8.1.1.1.2.c states that every 184 days the EDG will be started within 10 seconds by one of the following signals on a rotating test basis. The signals are a simulated loss of offsite power, simulated loss of offsite power with an ESF actuation, and an ESF actuation. The start requires specific values of voltage and frequency to be obtained within specified limits. ITS SR 3.8.1.7 states that each EDG is started within 10 seconds every 184 days. The start requires specific values of voltage and frequency to be obtained within specified limits. This changes the CTS by eliminating the specific start signals.

The purpose of ITS SR 3.8.1.7 is to perform a “fast start” on the EDG once every 184 days. 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 ITS SR for the EDG start must continue to meet the same requirements for time, voltage, and frequency that are required by the CTS. The type or specific start signal used to start the EDG does not affect the acceptability of the 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.

- L.18 *(Category 6 – Relaxation of Surveillance Requirement Acceptance Criteria)* CTS Surveillance Requirement 4.8.1.1.2 contains the requirement to perform various testing “during shutdown.” ITS SR 3.8.1.18 removes the MODE restrictions for performing the required testing. This changes the CTS requirements for testing of the AC sources by allowing this test to be performed in any MODE.

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 performance of the required test does not significantly perturbate the required electrical system. This SR only starts the two EDGs and does not perform any loading to perturbate the electrical system therefore the test may be performed at any time. This change is designated as less restrictive because less stringent Surveillance Requirements are being applied in the ITS than were applied in the CTS.

- L.19 *(Category 6 – Relaxation Of Surveillance Requirement Acceptance Criteria)* CTS surveillance requirements 4.8.1.1.2 c, d.3, d.4, d.5.b, d.6, d.10.b and e state that the EDG shall be started and are modified by a note labeled \*\*. The note requires the test to be conducted in accordance with the manufacturer’s recommendations, “regarding

**North Anna Improved Technical Specifications (ITS) Review Comments**  
**ITS Section 3.8, Electrical Power System**  
**3.8.1 AC Sources – Operating**

3.8.1-04 ITS SRs 3.8.1.7  
STS SRs 3.8.1.7  
CTS Unit 1 SR 4.8.1.1.2.c  
DOC A.12

**NRC RAI: Comment:** The DOC appears to be incorrect for the following reasons: 1) The proposed change is not Administrative. The CTS Note says manufacturer's recommendations shall be followed whereas ITS say may. This is a less restrictive change. 2) For this CTS SR, the manufacturer's recommendations regarding warmup and loading can be followed because there is no requirement for the EDG to be loaded in 10 seconds. The licensee should revise the DOC to address the above comments.

**Response:** The Company will take the action proposed in the Comment. DOC A.12 is eliminated and DOC L.19 is added. DOC L.19 explains that in the CTS, the manufacturer's recommendations regarding engine prelube and warmup procedures must be followed and as applicable, the loading recommendations. In the ITS, the manufacturer's recommendations for engine prelube and warmup may be followed and the loading requirements are specified, if required. Also see the response to Questions 7 and 15.

A.1

ELECTRICAL POWER SYSTEMS  
SURVEILLANCE REQUIREMENTS

RAI 3.8.1-04  
Rev 3  
L.19

4.8.1.1.2 (Continued)

~~INSERT PROPOSED NOTE TO SR 3.8.1.7~~

c. At least once per 184 days, the EDG shall be started ~~in~~ less than or equal to 10 seconds after the start signal and achieve voltage greater than or equal to 3960 volts and frequency greater than or equal to 59.5 Hz. The generator steady state voltage and frequency shall be  $4160 \pm 420$  volts and  $60 \pm 0.5$  Hz. ~~The EDG shall be manually synchronized to its appropriate emergency bus, gradually loaded\*\* to an indicated 2500 to 2600 kw\*\*\*, and operated for at least 60 minutes. The EDG shall be started for this test by using one of the following signals on a rotating test basis:~~

A.13

- a) Simulated loss of offsite power by itself.
- b) Simulated loss of offsite power in conjunction with an ESF actuation test signal.
- c) An ESF actuation test signal by itself.

L.17

This test, if it is performed so it coincides with the testing required by Surveillance Requirement 4.8.1.1.2.a.4, may also serve to concurrently meet those requirements as well.

RAI 3.8.1-02  
Rev 3

L.10  
M.7

d. At least once per 18 months ~~during shutdown by:~~

single largest post  
ACCIDENT  
LOAD

1. Verifying, on rejection of a load of greater than or equal to ~~610 kw~~ the frequency remains less than or equal to 66 Hz, and within 3 seconds, the voltage and frequency are  $4160 \pm 420$  volts and  $60 \pm 0.5$  Hz.
2. Verifying that the load sequencing timers are OPERABLE with times within the tolerances ~~shown in Table 4.8-1~~.

LA.9

L.15

A.14

LA.4

Insert  
proposed  
Notes

SR  
3.8.1.7

SR  
3.8.1.9

SR  
3.8.1.16

\*\* This test shall be conducted in accordance with the manufacturer's recommendations regarding engine prelube and warmup procedures, and as applicable regarding loading recommendations.

RAI 3.8.1-04  
Rev 3  
L.19

\*\*\* This band is meant as guidance to avoid routine overloading of the engine. Loads in excess of this band for special testing under direct monitoring of the manufacturer or momentary variations due to changing bus loads shall not invalidate the test.

A.13

A.1

ELECTRICAL POWER SYSTEMS  
SURVEILLANCE REQUIREMENTS

RAI 3.8.1-04  
REV 3  
L.15  
L.19  
A.14

ITS

4.8.1.1.2 (Continued)

SR  
3.8.1.10

- 3. ~~INSERT PROPOSED NOTES~~ Verify on an actuator (L.6)
  - a. Verifying de-energization of the emergency busses and load shedding from the emergency busses.
  - b. Verifying the EDG starts ~~on~~ <sup>on</sup> the auto-start signal, energizes the emergency busses with permanently connected loads within 10 seconds, energizes the auto-connected shutdown loads through the sequencing timers and operates for greater than or equal to 5 minutes while its generator is loaded with the shutdown loads. After energization of these loads, the steady state voltage and frequency shall be maintained at 4160 ± 420 volts and 60 ± 0.5 Hz. (L.15)

L.19  
RAI 3.8.1-04  
REV 3

SR  
3.8.1.11

- 4. ~~INSERT PROPOSED NOTES~~ Verifying that on an ESF actuation ~~test~~ <sup>signal</sup> (without loss of offsite power) the EDG starts ~~on~~ <sup>on</sup> the auto-start signal and achieves voltage greater than or equal to 3960 volts and frequency greater than or equal to 59.5 Hz within 10 seconds and operates on standby for greater than or equal to 5 minutes with a steady state voltage of 4160 ± 420 volts and a steady state frequency of 60 ± 0.5 Hz. (L.15)

INSERT PROPOSED Part D & E

actuator simulated  
L.6  
M.4

SR  
3.8.1.17

- 5. ~~INSERT PROPOSED NOTES~~ Verify an actuator (L.15)
  - a. Verifying de-energization of the emergency busses and load shedding from the emergency busses.
  - b. Verifying the EDG starts ~~on~~ <sup>on</sup> the auto-start signal, energizes the emergency busses with permanently connected loads within 10 seconds, energizes the auto-connected emergency (accident) loads through the sequencing timers and operates for greater than or equal to 5 minutes and maintains the steady state voltage and frequency at 4160 ± 420 volts and 60 ± 0.5 Hz.

RAI 3.8.1-04  
REV 3  
L.19  
RAI 3.8.1-02  
REV 3

SR  
3.8.1.12

- c. Verifying that all EDG trips, except engine overspeed, generator differential and breaker overcurrent are automatically bypassed upon, loss of voltage on the emergency bus and/or a safety injection actuation signal. (L.7, A.15)

actual or simulated automatic start

L.6  
L.10  
A.20  
LA.1

SR  
3.8.1.13

- 6. ~~INSERT PROPOSED NOTES~~ Verifying the EDG operates ~~for~~ <sup>for</sup> at least 24 hours. During the first 2 hours of this test, the EDG shall be loaded to an indicated target value of 2950 kw (between 2900-3000 kw) ~~and~~ <sup>and</sup> during the remaining 22 hours of this test, the EDG shall be loaded to an indicated 2500-2600 kw. (L.10, A.12, M.8)

Rev 3 RAI 3.8.1-02  
RAI 3.8.1-04

\*\* This test shall be conducted in accordance with the manufacturer's recommendations regarding engine pre-lube and warmup procedures, and as applicable regarding loading recommendations. (L.19)

\*\*\* This band is meant as guidance to avoid routine overloading of the engine. Loads in excess of this band for special testing under direct monitoring of the manufacturer or momentary variations due to changing bus loads shall not invalidate the test. (A.15)

A.1

ITS 3.8.1  
12-10-98

ITS

ELECTRICAL POWER SYSTEMS  
SURVEILLANCE REQUIREMENTS

4.8.1.1.2 (Continued)

SR  
3.8.1.15

7. Verifying that the auto-connected loads to each EDG do not exceed the 2000 hour rating of 3000 kw.

L.13

8. Verifying the EDG's capability to: INSERT PROPOSED NOTE

L.15 A.14

a) Synchronize with the offsite power source while the EDG is loaded with its emergency loads upon a simulated restoration of offsite power,

b) Transfer its loads to the offsite power source, and

c) Proceed through its shutdown sequence Returns to ready-to-load operation

M.3

9. Verifying that the following EDG lockout features prevent EDG starting only when required:

LA.6

a) Remote Local Selection Switch

b) Emergency Stop Switch

L.19  
A.16

10. Verifying the EDG's hot restart capability by: INSERT PROPOSED NOTES

L.19  
A.16

a) Operating the EDG ~~is~~ loaded to an indicated 2500 to 2600 kw~~\*\*~~ for 2 hours or until operating temperatures have stabilized, and

b) Within 5 minutes of shutdown verify the EDG can be started\*\* in less than or equal to 10 seconds of the start signal with voltage greater than or equal to 3960 volts and frequency greater than or equal to 59.5 Hz. The generator steady state voltage and frequency shall be 4160 ± 420 volts and 60 ± 0.5 Hz.

RAI  
3.8.1-04  
REV 3

SR  
3.8.1.14

e. At least once per 10 years or after any modifications which could affect EDG interdependence by starting both EDGs simultaneously during shutdown, and verifying that both EDGs start in less than or equal to 10 seconds of the start signal and achieve a voltage of greater than or equal to 3960 volts and a frequency of greater than or equal to 59.5 Hz. ↑

RAI  
3.8.1-04  
REV 3

L.8

L.19

L.8

M.5

SR  
3.8.1.18

Insert steady state limit requirements

f. At least once per 24 months during any mode of operation, by subjecting each EDG to a preventive maintenance inspection in accordance with maintenance procedures appropriate for diesels used for this class of standby service.

LA.7

Rev3 RAI  
3.8.1-02

\*\* This test shall be conducted in accordance with the manufacturer's recommendations regarding engine prelube and warmup procedures, and as applicable regarding loading recommendations.

Rev3 RAI  
3.8.1-04

L.19

\*\*\* This band is meant as guidance to avoid routine overloading of the engine. Loads in excess of this band for special testing under direct monitoring of the manufacturer or momentary variations due to changing bus loads shall not invalidate the test.

A.16

(A.1)

ELECTRICAL POWER SYSTEMS  
SURVEILLANCE REQUIREMENTS

ITS

4.8.1.1.1 Each of the above required physically independent circuits between the offsite transmission network and the onsite Class 1E distribution system shall be:

SR  
3.8.1.1

a. Determined OPERABLE at least once per 7 days by verifying correct breaker alignment indicating power availability.

b. Demonstrated OPERABLE at least once per 18 months during shutdown by manually transferring the onsite Class 1E power supply from the normal circuit to the alternate circuit.

(L.7)

4.8.1.1.2 Each emergency diesel generator (EDG) shall be demonstrated OPERABLE:

every 31 days

(L.5)

a. In accordance with the frequency specified in Table 4.8.2 on a STAGGERED TEST BASIS by:

SR  
3.8.1.4

1. Verifying the fuel level in the day tank contains 450 gallons ← FROM LCO 3.8.1.1 b.1

SR  
3.8.1.6

2. Verifying the fuel level in the fuel storage tank → (see ITS 3.8.3)

SR  
3.8.1.2

3. Verifying the fuel transfer pump can be started and transfers fuel from the storage system to the day tank every 42 days

(L.16)

SR  
3.8.1.3

4. Verifying the EDG can start and gradually accelerate to a steady state voltage and frequency of  $4160 \pm 420$  volts and  $60 \pm 0.5$  Hz. Subsequently, verifying the generator is synchronized, gradually loaded to an indicated 2500-2600 kw and operates for at least 60 minutes.

(A.10)

(L.19)

(A.11)

(M.6)

(LA.2)

SR  
3.8.1.5

5. Verifying the EDG is aligned to provide standby power to the associated emergency busses. INSERT PROPOSED SR 3.8.1.3

(M.2)

b. At least once per 92 days by verifying that a sample of diesel fuel from the fuel storage tank obtained as a DRAIN sample in accordance with ASTM-D270-65, is within the acceptable limits specified in Table 1 of ASTM D975-74 when checked for viscosity, water and sediment.

see 3.8.3/RAI 3.8.1-14 Rev 3

SR  
3.8.1.7

c. At least once per 184 days, the EDG shall be started in less than or equal to 10 seconds after the start signal and achieve voltage greater than or equal to 3960 volts and frequency greater than or equal to 59.5 Hz. The generator steady state voltage and frequency shall be  $4160 \pm 420$  volts and  $60 \pm 0.5$  Hz.

(L.19)

RAI 3.8.1-04 Rev 3

\*\* This test shall be conducted in accordance with the manufacturer's recommendations regarding engine pre-lube and warmup procedures, and as applicable regarding loading recommendations.

(L.19)

(A.10)

\*\*\* This band is meant as guidance to avoid routine overloading of the engine. Loads in excess of this band for special testing under direct monitoring of the manufacturer or momentary variations due to changing bus loads shall not invalidate the test.

RAI 3.8.1-16 Rev 3

(A.11)

A.1

12-10-98

ELECTRICAL POWER SYSTEMS

ITS SURVEILLANCE REQUIREMENTS

4.8.1.1.2 (Continued)

The EDG shall be manually synchronized to its appropriate emergency bus, gradually loaded\*\* to an indicated 2500 to 2600 kw\*\*\* and operated for at least 60 minutes. The EDG shall be started for this test by using one of the following signals on a rotating test basis:

A.13

- a) Simulated loss of offsite power by itself.
- b) Simulated loss of offsite power in conjunction with an ESF actuation test signal.
- c) An ESF actuation test signal by itself.

L.17

This test, if it is performed so it coincides with the testing required by Surveillance Requirement 4.8.1.1.2 a.4, may also serve to concurrently meet those requirements as well.

RAI  
Rev 3 3.8.1  
01

L.10  
M.7

d. At least once per 18 months during shutdown by:

single largest  
Post Accident  
Load

LA.9

SR  
3.8.1.9

1. ~~INSERT PROPOSED NOTES~~ Verifying, on rejection of a load of greater than or equal to 610 kw, the frequency remains less than or equal to 66 Hz, and within 3 seconds, the voltage and frequency are  $4160 \pm 420$  volts and  $60 \pm 0.5$  Hz.

L.15 A.14

SR  
3.8.1.16

2. ~~INSERT PROPOSED NOTES~~ Verifying that the load sequencing timers are OPERABLE with times within the tolerances shown in Table 4.8-10 design

LA.4

SR  
3.8.1.10

3. ~~W~~ Simulating a loss of offsite power by itself, and; ~~INSERT PROPOSED NOTES~~

L.15 L.19  
A.14

a) Verifying de-energization of the emergency busses and load shedding from the emergency busses actual or simulated signal

L.6

b) Verifying the EDG starts on the auto-start signal, energizes the emergency busses with permanently connected loads within 10 seconds, energizes the auto-connected shutdown loads through the sequencing timers and operates for greater than or equal to 5 minutes while its generator is loaded with the shutdown loads. After energization of these loads, the steady state voltage and frequency shall be maintained at  $4160 \pm 420$  volts and  $60 \pm 0.5$  Hz.

L.19

RAI  
3.8.1-04  
REV 3

\*\* This test shall be conducted in accordance with the manufacturer's recommendations regarding engine pre-lube and warmup procedures, and as applicable regarding loading recommendations.

L.19

\*\*\* This band is meant as guidance to avoid routine overloading of the engine. Loads in excess of this band for special testing under direct monitoring of the manufacturer or momentary variations due to changing bus loads shall not invalidate the test.

A.15

Rev 3

A.1

ELECTRICAL POWER SYSTEMS  
SURVEILLANCE REQUIREMENTS

ITS

RAI  
3.8.1-04  
REV 3

4.8.1.1.2 (Continued)

SR  
3.8.1.11

4. ~~INSERT PROPOSED NOTES~~ ACTUAL or simulated  
Verifying that on an ESF actuation ~~test~~ signal (without loss of offsite power) the EDG starts ~~on~~ on the auto-start signal and achieves voltage greater than or equal to 3960 volts and frequency greater than or equal to 59.5 Hz within 10 seconds and operates on standby for greater than or equal to 5 minutes with a steady state voltage of  $4160 \pm 420$  volts and a steady state frequency of  $60 \pm 0.5$  Hz.

L.9  
L.15  
L.19  
L.6  
L.19

SR  
3.8.1.17

5. ~~INSERT PROPOSED NOTES~~ Verify an actual or  
Simulating a loss of offsite power in conjunction with an ESF actuation test signal, and  
a) Verifying de-energization of the emergency busses and load shedding from the emergency busses.  
b) Verifying the EDG starts ~~on~~ on the auto-start signal, energizes the emergency busses with permanently connected loads within 10 seconds, energizes the auto-connected emergency (accident) loads through the sequencing timers and operates for greater than or equal to 5 minutes and maintains the steady state voltage and frequency at  $4160 \pm 420$  volts and  $60 \pm 0.5$  Hz.

insert 5 parts made  
A.14  
L.15  
L.19  
L.6  
L.19  
RAI 3.8.1-04 REV 3  
RAI 3.8.1-02 REV 3

SR  
3.8.1.12

c) ~~Verify an actual or~~ Verifying that all EDG trips, except engine overspeed, generator differential and ~~breaker overcurrent~~ are automatically bypassed upon loss of voltage on the emergency bus and/or a safety injection actuation signal.

L.10  
A.18  
A.20  
A.15  
L.9

SR  
3.8.1.13

6. ~~INSERT PROPOSED NOTE~~ ACTUAL or simulated  
Verifying the EDG operate ~~for~~ for at least 24 hours. During the first 2 hours of this test, the EDG shall be loaded to an indicated target value of 2950 kw (between 2900-3000 kw) and during the remaining 22 hours of this test, the EDG shall be loaded to an indicated 2500-2600 kw.

L.10  
M.8  
L.19  
A.15

SR  
3.8.1.15

7. ~~Verify that the auto-connected loads to each EDG do not exceed the 2000 hour rating of 3000 kw~~  
8. ~~Verify the EDG's capability to~~ INSERT PROPOSED NOTE  
a) Synchronize with the offsite power source while the EDG is loaded with its emergency loads upon a simulated restoration of offsite power.  
b) Transfer its loads to the offsite power source, and  
c) ~~Proceed through its shutdown sequence~~ returns to ready-to-load operation

L.13  
L.15  
A.14  
RAI 3.8.1-04 REV 3  
M.3

\*\* This test shall be conducted in accordance with the manufacturer's recommendations regarding engine prelube and warmup procedures, and as applicable regarding loading recommendations.

L.19

\*\*\* This band is meant as guidance to avoid routine overloading of the engine. Loads in excess of this band for special testing under direct monitoring of the manufacturer or momentary variations due to changing bus loads shall not invalidate the test.

A.15

A.1

ITS

ELECTRICAL POWER SYSTEMS  
SURVEILLANCE REQUIREMENTS

4.8.1.1.2 (Continued)

- 9. Verifying that the following EDG lockout features prevent EDG starting only when required:
  - a) Remote Local Selection Switch
  - b) Emergency Stop Switch
- 10. Verifying the EDG's hot restart capability by:
  - a) Operating the EDG ~~loaded~~ to an indicated 2500 to 2600 kw<sup>\*\*\*</sup> for 2 hours or until operating temperatures have stabilized, and
  - b) Within 5 minutes of shutdown verify the EDG can be started\*\* in less than or equal to 10 seconds of the start signal with voltage greater than or equal to 3960 volts and frequency greater than or equal to 59.5 Hz. The generator steady state voltage and frequency shall be 4160 ± 420 volts and 60 ± 0.5 Hz.
- e. At least once per 10 years or after any modifications which could affect EDG interdependence by starting ~~both~~ both EDGs simultaneously during shutdown and verifying that both EDGs start in less than or equal to 10 seconds of the start signal and achieve a voltage of greater than or equal to 3960 volts and a frequency of greater than or equal to 59.5 Hz. ~~Y~~ INSERT STEADY STATE limit requirements
- f. At least once per 24 months during any mode of operation, by subjecting each EDG to a preventive maintenance inspection in accordance with maintenance procedures appropriate for diesels used for this class of standby service.

LA.6

L.19  
A.16

INSERT PROPOSED NOTES

A.16  
L.19

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L.8

L.19

L.18

M.5

LA.7

RAI  
3.8.1-02  
Rev 3

4.8.1.1.3 Each emergency diesel generator 125-volt battery bank and charger shall be demonstrated OPERABLE:

- a. At least once per 7 days by verifying that
  - 1. The parameters in Table 4.8-3 meet Category A limits and
  - 2. The total battery terminal voltage is ≥ 129 volts on a float charge.

See  
3.8.4

\*\* This test shall be conducted in accordance with the manufacturer's recommendations regarding engine pre-lube and warmup procedures, and as applicable regarding loading recommendations.

L.19

\*\*\* This band is meant as guidance to avoid routine overloading of the engine. Loads in excess of this band for special testing under direct monitoring of the manufacturer or momentary variations due to changing bus loads shall not invalidate the test.

A.16

SR  
3.8.1.14

SR  
3.8.1.18

**DISCUSSION OF CHANGES**  
**ITS 3.8.1 - AC SOURCES - OPERATING**

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- A.11 CTS SR 4.8.1.1.2.a.4 states after a successful start of the EDG, “Subsequently, verifying the generator is synchronized, gradually loaded \*\* to an indicated 2500 - 2600 kW \*\*\* and operates for at least 60 minutes.” CTS notes \*\* and \*\*\* allow the test to be conducted in accordance with manufacturer’s recommendations regarding engine warmup and loading. These notes also allow momentary variations in loads, due to changing in bus loads, to not invalidate the test. ITS SR 3.8.1.3 states, “Verify each EDG is synchronized and loaded and operates for  $\geq 60$  minutes at a load  $\geq 2500$  kW and  $\leq 2600$  kW.” Four Notes modify the SR. Notes 1 and 2 allow EDG loading as recommended by the manufacturer and momentary transients outside the load range to not invalidate the test. Notes 3 and 4 are addressed by DOC M.6.

This change is acceptable because Notes 1 and 2 in ITS SR maintain the allowances provided by the CTS notes. The changes to the notes are editorial and conform to the format of the ISTS. This change is designated as administrative because it does not result in a technical change to the CTS.

RAI  
3.8.1  
104  
Rev 3

- A.12 Not used.

- A.13 CTS requirement 4.8.1.1.2.c states that the EDG shall be started at least once per 184 days and manually synchronized to its appropriate emergency bus, gradually loaded\*\* to an indicated 2500 to 2600 kW\*\*\*, and operated for at least 60 minutes. ITS SR 3.8.1.7 requires the start of the EDG every 184 days. ITS SRs 3.8.1.3 requires the synchronization and loading of the EDG from 2500 to 2600 kW for a period of 60 minutes. SR 3.8.1.3 contains a Note, which states that the requirement shall be preceded by and immediately follows without shutdown a successful performance of SR 3.8.1.2 or SR 3.8.1.7. This changes the CTS by eliminating the duplicated requirements of 4.8.1.1.2.c (ITS SR 3.8.1.7), which are now contained in ITS SR 3.8.1.3 (CTS SR 4.8.1.1.2.a.4).

This change is acceptable because the division of the current requirement 4.8.1.1.2.c into ITS SR 3.8.1.2 or SR 3.8.1.7 and 3.8.1.3 maintains the requirements of starting, synchronizing with the emergency bus, and fully loading the EDG for 60 minutes. Additional changes to requirement 4.8.1.1.2.c are discussed in other discussion of changes. This change is designated as administrative because it does not result in a technical change to the CTS.

- A.14 CTS requirements 4.8.1.1.2.d.2, d.3, d.5, and d.8 require the testing of the EDGs, at least once per 18 months “during shutdown.” ITS SRs 3.8.1.10, 3.8.1.15, 3.8.1.16 and 3.8.1.17 incorporate this requirement and state it as a Note. The Note states, “This Surveillance shall not be performed in MODES 1, 2, 3, or 4.” This changes the CTS by specifically stating the applicable MODES of operation that the SRs may be performed.

This change is acceptable because the CTS requirements for testing the AC sources do not specifically state the MODES in which the tests must be performed, but simply

**DISCUSSION OF CHANGES**  
**ITS 3.8.1 - AC SOURCES - OPERATING**

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under the requirements of the safety related pump program. The operation of both sets of level switches, which start and stop the two fuel oil transfer pumps, are calibrated on an 18 month frequency. The deletion of the STB is addressed by Discussion of Change L.5. This change is designated as less restrictive because Surveillances will be performed less frequently under the ITS than under the CTS.

- L.17 *(Category 6 – Relaxation Of Surveillance Requirement Acceptance Criteria)* CTS 4.8.1.1.1.2.c states that every 184 days the EDG will be started within 10 seconds by one of the following signals on a rotating test basis. The signals are a simulated loss of offsite power, simulated loss of offsite power with an ESF actuation, and an ESF actuation. The start requires specific values of voltage and frequency to be obtained within specified limits. ITS SR 3.8.1.7 states that each EDG is started within 10 seconds every 184 days. The start requires specific values of voltage and frequency to be obtained within specified limits. This changes the CTS by eliminating the specific start signals.

The purpose of ITS SR 3.8.1.7 is to perform a “fast start” on the EDG once every 184 days. 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 ITS SR for the EDG start must continue to meet the same requirements for time, voltage, and frequency that are required by the CTS. The type or specific start signal used to start the EDG does not affect the acceptability of the 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.

- L.18 *(Category 6 – Relaxation of Surveillance Requirement Acceptance Criteria)* CTS Surveillance Requirement 4.8.1.1.2 contains the requirement to perform various testing “during shutdown.” ITS SR 3.8.1.18 removes the MODE restrictions for performing the required testing. This changes the CTS requirements for testing of the AC sources by allowing this test to be performed in any MODE.

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 performance of the required test does not significantly perturbate the required electrical system. This SR only starts the two EDGs and does not perform any loading to perturbate the electrical system therefore the test may be performed at any time. This change is designated as less restrictive because less stringent Surveillance Requirements are being applied in the ITS than were applied in the CTS.

- L.19 *(Category 6 – Relaxation Of Surveillance Requirement Acceptance Criteria)* CTS surveillance requirements 4.8.1.1.2 a.4, c, d.3, d.4, d.5.b, d.6, d.10, and e state that the EDG shall be started and are modified by a note labeled \*\*. The note requires the test to be conducted in accordance with the manufacturer’s recommendations, “regarding

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engine prelube and warmup procedure, and as applicable regarding loading recommendations.” ITS SRs 3.8.1.7, 3.8.1.10, 3.8.1.11, 3.8.1.14, 3.8.1.17, and 3.8.1.18 state this allowance as a Note to each SR. The Note states, “All EDG starts may be preceded by an engine prelube period.” No loading requirements for the SRs have been included because they were not appropriate. This changes the CTS by not requiring the manufacturer’s recommendations to be followed, because the ITS states that these recommendations “may” be followed.

The purpose of ITS SRs’ Note is to allow for proper prelube of the EDG before performing a required 10-second start. 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. This change eliminates the specific requirement of a prelube from, “EDG starts shall follow the manufacturer’s recommendations” and changes it to, “EDG starts may be preceded by an engine prelube.” This change is designated as less restrictive because less stringent Surveillance Requirements are being applied in the ITS than were applied in the CTS.

RAE  
3.8.1-  
04-  
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**North Anna Improved Technical Specifications (ITS) Review Comments**  
**ITS Section 3.8, Electrical Power System**  
**3.8.1 AC Sources – Operating**

3.8.1-05 ITS SRs 3.8.1.8, 3.8.1.9, 3.8.1.12, and 3.8.1.13  
STS SRs 3.8.1.8, 3.8.1.9, 3.8.1.13, and 3.8.1.14  
CTS Unit 1 SR 4.8.1.1.1.b, 4.8.1.1.2.d.1, 4.8.1.1.2.d.5.c, and 3.8.1.1.2.d.6  
DOC L.10

**NRC RAI:** See RAI 3.8.1-02 **Comment:** The proposed change is beyond scope. The licensee will have to provide more information on the proposed changes to allow for a thorough staff review. The information should include details on system design and how the transfer to the alternate offsite is made, specific details regarding the single largest load reject test, information on how it is determined that EDG trips are bypassed, and a discussion of why it is safe to conduct the 24-hour run at power.

**Response:** The Company agrees with the Comment and withdraws the proposed change. The Company proposes a change to the SRs that incorporates TSTF-283 Rev. 3. This will restore the MODE restrictions in the Note to the SRs and modifies the Note to read, "This Surveillance shall not normally be performed in MODES 1 and 2. However, this Surveillance may be performed to reestablish OPERABILITY provided an assessment determines the safety of the unit is maintained or enhanced." This change requires a modification to DOC L.10 and the creation of DOC L.18. Also see the response to Questions 2, 6, 9, 17, 18, 21, and 30.

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**3.8.1 AC Sources – Operating**

See Revised Submittal Pages for RAI 3.8.1-02.

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3.8.1-06 ITS SRs 3.8.1.8, 3.8.1.9, 3.8.1.12, and 3.8.1.13  
STS SRs 3.8.1.8, 3.8.1.9, 3.8.1.13, and 3.8.1.14  
CTS Unit 1 SR 4.8.1.1.1.b, 4.8.1.1.2.d.1, 4.8.1.1.2.d.5.c, and 3.8.1.1.2.d.6  
DOC L.10

**NRC RAI:** See RAI 3.8.1-02 **Comment:** The proposed change is beyond scope. The licensee will have to provide more information on the proposed changes to allow for a thorough staff review. The information should include details on system design and how the transfer to the alternate offsite is made, specific details regarding the single largest load reject test, information on how it is determined that EDG trips are bypassed, and a discussion of why it is safe to conduct the 24-hour run at power.

**Response:** The Company agrees with the Comment and withdraws the proposed change. The Company proposes a change to the SRs that incorporates TSTF-283 Rev. 3. This will restore the MODE restrictions in the Note to the SRs and modifies the Note to read, "This Surveillance shall not normally be performed in MODES 1 and 2. However, this Surveillance may be performed to reestablish OPERABILITY provided an assessment determines the safety of the unit is maintained or enhanced." This change requires a modification to DOC L.10 and the creation of DOC L.18. Also see the response to Questions 2, 5, 9, 17, 18, 21, and 30.

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**ITS Section 3.8, Electrical Power System**  
**3.8.1 AC Sources – Operating**

See Revised Submittal Pages for RAI 3.8.1-02.

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**ITS Section 3.8, Electrical Power System**  
**3.8.1 AC Sources – Operating**

3.8.1-07 ITS SRs 3.8.1.7  
STS SRs 3.8.1.7  
CTS Unit 1 SR 4.8.1.1.2.c  
DOC A.12

**NRC RAI:** See 3.8.1-04 **Comment:** The DOC appears to be incorrect for the following reasons: 1) The proposed change is not Administrative. The CTS Note says manufacturer's recommendations shall be followed whereas ITS say may. This is a less restrictive change. 2) For this CTS SR, the manufacturer's recommendations regarding warmup and loading can be followed because there is no requirement for the EDG to be loaded in 10 seconds. The licensee should revise the DOC to address the above comments.

**Response:** The Company will take the action proposed in the Comment. DOC A.12 is eliminated and DOC L.19 is added. DOC L.19 states that the CTS requires the manufacturer's recommendations must be followed and the ITS only requires that the recommendations may be followed. Loading requirements of the CTS state that they are followed, as applicable. The loading recommendations are not applicable for ITS SR 3.8.1.7, therefore it is not required to be addressed by L.19. Loading recommendations is now addressed by DOC A.1. Also see the response to Questions 4 and 15.

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**ITS Section 3.8, Electrical Power System**  
**3.8.1 AC Sources – Operating**

See Revised Submittal Pages for RAI 3.8.1-04.

**North Anna Improved Technical Specifications (ITS) Review Comments**  
**ITS Section 3.8, Electrical Power System**  
**3.8.1 AC Sources – Operating**

3.8.1-08 ITS None  
STS None  
CTS Unit 1 SR 4.8.1.1.2.d.7  
DOC L.13

**NRC RAI: Comment:** Instead of being deleted, this CTS requirement should be relocated to a licensee- controlled document, such as the Technical Requirements Manual (TRM).

**Response:** The Company does not agree with the action recommended in the Comment. The requirement states, "Verifying that the auto-connected loads to each EDG do not exceed the 2000 hour rating of 3000 kW." This is a design change process requirement that is verified when a load is added to the emergency bus and can be powered by an EDG. This requirement is and will continue to be a part of that process as stated in Electrical Engineering Nuclear Standard (Guidelines for Electrical System Analysis) STD EEN – 0026 Attachment 8.1, Part 1.3. DOC L.13 is modified to reflect that this requirement is contained in the design change process requirements. Also see the response to Question 20.

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**ITS 3.8.1 - AC SOURCES - OPERATING**

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as less restrictive because less stringent LCO requirements are being applied in the ITS than were applied in the CTS.

- L.13 (Category 5 – Deletion of Surveillance Requirement) CTS Surveillance Requirement 4.8.1.1.2.d.7 states, “Verifying that the auto-connected loads to each EDG do not exceed the 2000 hour rating of 3000 kw.” ITS 3.8.1 does not require the verification of loading limit to ensure OPERABILITY of the EDGs. This changes the CTS by deleting the surveillance requirement.

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. Each EDG will continue to be tested in a manner to ensure the safety analyses assumption will be met. Changes to the auto-connected loads will be controlled and evaluated by the design change control process to ensure the EDG is not overloaded. This change is designated as less restrictive because a Surveillance which is required in the CTS will not be required in the ITS.

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- L.14 (Category 4 – Relaxation of Required Action) CTS Action b states that the OPERABLE EDG must be tested within 24 hours, if the inoperable EDG is due to any cause, “other than an inoperable support system, an independently testable component, or preplanned preventive maintenance or testing.” The OPERABLE EDG will be tested, “unless the absence of any potential common mode failure is demonstrated.” ITS Required Action B.3.1 states the requirement as, “Demonstrate OPERABLE EDG(s) are not inoperable due to common cause failure.” This changes the CTS by allowing a determination for common cause failure, instead of requiring a demonstration for a potential common mode failure, for the OPERABLE EDG.

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 a determination to be made for the OPERABLE EDG and not require additional testing for it if common cause failure can be ruled out. The requirement B.3.1 states, “Determine OPERABLE LCO 3.8.1.b EDG is not inoperable due to common cause failure,” or B.3.2 requires the “Perform SR 3.8.1.2 for the OPERABLE LCO 3.8.1.b EDG.” The OPERABLE EDG may not require a start test to be performed. The CTS requires additional testing for a failure of an EDG, unless the absence of any potential common mode failure for the OPERABLE EDG is demonstrated. This requirement has always been interpreted as requiring additional testing for the OPERABLE EDG. This change is designated as

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3.8.1-09 ITS SRs 3.8.1.18  
STS SRs 3.8.1.20  
CTS Unit 2 SR 3.8.1.1.2.e  
DOC L.10

**NRC RAI:** See RAI 3.8.1-02 **Comment:** The proposed change is beyond scope. The licensee will have to provide more information on the proposed changes to allow for a thorough staff review. The information should include details on system design and how the transfer to the alternate offsite is made, specific details regarding the single largest load reject test, information on how it is determined that EDG trips are bypassed, and a discussion of why it is safe to conduct the 24-hour run at power.

**Response:** The Company will take the action proposed in the Comment. The ISTS does not propose any MODE restrictions for the performance of this SR. New DOC L.18 is constructed to delete the “during shutdown” requirement. Also see the response to Questions 2, 5, 6, 17, 18, 21, and 30.

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See Revised Submittal Pages for RAI 3.8.1-02.

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3.8.1-10 ITS Condition B  
STS Condition B  
CTS Unit 1 3.8.1.1 Action b  
DOC L.14

**NRC RAI: Comment:** The DOC appears to be incorrect. The DOC states that a EDG test is required when a common mode failure affects the OPERABLE EDG. In the NUREG, an EDG test is required only when the absence of a common mode failure cannot be established. This means that the OPERABLE EDG will have to be tested if the cause of the one EDG inoperability cannot be determined. This difference between the NUREG and the DOC should be resolved.

**Response:** The Company will take the action proposed in the Comment. This will revise DOC L.14 to state that the CTS Action b requires the OPERABLE EDG to be demonstrated to be OPERABLE within 24 hours, if the inoperable EDG is due to any cause, "other than an inoperable support system, an independently testable component, or preplanned preventive maintenance or testing." DOC L.14 now also states that ITS Required Action B.3.1 requires, "Demonstrate OPERABLE EDG(s) are not inoperable due to common cause failure." This should clarify the change that occurs from the CTS to the ITS requirements.

**DISCUSSION OF CHANGES**  
**ITS 3.8.1 - AC SOURCES - OPERATING**

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as less restrictive because less stringent LCO requirements are being applied in the ITS than were applied in the CTS.

- L.13 (*Category 5 – Deletion of Surveillance Requirement*) CTS Surveillance Requirement 4.8.1.1.2.d.7 states, “Verifying that the auto-connected loads to each EDG do not exceed the 2000 hour rating of 3000 kw.” ITS 3.8.1 does not require the verification of loading limit to ensure OPERABILITY of the EDGs. This changes the CTS by deleting the surveillance requirement.

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. Each EDG will continue to be tested in a manner to ensure the safety analyses assumption will be met. Changes to the auto-connected loads will be controlled and evaluated by the design change control process to ensure the EDG is not overloaded. This change is designated as less restrictive because a Surveillance which is required in the CTS will not be required in the ITS.

- L.14 (*Category 4 – Relaxation of Required Action*) CTS 3.8.1.1 Action b states that the OPERABLE EDG must be demonstrated to be OPERABLE within 24 hours unless the absence of any potential common mode failure is demonstrated. This is required if the inoperable EDG inoperability is due to any cause “other than an inoperable support system, an independently testable component, or preplanned preventive maintenance or testing,” ITS Required Action B.3 states “Determine OPERABLE LCO 3.8.1.b EDG is not inoperable due to common cause failure.” This changes the CTS by allowing a determination for common cause failure, instead of requiring a demonstration for a potential common mode failure, for the OPERABLE EDG.

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 a determination to be made for the OPERABLE EDG and not require additional testing for it if common cause failure can be ruled out. The requirement B.3.1 states, “Determine OPERABLE LCO 3.8.1.b EDG is not inoperable due to common cause failure,” or B.3.2 requires the “Perform SR 3.8.1.2 for the OPERABLE LCO 3.8.1.b EDG.” The OPERABLE EDG may not require a start test to be performed. The CTS requires additional testing for a failure of an EDG, unless the absence of any potential common mode failure for the OPERABLE EDG is demonstrated. This requirement has always been interpreted as requiring additional testing for the OPERABLE EDG. This change is designated as

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less restrictive because less stringent Required Actions are being applied in the ITS than were applied in the CTS.

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10  
R3

- L.15 (*Category 6 – Relaxation of Surveillance Requirement Acceptance Criteria*) CTS Surveillance Requirement 4.8.1.1.2 contains the requirement to perform various tests for the EDGs “during shutdown.” ITS SRs 3.8.1.10, 3.8.1.11, 3.8.1.15, 3.8.1.16, and 3.8.1.17 are modified in a Note that states the Surveillance shall not normally be performed in specific MODES. An additional statement modifies the Note. It allows a full or partial Surveillance to be performed to reestablish OPERABILITY provided an assessment determines the safety of the unit is maintained or enhanced. This changes the CTS requirements for testing of the EDGs by allowing the listed tests to be performed in MODES in which they are normally prohibited from being conducted.

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 required EDG tests may be performed in the indicated MODES without a significant perturbation of the required electrical system. An evaluation must be performed to determine that unit safety is maintained or enhanced with the full or partial performance of the Surveillance under specific conditions. This change is designated as less restrictive because less stringent Surveillance Requirements are being applied in the ITS than were applied in the CTS.

- L.16 (*Category 7 – Relaxation Of Surveillance Frequency*) CTS 4.8.1.1.2.a.3 states, “Verifying the fuel oil transfer pump can be started and transfers fuel from the storage tank to the day tank.” This requirement shall be performed with a frequency specified in Table 4.8-2 on a Staggered Test Basis (STB). Table 4.8-2 states that the EDG test schedule is once per 31 days when the number of test failures is less than one in the past 20 valid tests, and once per 7 days if the number of test failures is two or more in the previous 20 valid tests. ITS SR 3.8.1.6 states, “Verify each required fuel oil transfer pump operates to transfer fuel oil from the storage tank to the day tank,” and the requirement is required to be performed every 92 days. This changes the CTS by decreasing the SR Frequency from 7 or 31 days on a STB to every 92 days.

The purpose of SR Frequency is to confirm OPERABILITY of the equipment. This change is acceptable because the new Surveillance Frequency has been evaluated to ensure that it provides an acceptable level of equipment reliability. The monthly start required by ITS SR 3.8.1.2 and the one-hour loading of EDG by ITS SR 3.8.1.3 may not reduce the fuel oil level in the EDG day tank sufficiently to actuate the level switches that cause a fuel oil transfer pump to start. Therefore, a 92-day requirement to ensure the pump operates and fills the EDG day tank is more appropriate. The lead or backup fuel oil transfer pump is started every 31 days to refill the day tank after the performance of SR 3.8.1.3. This is done to maintain the EDG day tank in a “topped off” condition. The lead and backup fuel oil transfer pumps are tested every 3 months

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3.8.1-11 ITS Condition B  
STS Condition B  
CTS Unit 1 3.8.1.1 Action b  
DOC L.3 and L.14

**NRC RAI:** See RAI 3.8.1-01 **Comment:** There seems to be a misunderstanding in the DOCs. A diesel generator (DG) cannot be returned to OPERABLE status until the cause of the failure is determined and corrected. If the cause of the failure is not determined within 24 hours, the OPERABLE DG must be tested. The DOC statement about the corrective action program continuing to assess the common cause evaluation for the inoperable DG is misleading because, as stated above, a DG cannot be considered OPERABLE unless the cause of the inoperability is determined and corrected. The licensee should consider revising the DOC to reflect the above.

**Response:** The Company will take the action proposed in the Comment. This will revise DOC L.3 to eliminate any reference to the plant's corrective action program and to specifically state that the cause of an EDG inoperability must be determined and corrected before the EDG can be returned to OPERABLE status. Also see the response to Question 1.

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**3.8.1 AC Sources – Operating**

See Revised Submittal Pages for RAI 3.8.1-01.

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3.8.1-12 ITS SR 3.8.1.8  
STS SR 3.8.1.8  
CTS Unit 2 SR 4.8.1.1.1.b  
DOC L.7

**NRC RAI: Comment:** The following is the staff interpretation of what the licensee is saying in DOC L.7. Closing breaker 25H1 in Modes 1-4 would inop buses 2H and 2J, and put the unit into 3.0.3. Therefore, breaker 25H1 cannot be closed in Modes 1-4. Since breaker 25H1 cannot be closed, effectively there is no alternate offsite source for buses 2H and 2J, and the SR is meaningless. Therefore, it should be deleted. If this staff interpretation is correct, it is suggested that the DOC be revised to reflect it. In looking at the DOC, the licensee should also address why the SR was included in the TS to begin with, given the plant design. This should also be addressed in the DOC.

**Response:** The Company will take the action proposed in the Comment, with modifications. This will revise DOC L.7 to specify that closing breaker 25H1 in MODES 1, 2, 3, and 4 would make buses 2H and 2J inoperable, and the unit would be required to enter LCO 3.0.3 and be required to shutdown. Therefore, breaker 25H1 cannot be closed in these MODES. Since breaker 25H1 cannot be closed, there is no alternate offsite source for buses 2H and 2J, and the SR is meaningless. In response to the second comment, there is no record readily available that documents the basis for including the SR in the Technical Specifications.

**DISCUSSION OF CHANGES**  
**ITS 3.8.1 - AC SOURCES - OPERATING**

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L.5 *(Category 7 – Relaxation of Surveillance Frequency)* CTS surveillance requirement 4.8.1.1.2.a requires that each EDG be demonstrated OPERABLE in accordance with the frequency specified in Table 4.8-2 on a STAGGERED TEST BASIS (STB). CTS Table 4.8-2 specifies the test frequency based on the number of failures that have occurred in testing each EDG during the previous 20 or 100 tests. If the number of failures do not exceed the specified limit, testing is to be performed every 31 days. If failures occur above the specified limits, then testing is conducted every 7 days. ITS SR 3.8.1.2 states that each EDG be started and reach steady state voltage and frequency within a fixed Frequency of 31 days. This changes the CTS by eliminating the requirements to test on a staggered test basis and an increasing frequency of testing based on the number of test failures.

This change is acceptable because the new Surveillance Frequency has been evaluated to ensure that it provides an acceptable level of equipment reliability. Additional testing of the EDGs has been shown to decrease reliability and create additional equipment inoperabilities. This change is designated as less restrictive because Surveillances will be performed less frequently under the ITS than under the CTS.

L.6 *(Category 6 – Relaxation of Surveillance Requirement Acceptance Criteria)* CTS requirements 4.8.1.1.2.d.3, 4, and 5 state that an EDG will respond to a loss of offsite power, an ESF actuation, and a loss of offsite power in conjunction with ESF actuation. These requirements do not specifically state that an actual or simulated signal may be used for the requirements. ITS SRs 3.8.1.10, 3.8.1.11, 3.8.1.12, and 3.8.1.17 state the EDG may be started for these requirements with an actual or simulated signal. This changes the CTS to allow either an actual or simulated signal to be credited in the performance of these requirements.

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 can not discriminate between an actual or simulated signal and the tests are unaffected by the type of signal used for initiation. This change allows credit to be taken for unplanned actuation, if sufficient information is collected to satisfy the test requirements. This change is designated as less restrictive because less stringent Surveillance Requirements are being applied in the ITS than were applied in the CTS.

L.7 *(Category 5 – Deletion of Surveillance Requirement)* Unit 2 CTS requirement 4.8.1.1.1.b requires the demonstration of OPERABILITY for the alternate offsite circuit by the manual transferring of the onsite Class 1E power source from the normal circuit to the alternate circuit every 18 months with the plant shutdown. The ITS does not include this requirement for Unit 2. This change eliminates the CTS requirement.

RAI  
3.8.1-  
12  
R3

**DISCUSSION OF CHANGES**  
**ITS 3.8.1 - AC SOURCES - OPERATING**

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This change is acceptable because the deleted Surveillance Requirement is not necessary to verify that the equipment used to meet the LCO are 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 analysis are protected. Closing breaker 25H1 in MODES 1, 2, 3, and 4 would make buses 2H and 2J inoperable and would require the unit to be placed in LCO 3.0.3. Therefore, Breaker 25H1 should not be closed in MODES 1, 2, 3, and 4 and there is no alternate offsite source for buses 2H and 2J. The SR is therefore meaningless and is deleted. This change is designated as less restrictive because Surveillances which are required in the CTS will not be required in the ITS.

RAI  
3.8.1-  
12  
R3

- L.8 *(Category 5 – Deletion of Surveillance Requirement)* CTS Surveillance 4.8.1.1.2.e describes the testing that must be performed following any modification that could affect EDG interdependence. ITS 3.8.1 does not include these testing requirements.

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 analysis are protected. Following repair, maintenance, modification, or replacement of a component has may affect OPERABILITY, post maintenance testing is required to demonstrate OPERABILITY of the system or component. This is described in the Bases of ITS SR 3.0.1 and required under SR 3.0.1. The OPERABILITY requirements of the EDGs are described in the Bases for Specification 3.8.1. In addition, the requirements of 10 CFR 50, Appendix B, Section XI (Test Control) provide adequate controls for test programs to ensure that testing incorporates applicable acceptance criteria. Compliance with 10 CFR 50 is required under the unit's operating license. As a result, post maintenance testing will continue to be performed and an explicit requirement in the Technical Specifications is not necessary. This change is designated as less restrictive because Surveillances which are required in the CTS will not be required in the ITS.

- L.9 *(Category 6 – Relaxation of Surveillance Requirement Acceptance Criteria)* CTS Surveillance Requirements 4.8.1.1.1 and 4.8.1.1.2 contain the requirements to perform various testing “during shutdown.” Surveillance Requirement for 4.8.1.1.2.d is required to be performed during shutdown. ITS SR 3.8.1.11 states in a Note that the required Surveillance shall not be performed in MODE 1 or 2. This changes the CTS requirements for testing of the AC sources by allowing the listed test to be performed in MODES 3 or 4.

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 required tests may be performed in the indicated MODES without a significant perturbation of the required electrical system. The performance of the EDG start on a simulated or

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**ITS Section 3.8, Electrical Power System**  
**3.8.1 AC Sources – Operating**

3.8.1-13 ITS SRs 3.8.1.6  
STS SRs 3.8.1.6  
CTS Unit 2 SR 4.8.1.1.2.a.3  
DOC L.16

**NRC RAI:** See RAI 3.8.1-03 **Comment:** The DOC does not provide an adequate justification for changing the test frequency from 31 days to 92 days. The purpose of the surveillance requirement (SR) is to test the system as well as the pump. As such, it is not part of the safety-related pump testing program. The licensee should provide adequate justification, or retain the NUREG for 31 days. In responding to this RAI, the licensee should also consider the North Anna fuel oil system design. There are two pumps per EDG, each pump taking suction on a separate storage tank. Are both pumps required in order to supply adequate fuel for 7 days of operation? If so, when are the second pumps and control systems tested?

**Response:** The Company will take the action proposed in the Comment with certain modifications. Only one fuel oil pump is required to provide the necessary transfer rate of fuel oil from the underground tank to the EDG day tank. DOC L.16 is modified to explain that the monthly EDG start (SR 3.8.1.2) and loading to 2500 kW to 2600 kW for one hour (SR 3.8.1.3) may not consume sufficient fuel oil volume from the EDG's day tank to automatically start a makeup to the tank. Level switches on the EDG day tank control the starting and stopping of the lead fuel oil transfer pump. Redundant level switches positioned at lower elevations control the starting and stopping of the backup fuel oil transfer pump. Therefore, the automatic operation of fuel oil system cannot be tested as a part of this SR because the level of the day tank is not reduced sufficiently to initiate an automatic start of the lead or backup pump. The lead and backup fuel oil pump will be manually started to transfer fuel oil to the day tank each month. The Inservice Testing Program requires the testing of both fuel oil transfer pumps every 92 days. This testing is conducted with the pumps in manual and would satisfy SR 3.8.1.6. The ISTS Bases for this SR allow this because of various system designs by stating, "The Frequency for this SR is variable, depending on individual system design, with up to a [92] day interval." North Anna's design qualifies for this allowance because of the limited quantity of fuel oil used in the monthly test. The automatic makeup of the system can only be tested when the EDG is required to run an extended period of time. This is usually performed during the 24-hour run of each EDG every 18 months. ITS SR 3.8.1.6 is adequate to ensure the fuel oil system remain OPERABLE for each EDG. Also see the response to Questions 3 and 29.

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See Revised Submittal Pages for RAI 3.8.1-03.

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**3.8.1 AC Sources – Operating**

3.8.1-14 ITS SR 3.8.1.6  
STS SR 3.8.1.6  
CTS Unit 2 SR 4.8.1.1.2.a.5  
DOC A.12

**NRC RAI: Comment:** This markup indicates the CTS will become ITS SR 3.8.1.6. However, the DOC and the Unit 1 markup indicate it will be SR 3.8.1.5. Is this an error in the Unit 2 markup?

**Response:** The Company agrees that a markup error was made. The markup for Unit 2 has been changed.

A.1

ELECTRICAL POWER SYSTEMS  
SURVEILLANCE REQUIREMENTS

ITS

4.8.1.1.1 Each of the above required physically independent circuits between the offsite transmission network and the onsite Class 1E distribution system shall be:

SR  
3.8.1.1

a. Determined OPERABLE at least once per 7 days by verifying correct breaker alignment indicating power availability.

b. Demonstrated OPERABLE at least once per 18 months during shutdown by manually transferring the onsite Class 1E power supply from the normal circuit to the alternate circuit.

L.7

4.8.1.1.2 Each emergency diesel generator (EDG) shall be demonstrated OPERABLE:

every 31 days

L.5

a. In accordance with the frequency specified in Table 4.8.2 on a STAGGERED TEST BASIS by:

SR  
3.8.1.4

1. Verifying the fuel level in the day tank. contains 450 gallons < FROM: LCO 3.8.1.1 b.1 >

< see ITS 3.8.3 >

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

SR  
3.8.1.6

3. Verifying the fuel transfer pump can be started and transfers fuel from the storage system to the day tank. every 92 days

L.19

A.10

~~INSERT PROPOSED NOTES TO SR 3.8.1.2~~

SR  
3.8.1.2

4. Verifying the EDG can start and gradually accelerate to a steady state voltage and frequency of  $4160 \pm 420$  volts and  $60 \pm 0.5$  Hz. Subsequently, verifying the generator is synchronized, gradually loaded to an indicated 2500-2600 kW and operates for at least 60 minutes.

SR  
3.8.1.3

INSERT PROPOSED Note to SR 3.8.1.3

L.19

A.11

M.6

L.A.2

SR  
3.8.1.5

5. Verifying the EDG is aligned to provide standby power to the associated emergency busses.

M.2

INSERT PROPOSED SR 3.8.1.5

b. At least once per 92 days by verifying that a sample of diesel fuel from the fuel storage tank obtained as a DRAIN sample in accordance with ASTM-D270-65, is within the acceptable limits specified in Table 1 of ASTM D975-74 when checked for viscosity, water and sediment.

see 3.8.3  
RAI 3.8.1-14 Rev 3

~~INSERT PROPOSED NOTES~~

SR  
3.8.1.7

c. At least once per 184 days, the EDG shall be started in less than or equal to 10 seconds after the start signal and achieve voltage greater than or equal to 3960 volts and frequency greater than or equal to 59.5 Hz. The generator steady state voltage and frequency shall be  $4160 \pm 420$  volts and  $60 \pm 0.5$  Hz.

L.19

RAI 3.8.1-04 Rev 3

\*\* This test shall be conducted in accordance with the manufacturer's recommendations regarding engine prelude and warmup procedures, and as applicable regarding loading recommendations.

L.19

\*\*\* This band is meant as guidance to avoid routine overloading of the engine. Loads in excess of this band for special testing under direct monitoring of the manufacturer or momentary variations due to changing bus loads shall not invalidate the test.

A.11

**North Anna Improved Technical Specifications (ITS) Review Comments**  
**ITS Section 3.8, Electrical Power System**  
**3.8.1 AC Sources – Operating**

3.8.1-15 ITS SRs 3.8.1.7  
STS SRs 3.8.1.7  
CTS Unit 2 SR 4.8.1.1.2.c  
DOC A.12

**NRC RAI:** See RAI 3.8.1-04 **Comment:** The DOC appears to be incorrect for the following reasons: 1) The proposed change is not Administrative. The CTS Note says manufacturer's recommendations shall be followed whereas ITS say may. This is a less restrictive change. 2) For this CTS SR, the manufacturer's recommendations regarding warmup and loading can be followed because there is no requirement for the EDG to be loaded in 10 seconds. The licensee should revise the DOC to address the above comments.

**Response:** The Company will take the action proposed in the Comment. DOC A.12 is eliminated and DOC L.19 is added. DOC L.19 states that the CTS requires the manufacturer's recommendations must be followed and the ITS only requires that the recommendations may be followed. Loading requirements of the CTS state that they are followed, as applicable. The loading recommendations are not applicable for ITS SR 3.8.1.7, therefore it is not required to be addressed by L.19. Loading recommendations is now addressed by DOC A.1. Also see the response to Questions 4 and 7.

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**3.8.1 AC Sources – Operating**

See Revised Submittal Pages for RAI 3.8.1-04.

**North Anna Improved Technical Specifications (ITS) Review Comments**  
**ITS Section 3.8, Electrical Power System**  
**3.8.1 AC Sources – Operating**

3.8.1-16 ITS SRs 3.8.1.2  
STS SRs 3.8.1.2  
CTS Unit 1 SR 4.8.1.1.2.a.4  
DOC A.12

**NRC RAI: Comment:** This footnote applies to CTS 4.8.1.1.a.4 as well as to 4.8.1.1.2.C. In the Unit 1 markup, this Note is deleted using DOC A.10 as the justification. In the Unit 2 markup, the Note is deleted using DOC A.12. The DOCs are substantially different. The licensee is requested to resolved the apparent discrepancy.

**Response:** The Company will take the action proposed by the Comment. The Unit 2 markup has deleted the \*\* footnote by both A.10 and L.19. DOC A.12 was changed to L.19 for RAI 3.8.1-4.

(A.1)

ELECTRICAL POWER SYSTEMS  
SURVEILLANCE REQUIREMENTS

ITS

4.8.1.1.1 Each of the above required physically independent circuits between the offsite transmission network and the onsite Class 1E distribution system shall be:

SR  
3.8.1.1

a. Determined OPERABLE at least once per 7 days by verifying correct breaker alignment indicating power availability.

b. Demonstrated OPERABLE at least once per 18 months during shutdown by manually transferring the onsite Class 1E power supply from the normal circuit to the alternate circuit.

(L.7)

4.8.1.1.2 Each emergency diesel generator (EDG) shall be demonstrated OPERABLE.

every 31 days

(L.5)

a. In accordance with the frequency specified in Table 4.8.2 on a STAGGERED TEST BASIS by:

SR  
3.8.1.4

1. Verifying the fuel level in the day tank. contains 450 gallons (from LCO 3.8.1.1.b.1)

SR  
3.8.1.6

2. Verifying the fuel level in the fuel storage tank. (see ITS 3.8.3)

SR  
3.8.1.2

3. Verifying the fuel transfer pump can be started and transfers fuel from the storage system to the day tank. every 92 days

(L.16)

SR  
3.8.1.3

4. Verifying the EDG can start and gradually accelerate to a steady state voltage and frequency of  $4160 \pm 420$  volts and  $60 \pm 0.5$  Hz. Subsequently, verifying the generator is synchronized, gradually loaded to an indicated 2500-2600 kW and operates for at least 60 minutes. INSERT PROPOSED Note to SR 3.8.1.3

(A.10)

(L.19)

(A.11)

(M.6)

SR  
3.8.1.5

5. Verifying the EDG is aligned to provide standby power to the associated emergency busses. INSERT PROPOSED SR 3.8.1.5

(L.A.2)

(M.2)

b. At least once per 92 days by verifying that a sample of diesel fuel from the fuel storage tank obtained as a DRAIN sample in accordance with ASTM-D270-65, is within the acceptable limits specified in Table 1 of ASTM D975-74 when checked for viscosity, water and sediment. INSERT PROPOSED NOTES

RAI 3.8.1-14 Rev 3  
see 3.8.3

SR  
3.8.1.7

c. At least once per 184 days, the EDG shall be started in less than or equal to 10 seconds after the start signal and achieve voltage greater than or equal to 3960 volts and frequency greater than or equal to 59.5 Hz. The generator steady state voltage and frequency shall be  $4160 \pm 420$  volts and  $60 \pm 0.5$  Hz.

(L.19)

RAI 3.8.1-04 Rev 3

\*\* This test shall be conducted in accordance with the manufacturer's recommendations regarding engine prelube and warmup procedures, and as applicable regarding loading recommendations.

(L.19)

(A.10)

\*\*\* This band is meant as guidance to avoid routine overloading of the engine. Loads in excess of this band for special testing under direct monitoring of the manufacturer or momentary variations due to changing bus loads shall not invalidate the test.

RAI 3.8.1-16 Rev 3

(A.11)

**North Anna Improved Technical Specifications (ITS) Review Comments**  
**ITS Section 3.8, Electrical Power System**  
**3.8.1 AC Sources – Operating**

3.8.1-17 ITS SRs 3.8.1.9, 3.8.1.12, and 3.8.1.13  
STS SRs 3.8.1.9, 3.8.1.13, and 3.8.1.14  
CTS Unit 2 SR 4.8.1.1.2.d.1, 4.8.1.1.2.d.5.c, and 3.8.1.1.2.d.6  
DOC L.10

**NRC RAI:** See 3.8.1-02 **Comment:** The proposed change is beyond scope. The licensee will have to provide more information on the proposed changes to allow for a thorough staff review. The information should include details on system design and how the transfer to the alternate offsite is made, specific details regarding the single largest load reject test, information on how it is determined that EDG trips are bypassed, and a discussion of why it is safe to conduct the 24-hour run at power.

**Response:** The Company agrees with the Comment and withdraws the proposed change. The Company proposes a change to the SRs that incorporates TSTF-283 Rev. 3. This will restore the MODE restrictions in the Note to the SRs and modifies the Note to read, "This Surveillance shall not normally be performed in MODES 1 and 2. However, this Surveillance may be performed to reestablish OPERABILITY provided an assessment determines the safety of the unit is maintained or enhanced." This change requires a modification to DOC L.10 and the creation of DOC L.18. Also see the response to Questions 2, 5, 6, 9, 18, 21, and 30.

**North Anna Improved Technical Specifications (ITS) Review Comments**  
**ITS Section 3.8, Electrical Power System**  
**3.8.1 AC Sources – Operating**

See Revised Submittal Pages for RAI 3.8.1-02.

**North Anna Improved Technical Specifications (ITS) Review Comments**  
**ITS Section 3.8, Electrical Power System**  
**3.8.1 AC Sources – Operating**

3.8.1-18 ITS SRs 3.8.1.12  
STS SRs 3.8.1.13  
CTS Unit 2 4.8.1.1.2.d.5.c  
DOC L.10

**NRC RAI:** See RAI 3.8.1-02 **Comment:** The proposed change is beyond scope. The licensee will have to provide more information on the proposed changes to allow for a thorough staff review. The information should include details on system design and how the transfer to the alternate offsite is made, specific details regarding the single largest load reject test, information on how it is determined that EDG trips are bypassed, and a discussion of why it is safe to conduct the 24-hour run at power.

**Response:** The Company agrees with the Comment and withdraws the proposed change. The Company proposes a change to the SRs that incorporates TSTF-283 Rev. 3. This will restore the MODE restrictions in the Note to the SRs and modifies the Note to read, "This Surveillance shall not normally be performed in MODES 1 and 2. However, this Surveillance may be performed to reestablish OPERABILITY provided an assessment determines the safety of the unit is maintained or enhanced." This change requires a modification to DOC L.10 and the creation of DOC L.18. Also see the response to Questions 2, 5, 6, 9, 17, 21, and 30.

**North Anna Improved Technical Specifications (ITS) Review Comments**  
**ITS Section 3.8, Electrical Power System**  
**3.8.1 AC Sources – Operating**

See Revised Submittal Pages for RAI 3.8.1-02.

**North Anna Improved Technical Specifications (ITS) Review Comments**  
**ITS Section 3.8, Electrical Power System**  
**3.8.1 AC Sources – Operating**

3.8.1-19 ITS SRs 3.8.1.11  
STS SRs 3.8.1.12  
CTS Unit 2 SR 4.8.1.1.2.d.6  
DOC L.9

**NRC RAI:** See RAI 3.8.1-02 **Comment:** DOC L.9 is written such that it appears to apply to ITS SR3.8.1.11. The corresponding CTS is 4.8.1.1.2.d.4. The licensee shall determine if this DOC is applicable to this CTS requirement, and if this DOC is in fact applicable provide a response as to why is Unit 1 not marked up the same.

**Response:** The Company agrees with the action recommended in the Comment. The markup of Unit 1 and Unit 2 for 4.8.1.1.2.d.4 (ITS SR 3.8.1.11) with DOC L.9 is correct. SR 4.8.1.1.2.d.6 for both Unit 1 and Unit 2 also referenced DOC L.9. This was incorrect and DOC L.9 has been eliminated for SR 4.8.1.1.2.d.6 (ITS 3.8.1.13).

A.1

RAI 3.8.1-04 Rev 3

ITS

ELECTRICAL POWER SYSTEMS  
SURVEILLANCE REQUIREMENTS

4.8.1.1.2 (Continued)

SR  
3.8.1.10

3. ~~INSERT PROPOSED NOTES~~ Verify on an actuator (L.15) (L.19) (A.14) (L.6)

- a. Verifying de-energization of the emergency busses and load shedding from the emergency busses.
- b. Verifying the EDG starts ~~on~~ on the auto-start signal, energizes the emergency busses with permanently connected loads within 10 seconds, energizes the auto-connected shutdown loads through the sequencing timers and operates for greater than or equal to 5 minutes while its generator is loaded with the shutdown loads. After energization of these loads, the steady state voltage and frequency shall be maintained at 4160 ± 420 volts and 60 ± 0.5 Hz. (L.15) (L.19)

(L.19) RAI 3.8.1-04 Rev 3

SR  
3.8.1.11

4. ~~INSERT PROPOSED NOTES~~ Verifying that on an ESF actuation (ES) signal (without loss of offsite power) the EDG starts ~~on~~ on the auto-start signal and achieves voltage greater than or equal to 3960 volts and frequency greater than or equal to 59.5 Hz within 10 seconds and operates on standby for greater than or equal to 5 minutes with a steady state voltage of 4160 ± 420 volts and a steady state frequency of 60 ± 0.5 Hz. (L.15) (L.9) (L.19)

actuator simulated (L.6) (M.4)

INSERT PROPOSED Part D&E

SR  
3.8.1.17

5. ~~INSERT PROPOSED NOTES~~ Verify an actuator (L.15) (L.19) (A.14) (L.6) (RAI 3.8.1-04 Rev 3) (L.19)

- a. Verifying de-energization of the emergency busses and load shedding from the emergency busses.
- b. Verifying the EDG starts ~~on~~ on the auto-start signal, energizes the emergency busses with permanently connected loads within 10 seconds, energizes the auto-connected emergency (accident) loads through the sequencing timers and operates for greater than or equal to 5 minutes and maintains the steady state voltage and frequency at 4160 ± 420 volts and 60 ± 0.5 Hz. (L.6) (RAI 3.8.1-02 Rev 3)

actual or simulated automatic start (L.10) (A.20) (LA.1)

SR  
3.8.1.12

c. Verifying that all EDG trips, except engine overspeed, generator differential and breaker overcurrent are automatically bypassed upon loss of voltage on the emergency bus and/or a safety injection actuation signal. (L.15) (A.12) (M.8) (RAI 3.8.1-19 Rev 3) (L.10) (A.15)

SR  
3.8.1.13

6. ~~INSERT PROPOSED NOTES~~ Verifying the EDG operates ~~for~~ for at least 24 hours. During the first 2 hours of this test, the EDG shall be loaded to an indicated target value of 2950 kw (between 2900-3000 kw) and during the remaining 22 hours of this test, the EDG shall be loaded to an indicated 2500-2600 kw. (L.10) (A.15) (Rev 3 RAI 3.8.1-02)

\*\* This test shall be conducted in accordance with the manufacturer's recommendations regarding engine prelude and warmup procedures, and as applicable regarding loading recommendations. (L.19) (Rev 3 RAI 3.8.1-04)

\*\*\* This band is meant as guidance to avoid routine overloading of the engine. Loads in excess of this band for special testing under direct monitoring of the manufacturer or momentary variations due to changing bus loads shall not invalidate the test. (A.15)

A.1

ELECTRICAL POWER SYSTEMS  
SURVEILLANCE REQUIREMENTS

RAI  
3.8.1-04  
REV 3

L.9  
L.15  
L.19

L.6  
L.19

INSERT 3 parts  
of and e

M.4

A.14  
L.15  
L.19

L.6

L.19

RAI  
3.8.1-04  
REV 3

RAI  
3.8.1-02  
REV 3

L.10

A.18

A.20

L.6  
RAI 3.8.1-19  
REV 3

L.10 M.8

L.19

A.15

L.13

L.15 A.14

RAI  
3.8.1-04  
REV 3

M.3

L.19

A.15

4.8.1.1.2 (Continued)

SR  
3.8.1.11

4. ~~INSERT PROPOSED NOTES~~ ~~ACTUAL or Simulated~~  
Verifying that on an ESF actuation (test) signal (without loss of offsite power) the EDG starts ~~\*\*~~ on the auto-start signal and achieves voltage greater than or equal to 3960 volts and frequency greater than or equal to 59.5 Hz within 10 seconds and operates on standby for greater than or equal to 5 minutes with a steady state voltage of  $4160 \pm 420$  volts and a steady state frequency of  $60 \pm 0.5$  Hz.

SR  
3.8.1.17

5. ~~INSERT PROPOSED NOTES~~  
Simulating a loss of offsite power in conjunction with an ESF actuation test signal, and ~~Verify an actual or~~  
a) Verifying de-energization of the emergency busses and load shedding from the emergency busses.  
b) Verifying the EDG starts ~~\*\*~~ on the auto-start signal, energizes the emergency busses with permanently connected loads within 10 seconds, energizes the auto-connected emergency (accident) loads through the sequencing timers and operates for greater than or equal to 5 minutes and maintains the steady state voltage and frequency at  $4160 \pm 420$  volts and  $60 \pm 0.5$  Hz.

SR  
3.8.1.12

c) Verifying that all EDG trips, except engine overspeed, generator differential and ~~breaker overcurrent~~ are automatically bypassed upon loss of voltage on the emergency bus and/or a safety injection actuation signal.

SR  
3.8.1.13

6. Verifying the EDG operate ~~\*\*~~ for at least 24 hours. During the first 2 hours of this test, the EDG shall be loaded to an indicated target value of 2950 kw (between 2900-3000 kw) ~~\*\*~~ and during the remaining 22 hours of this test, the EDG shall be loaded to an indicated 2500-2600 kw ~~\*\*~~.

SR  
3.8.1.15

7. Verifying that the auto-connected loads to each EDG do not exceed the 2000 hour rating of 3000 kw.  
8. Verifying the EDG's capability to: ~~INSERT PROPOSED NOTE~~  
a) Synchronize with the offsite power source while the EDG is loaded with its emergency loads upon a simulated restoration of offsite power.  
b) Transfer its loads to the offsite power source, and  
c) ~~Proceed through its shutdown sequence~~ Returns to ready-to-load operation.

\*\* This test shall be conducted in accordance with the manufacturer's recommendations regarding engine pre-lube and warmup procedures, and as applicable regarding loading recommendations.

\*\*\* This band is meant as guidance to avoid routine overloading of the engine. Loads in excess of this band for special testing under direct monitoring of the manufacturer or momentary variations due to changing bus loads shall not invalidate the test.

**North Anna Improved Technical Specifications (ITS) Review Comments**  
**ITS Section 3.8, Electrical Power System**  
**3.8.1 AC Sources – Operating**

3.8.1-20 ITS None  
STS None  
CTS Unit 2 SR 4.8.1.1.2.d.7  
DOC L.13

**NRC RAI:** See 3.8.1-08 **Comment:** Instead of being deleted, this CTS requirement should be relocated to a licensee- controlled document, such as the Technical Requirements Manual (TRM).

**Response:** The Company does not agree with the action recommended in the Comment. The requirement states, "Verifying that the auto-connected loads to each EDG do not exceed the 2000 hour rating of 3000 kW." This is a design change process requirement that is verified when a load is added to the emergency bus and can be powered by an EDG. This requirement is and will continue to be a part of that process as stated in Electrical Engineering Nuclear Standard (Guidelines for Electrical System Analysis) STD EEN – 0026 Attachment 8.1, Part 1.3. DOC L.13 is modified to reflect that this requirement is contained in the design change process requirements. Also see the response to Question 8.

**North Anna Improved Technical Specifications (ITS) Review Comments**  
**ITS Section 3.8, Electrical Power System**  
**3.8.1 AC Sources – Operating**

See Revised Submittal Pages for RAI 3.8.1-08.

**North Anna Improved Technical Specifications (ITS) Review Comments**  
**ITS Section 3.8, Electrical Power System**  
**3.8.1 AC Sources – Operating**

3.8.1-21 ITS SRs 3.8.1.18  
STS SRs 3.8.1.20  
CTS Unit 2 SR 3.8.1.1.2.e  
DOC L.10

**NRC RAI:** See 3.8.1-02 **Comment:** The proposed change is beyond scope. The licensee will have to provide more information on the proposed changes to allow for a thorough staff review. The information should include details on system design and how the transfer to the alternate offsite is made, specific details regarding the single largest load reject test, information on how it is determined that EDG trips are bypassed, and a discussion of why it is safe to conduct the 24-hour run at power.

**Response:** The Company will take the action proposed in the Comment. The ISTS does not propose any MODE restrictions for the performance of this SR. Therefore, DOC L.10 should apply for the deletion of the “during shutdown” condition. Also see the response to Questions 2, 5, 6, 9, 17, 18, and 30.

**North Anna Improved Technical Specifications (ITS) Review Comments**  
**ITS Section 3.8, Electrical Power System**  
**3.8.1 AC Sources – Operating**

See Revised Submittal Pages for RAI 3.8.1-02.

**North Anna Improved Technical Specifications (ITS) Review Comments**  
**ITS Section 3.8, Electrical Power System**  
**3.8.1 AC Sources – Operating**

3.8.1-22 ITS Condition C

STS N/A

CTS Units 1 and 2 Action b.1 and b.2

JFD 6

**NRC RAI: Comment:** The Note in Condition C reads Alternate AC DG or EDGs on other unit inoperable. The Required Actions, however, have AND between C.1 and C.2, indicating both Actions must be completed. Should AND be changed to OR? Also, provide the required Action if both the Alternate AC DG and one or both opposite unit EDG are inoperable at the same time. Is this addressed anywhere in the Limiting Condition for Operation (LCO)?

**Response: Parts 1 and 2)** The AND is correct for the Required Actions of Condition C. The Company will modify the Note for Condition C to read, "Only applicable if Alternate AC (AAC) diesel generator (DG) or one or more EDGs on other unit is inoperable." The Required Actions are modified to include a restore option for the Condition. Condition C limits the Completion Time that an EDG may be inoperable to 72 hours versus 14 days. The Condition must be entered any time the subject unit's EDG is inoperable and if the AAC or one or more EDGs on the other unit are inoperable. This is a translation of CTS requirements in the ITS format. No technical requirements are modified with this proposed change. In addition, the Note for Condition F is modified to read, ". . . one or more LCO 3.8.1.b EDG(s) or AAC DG . . ." This is changed to provide consistency between Actions C and F. **Part 3)** Required Actions C.1.1 and C.1.2 or the EDG must be return to OPERABLE, Required Action C.2, within 72 hours or the unit is required to enter Condition L. Condition L Required Actions specify that the unit be placed in MODE 3 within 6 hours and MODE 5 within the next 36 hours.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
<p>B. (continued)</p>	<p>B.3.1 Determine OPERABLE LCO 3.8.1.b EDG is not inoperable due to common cause failure.</p> <p style="text-align: center;"><u>OR</u></p> <p>B.3.2 Perform SR 3.8.1.2 for OPERABLE LCO 3.8.1.b EDG.</p> <p style="text-align: center;"><u>AND</u></p> <p>B.4 Restore EDG to OPERABLE status.</p>	<p>24 hours</p> <p>24 hours</p> <p>14 days</p> <p style="text-align: center;"><u>AND</u></p> <p>17 days from discovery of failure to meet LCO</p>
<p>C. -----NOTE----- Only applicable if Alternate AC (AAC) diesel generator (DG) or one or more EDG on the other unit is inoperable. -----</p> <p>One LCO 3.8.1.b EDG inoperable.</p>	<p>C.1.1 Restore inoperable AAC DG to OPERABLE status.</p> <p style="text-align: center;"><u>AND</u></p> <p>C.1.2 Restore inoperable EDG(s) on other unit to OPERABLE status.</p> <p style="text-align: center;"><u>OR</u></p> <p>C.2 Restore EDG to OPERABLE status.</p>	<p>72 hours</p> <p>72 hours</p> <p>72 hours</p>

RAI  
3.8.1-22  
R3

RAI  
3.8.1-22  
R3

RAI  
3.8.1-22  
R3

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
<p>E. One required LCO 3.8.1.c EDG inoperable.</p>	<p>E.1 Perform SR 3.8.1.1 for required offsite circuit(s).</p> <p><u>AND</u></p> <p>E.2 Declare required feature(s) supported by the inoperable EDG inoperable when its redundant required feature(s) is inoperable.</p> <p><u>AND</u></p> <p>E.3 Declare associated shared component inoperable.</p>	<p>1 hour</p> <p><u>AND</u></p> <p>Once per 8 hours thereafter</p> <p>4 hours from discovery of Condition E concurrent with inoperability of redundant required feature(s)</p> <p>14 days</p>
<p>F. -----NOTE----- Only applicable if one or more LCO 3.8.1.b EDG(s) or AAC DG is inoperable. -----</p> <p>One required LCO 3.8.1.c EDG inoperable.</p>	<p>F.1.1 Restore inoperable AAC DG to OPERABLE status.</p> <p><u>AND</u></p> <p>F.1.2 Restore inoperable LCO 3.8.1.b EDG (s) to OPERABLE status.</p> <p><u>OR</u></p> <p>F.2 Declare associated shared component inoperable.</p>	<p>72 hours</p> <p>72 hours</p> <p>72 hours</p>

RAI  
3.8.1-22  
R3

BASES

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ACTIONS

C.1 and C.2 (continued)

Condition B; Required Actions C.1 and C.2 limit the time the EDG may be out of service to 72 hours. If the AAC DG or the other unit's EDG(s) is inoperable when the EDG becomes inoperable, the allowed outage time (AOT) is limited to 72 hours, unless the AAC DG and the other unit's EDG(s) are returned to OPERABLE status. If during the 72 hour Completion Time of C.1 or C.2, the AAC DG and the other unit's EDG(s) are returned to OPERABLE status, Condition C is exited and AOT is restricted by the Completion Time tracked in Condition B. If the AAC DG or one or more of the other unit's EDG(s) becomes inoperable at sometime after the initial EDG inoperability, Condition C requires the restoration of the EDG or the AAC DG and the other unit's EDG(s) within 72 hours or Condition L is required to be entered.

RAI  
3.8.1-22  
R3

The 72 hour Completion Time is considered reasonable and takes into account the assumption in the probabilistic safety analysis (PSA) for potential core damage frequency.

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

Condition D is modified by a Note indicating that separate Condition entry is allowed for each offsite circuit on the other unit that provides electrical power to required shared components.

To provide the necessary electrical power for the SW, MCR/ESGR EVS, and Auxiliary Building central exhaust functions for a unit, AC electrical sources of both units may be required to be OPERABLE. Action D is entered for one or more inoperable offsite circuit(s) on the other unit that is necessary to support required shared components. These shared components are the SW pump(s), MCR/ESGR fan(s), and Auxiliary Building central exhaust fan(s). Required Action D.1 verifies the OPERABILITY of the remaining required offsite sources within an hour of the inoperability and every 8 hours thereafter. Since the Required Action only specifies "perform," a failure of the SR 3.8.1.1 acceptance criteria does not result in a Required Action not met.

The Completion Time for Required Action D.2 is intended to allow the operator time to evaluate and repair any discovered inoperabilities. This Completion Time also allows  
(continued)

**JUSTIFICATION FOR DEVIATIONS**  
**ITS 3.8.1 - AC SOURCES - OPERATING**

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1. The brackets are removed and the proper plant specific information/value is provided.
2. Changes are made (additions, deletions, and/or changes) to the ISTS, which reflect the plant specific nomenclature, number, reference, system description, analysis, or licensing basis description. This change includes the diesel generator (DG) to emergency diesel generator (EDG), automatic load sequencer to sequencing timing relays, plant to unit, and Trains A and B to Trains H and J.
3. Editorial change made with the removal of the Reviewer's Note to be consistent with the ISTS Writers Guide.
4. The bracketed requirement ISTS SR 3.8.1.17 is deleted. This is acceptable because the North Anna electrical design does not incorporate an override from an actual or simulated ESF signal of the EDG operating in a test mode. The following requirements are renumbered, where applicable, to reflect this deletion.
5. ISTS SR 3.8.1.8 requires the automatic or manual transfer of the AC power sources from the normal offsite circuit to each alternate offsite circuit every 18 months. North Anna Unit 2 design does not include an alternate circuit from the offsite AC source as tested by SR 3.8.1.8. To perform this testing, H and J emergency buses would be tied electrically together with breaker 25H1. This alignment is not allowed by GDC 17 requirements in MODES 1, 2, 3, and 4. Note 1 modifies ISTS SR 3.8.1.8 and states, "The Surveillance is only applicable to Unit 1." Note 2 to the SR specifies MODE restrictions for the performance of the SR. This is acceptable because North Anna Unit 1 does have an alternate offsite circuit and the test can be performed and the test cannot be performed on Unit 2 without jeopardizing electrical independence.
6. ITS Action C is added to the ISTS and applies when an EDG is inoperable and one or more of the opposite unit's EDG(s) or the Alternate AC (AAC DG) is inoperable. This change is acceptable because it limits the Completion Time for ITS Action C with an inoperable EDG to 72 hours without both opposite unit EDGs and the AAC DG OPERABLE. CTS 3.8.1.1 Action b.2 allows the removal of an EDG for a period up to 14 days provided the opposite unit's EDGs and the AAC DG are OPERABLE. If the other units EDG(s) or AAC DG are inoperable or become inoperable, only 72 hours is allowed to return them or return the inoperable EDG to OPERABLE status. ITS Required Action B.4 sets the Completion Time for an inoperable EDG to 14 days and is limiting if Condition C is not entered. This is acceptable because ITS Action C provides adequate remedial Required Actions and appropriate associated Completion Time of 72 hours. The 14-day allowance provided by ITS Action B, Required Actions A.3 and B.4 Completion Times are modified to allow 17 days from failure to meet the LCO from the ISTS requirement of 6 days. This is acceptable because of the Completion Times allowed by Conditions A and B. ITS Actions following Action C are renumbered to reflect this addition.

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23

**ITS 3.8.1 - AC SOURCES - OPERATING**

INSERT

CONDITION	REQUIRED ACTION	COMPLETION TIME
<p>C. -----NOTE----- Only applicable if Alternate AC (AAC) diesel generator (DG) or one or more EDG on other unit is inoperable. ----- One LCO 3.8.1.b EDG inoperable.</p>	<p>C.1.1 Restore inoperable AAC DG to OPERABLE status.  <u>AND</u>  C.1.2 Restore inoperable EDG(s) on other unit to OPERABLE status.  <u>OR</u>  C.2 Restore EDG to OPERABLE status.</p>	<p>72 hours  72 hours  72 hours</p> <p style="text-align: right; vertical-align: middle;">RAI 3.8.1-22 R3</p>
<p>D. -----NOTE----- Separate Condition entry is allowed for each offsite circuit. ----- One or more required LCO 3.8.1.c offsite circuit(s) inoperable.</p>	<p>D.1 Perform SR 3.8.1.1 for OPERABLE LCO offsite circuit(s).  <u>AND</u>  D.2 Declare required feature(s) with no offsite power available inoperable when its redundant required feature(s) is inoperable.  <u>AND</u>  D.3 Declare associated shared component(s) inoperable.</p>	<p>1 hour  <u>AND</u>  Once per 8 hours thereafter  24 hours from discovery of no offsite power to a train concurrent with inoperability of redundant required feature(s)  72 hours</p>

**ITS 3.8.1 - AC SOURCES - OPERATING**

INSERT (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
<p>E. One required LCO 3.8.1.c EDG inoperable.</p>	<p>E.1 Perform SR 3.8.1.1 for required offsite circuit(s).</p> <p><u>AND</u></p> <p>E.2 Declare required feature(s) supported by the inoperable EDG inoperable when its redundant required feature(s) is inoperable.</p> <p><u>AND</u></p> <p>E.3 Declare associated shared component(s) inoperable.</p>	<p>1 hour</p> <p><u>AND</u></p> <p>Once per 8 hours thereafter</p> <p>4 hours from discovery of Condition E concurrent with inoperability of redundant required feature(s)</p> <p>14 days</p>
<p>F. -----NOTE----- Only applicable if one or more LCO 3.8.1.b EDG(s) or AAC DG is inoperable. ----- One required LCO 3.8.1.c EDG inoperable.</p>	<p>F.1.1 Restore inoperable AAC DG to OPERABLE status.</p> <p><u>AND</u></p> <p>F.1.2 Restore inoperable LCO 3.8.1.b EDG(s) to OPERABLE status.</p> <p><u>OR</u></p> <p>F.2 Declare associated shared component(s) inoperable.</p>	<p>72 hours</p> <p>72 hours</p> <p>72 hours</p> <p style="text-align: right;">} RAI 3.8.1-22 Rev 3</p>

**DISCUSSION OF CHANGES**  
**ITS 3.8.1 - AC SOURCES - OPERATING**

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ADMINISTRATIVE CHANGES

- A.1 In the conversion of the North Anna 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-1431, Rev. 1, "Standard Technical Specifications-Westinghouse Plants" (ISTS).

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

- A.2 CTS LCO 3.7.4.1, Service Water System – Operating, states, “Two service water loops (shared with the other unit) shall be OPERABLE with each loop consisting of two OPERABLE service water pumps (excluding auxiliary service water pumps) with their associated normal and emergency power supplies, and an OPERABLE flow path.” Each unit’s service water system requirements consist of the above requirements for either unit operating in MODES 1, 2, 3, or 4. ITS LCO 3.7.10 specifies the requirements for the Main Control Room (MCR) / Emergency Switchgear Room (ESGR) Habitability System. This system requires the MCR and ESGR fans on both units to be OPERABLE in MODES 1, 2, 3, and 4 and during the movement of recently irradiated fuel assemblies. ITS LCO 3.7.12 requires the fans from the Auxiliary Building central exhaust system to be OPERABLE to support the Emergency Core Cooling System (ECCS) Pump Room Exhaust Air Cleanup System. This could require a fan powered from the other unit to be required for this unit. The SW pumps and the fans from the MCR/ESGR and Auxiliary Building exhaust ventilation systems are components that may be required by either or both units. Therefore, these pumps and fans are classified as “shared components,” for the electrical power requirements. ITS LCO 3.8.1 Action J states, “Two required LCO 3.8.1.c EDGs inoperable, declare shared components inoperable immediately.” This changes the CTS by specifically stating the requirement in the ITS Action J.

The purpose of the proposed change is to structure the existing electrical requirements for the shared components in the ITS by placing electrical requirements in ITS section 3.8. This change is acceptable because the AC sources requirements for the SW, MCR/ESGR Emergency Habitability System, and ECCS Pump Room Exhaust Cleanup System functions are contained in the electrical requirement section of the unit’s Technical Specifications. The additional requirements of the fans in the ventilation specifications are addressed by more restrictive discussion of changes to the CTS requirements. The additional electrical requirements are classified as administrative because of the systems may require electrical power from both units in order to satisfy the individual safety function. This change is designated as administrative because it does not result in a technical change to the CTS.

- A.3 CTS 3.8.1.1 Actions b.1 and b.2 provide an allowance to have an EDG inoperable for up to 14 days. These Actions require the OPERABILITY of the alternate AC (AAC)

**DISCUSSION OF CHANGES**  
**ITS 3.8.1 - AC SOURCES - OPERATING**

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diesel generator (DG) and the opposite unit's EDGs at the time of the initial inoperability of the EDG and throughout the 14 day allowed outage time. If either the AAC DG or either of the opposite unit's EDGs become inoperable when relied on for this action, a seventy two-hour limit is imposed for the EDG. If the AAC DG and both of the opposite unit's EDGs are returned to an OPERABLE status within the 72-hour limit, the EDG may continue in the 14 day allowed outage. ITS Action B provides the necessary Required Actions for returning the inoperable EDG to OPERABLE status within 14 days. ITS Action C requires with an EDG inoperable and one or more of the opposite unit's EDGs or the AAC DG inoperable, both of the opposite unit's EDGs and the AAC DG must be restored to OPERABLE status within 72 hours or restore the ITS 3.8.1.b EDG to OPERABLE status. A Note to ITS Condition C states that the condition is only applicable if either the AAC DG or the opposite unit EDG(s) is inoperable.

RAI  
3.8.1-22  
R3

This change is acceptable because no technical requirements are added to or deleted from the current requirements. The change in format of the CTS, with the conversion to the ITS, maintains all technical requirements. This change is designated as administrative because it does not result in a technical change to the CTS.

- A.4 CTS 3.8.1.1 Action c applies, "With one offsite circuit and one EDG inoperable." In this condition an emergency bus may be de-energized. CTS LCO 3.8.2.1 provides an Action for an emergency bus that is de-energized. A Note to ITS 3.8.1 Action H in the Required Actions column states, "Enter applicable Conditions and Required Actions of LCO 3.8.9, "Distribution System - Operating," when Condition H is entered with no AC power source to any train." The addition of the Note does not alter the technical requirements of the CTS and acts as only a reminder to enter appropriate Actions.

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 emergency bus becomes de-energized. This change is designated as administrative because it does not result in a technical change to the CTS.

- A.5 CTS 3.8.1.1 Action c for an inoperable offsite circuit and EDG requires the restoration of one of the sources within 12 hours and states "demonstrate the OPERABILITY of the remaining offsite A.C. power sources by performing Surveillance Requirement 4.8.1.1.a within one hour and at least once per 8 hours thereafter." That is, when the EDG is declared inoperable and Action b is entered and either earlier or later an offsite circuit is declared inoperable, Action a. and Action c. are also required to be entered. The only mechanism for entering Action c is to be in Action a and Action b concurrently. ITS 3.8.1 Action H states that when one offsite circuit and one EDG are inoperable, one source must be returned to OPERABLE status within twelve hours. The only mechanism to enter this Condition is to have entered ITS 3.8.1 Actions A and B concurrently. ITS Required Action B.1 states that

**North Anna Improved Technical Specifications (ITS) Review Comments**  
**ITS Section 3.8, Electrical Power System**  
**3.8.1 AC Sources – Operating**

3.8.1-23 ITS Condition D  
STS N/A  
CTS N/A  
JFD 12

**NRC RAI: Comment:** Condition D includes a Note allowing separate condition entry for the opposite unit's offsite circuits. Condition D also allows one or both opposite unit offsite circuits to be inoperable at the same time, without any additional requirements. What is the justification for these LCO allowances? Why is the loss of both opposite unit offsite circuits not more of a concern than the loss of only one offsite circuit? Given the wording of Condition D, what is the purpose of Required Action D.1? Note that Required Actions D.1 and D.2 are worded the same as the Actions in Condition A. To avoid confusion, these Required Actions should be revised to make it clear they are associated with offsite power for shared systems/components.

**Response: Part 1)** This change is consistent with Condition A of the NUREG 1431. Each required shared component must have an OPERABLE EDG. Each required feature must be verified OPERABLE with all of its redundant required features OPERABLE within 24 hours from discovery of no offsite power. Only 72 hours is allowed for the inoperable offsite circuit, and then the shared component(s) is declared inoperable. The LCOs in Section 3.7 contain various Conditions for the required inoperable component(s). If these components are inoperable, then the appropriate Conditions must be entered. **Part 2)** The equipment remains powered from an associated EDG and the Completion Time is limited to 72 hours for each associated-shared component(s) in this condition. **Part 3)** This action ensures that all offsite circuits (from the subject unit or the other unit) are OPERABLE. **Part 4)** The Company disagrees with the Comment. These actions ensure the requirements are clearly defined in the specification and the wording of Required Action D.1 and D.2 should be similar to Required Actions A.1 and A.2 to be consistent with the NUREG format.

**North Anna Improved Technical Specifications (ITS) Review Comments**  
**ITS Section 3.8, Electrical Power System**  
**3.8.1 AC Sources – Operating**

3.8.1-24 ITS Condition D  
STS N/A  
CTS N/A  
JFD 12

**NRC RAI: Comment:** The licensee is requested to provide a justification for waiting 72 hours to implement Required Action D.3.

**Response:** The change is justified because the required shared component has an OPERABLE EDG. A component meets the definition of OPERABLE – OPERABILITY by having a “normal or emergency” electrical power. The 72 hours is the same amount of time allowed for an entire ESF train that has an offsite circuit inoperable.

**North Anna Improved Technical Specifications (ITS) Review Comments**  
**ITS Section 3.8, Electrical Power System**  
**3.8.1 AC Sources – Operating**

3.8.1-25 ITS Condition E  
STS N/A  
CTS N/A  
JFD 12

**NRC RAI: Comment:** Proposed Condition E addresses inoperability of an EDG associated with the opposite unit. Assume you are in the Unit 1 TS, and an EDG on Unit 2 becomes inoperable. Proposed Required Actions E.1 and E.2 would be covered by Condition B and/or Condition C for Unit 2. There does not appear to be any need for these Actions in Condition E. The licensee should consider deleting these Actions from Condition E since, in the staff's view, they could be confusing. Also, what is the justification for waiting 14 days to implement Required Action E.3?

**Response: Part 1)** The Company disagrees with the Comment. For Unit 1, Conditions B and C only apply for Unit's 1H and J EDGs and Condition E applies only to Unit 2's required EDGs that are needed to support Unit 1's electrical requirements for required shared components. **Part 2)** Because the required shared component has an OPERABLE offsite circuit, the component meets the definition of OPERABLE – OPERABILITY by having “normal or emergency” electrical power. This is the same period of time allowed for an entire ESF train that has an EDG inoperable.

**North Anna Improved Technical Specifications (ITS) Review Comments**  
**ITS Section 3.8, Electrical Power System**  
**3.8.1 AC Sources – Operating**

3.8.1-26 ITS Condition E  
STS N/A  
CTS N/A  
JFD 12

**NRC RAI: Comment:** The licensee is requested to provide a justification for waiting 14 days to implement Required Action E.3.

**Response:** The 14 days is justified because the required shared component has an OPERABLE offsite circuit. A component meets the definition of OPERABLE – OPERABILITY by having “normal or emergency” electrical power. This is the same period of time allowed for an entire ESF train that has an EDG inoperable.

**North Anna Improved Technical Specifications (ITS) Review Comments**  
**ITS Section 3.8, Electrical Power System**  
**3.8.1 AC Sources – Operating**

3.8.1-27 ITS Condition F  
STS N/A  
CTS N/A  
JFD 12

**NRC RAI: Comment:** The licensee is requested to provide a justification for waiting 72 hours to implement Required Action F.2.

**Response:** 72 hours is justified because the associated shared component(s) continue to be powered by an OPERABLE offsite circuit. This Condition is similar to Condition C by limiting an inoperable EDG to 72 hours from 14 days, with either one or more EDG(s) on this unit or the AAC DG inoperable.

**North Anna Improved Technical Specifications (ITS) Review Comments**  
**ITS Section 3.8, Electrical Power System**  
**3.8.1 AC Sources – Operating**

3.8.1-28 ITS Condition J  
STS N/A  
CTS N/A  
JFD None

**NRC RAI: Comment:** Proposed Condition J addresses two LCO 3.8.1c EDGs inoperable. However, the LCO does not address two LCO 3.8.1.c offsite circuits inoperable, or one LCO 3.8.1.C offsite and one LCO 3.8.1.c EDG inoperable. These plant conditions could lead to LCO 3.0.3. Should these possible plant conditions be included in the ITS?

**Response:** The Company disagrees with the Comment. Separate condition entry is allowed Condition D. Therefore, for the loss of two offsite circuits on the other unit, that are required for shared components on this unit, Condition D may be entered twice to track the offsite supply for the shared required equipment. If both an EDG and an offsite circuit for a required shared component are inoperable, then the component is inoperable and the applicable TS LCO 3.7 Condition must be entered.

**North Anna Improved Technical Specifications (ITS) Review Comments**  
**ITS Section 3.8, Electrical Power System**  
**3.8.1 AC Sources – Operating**

3.8.1-29 ITS SRs 3.8.1.6  
STS SRs 3.8.1.6  
CTS Unit 1 and Unit 2 SR 4.8.1.1.2.a.3  
JFD 12

**NRC RAI:** See 3.8.1-03 **Comment:** The DOC does not provide an adequate justification for changing the test frequency from 31 days to 92 days. The purpose of the surveillance requirement (SR) is to test the system as well as the pump. As such, it is not part of the safety-related pump testing program. The licensee should provide adequate justification, or retain the NUREG for 31 days. In responding to this RAI, the licensee should also consider the North Anna fuel oil system design. There are two pumps per EDG, each pump taking suction on a separate storage tank. Are both pumps required in order to supply adequate fuel for 7 days of operation? If so, when are the second pumps and control systems tested?

**Response:** The Company will take the action proposed in the Comment with certain modifications. Only one fuel oil pump is required to provide the necessary transfer rate of fuel oil from the underground tank to the EDG day tank. DOC L.16 is modified to explain that the monthly EDG start (SR 3.8.1.2) and loading to 2500 kW to 2600 kW for one hour (SR 3.8.1.3) may not consume sufficient fuel oil volume from the EDG's day tank to automatically start a makeup to the tank. Level switches on the EDG day tank control the starting and stopping of the lead fuel oil transfer pump. Redundant level switches positioned at lower elevations control the starting and stopping of the backup fuel oil transfer pump. Therefore, the automatic operation of fuel oil system cannot be tested as a part of this SR because the level of the day tank is not reduced sufficiently to initiate an automatic start of the lead or backup pump. The lead and backup fuel oil pump will be manually started to transfer fuel oil to the day tank each month. The Inservice Testing Program requires the testing of both fuel oil transfer pumps every 92 days. This testing is conducted with the pumps in manual and would satisfy SR 3.8.1.6. The ISTS Bases for this SR allow this because of various system designs by stating, "The Frequency for this SR is variable, depending on individual system design, with up to a [92] day interval." North Anna's design qualifies for this allowance because of the limited quantity of fuel oil used in the monthly test. The automatic makeup of the system can only be tested when the EDG is required to run an extended period of time. This is usually performed during the 24-hour run of each EDG every 18 months. ITS SR 3.8.1.6 is adequate to ensure the fuel oil system remain OPERABLE for each EDG. Also see the response to Questions 3 and 13.

**North Anna Improved Technical Specifications (ITS) Review Comments**  
**ITS Section 3.8, Electrical Power System**  
**3.8.1 AC Sources – Operating**

See Revised Submittal Pages for RAI 3.8.1-03.

**North Anna Improved Technical Specifications (ITS) Review Comments**  
**ITS Section 3.8, Electrical Power System**  
**3.8.1 AC Sources – Operating**

3.8.1-30 ITS SRs 3.8.1.8, 3.8.1.9, 3.8.1.12, and 3.8.1.15  
STS SRs 3.8.1.8, 3.8.1.9, 3.8.1.13, and 3.8.1.16  
CTS N/A  
JFD 8

**NRC RAI:** See 3.8.1-02 **Comment:** The proposed change is beyond scope. The licensee will have to provide more information on the proposed changes to allow for a thorough staff review. The information should include details on system design and how the transfer to the alternate offsite is made, specific details regarding the single largest load reject test, information on how it is determined that EDG trips are bypassed, and a discussion of why it is safe to conduct the 24-hour run at power.

**Response:** The Company agrees with the Comment and withdraws the proposed change. The Company proposes a change to the SRs that incorporates TSTF-283 Rev. 3. This will restore the MODE restrictions in the Note to the SRs and modifies the Note to read, "This Surveillance shall not normally be performed in MODES 1 and 2. However, this Surveillance may be performed to reestablish OPERABILITY provided an assessment determines the safety of the unit is maintained or enhanced." This change requires a modification to DOC L.10 and the creation of DOC L.18. Also see the response to Questions 2, 5, 6, 9, 17, 18, and 21.

**North Anna Improved Technical Specifications (ITS) Review Comments**  
**ITS Section 3.8, Electrical Power System**  
**3.8.1 AC Sources – Operating**

See Revised Submittal Pages for RAI 3.8.1-02.

**North Anna Improved Technical Specifications (ITS) Review Comments**  
**ITS Section 3.8, Electrical Power System**  
**3.8.1 AC Sources – Operating**

3.8.1-31 ITS SR 3.8.1.16  
STS N/A  
CTS N/A  
JFD 8

**NRC RAI: Comment:** The staff does not understand the revised wording of this SR. Provide the tolerances the SR is verifying for the sequencing timing relays. The licensee should consider adding something to this SR to make it more explicit.

**Response:** The Company disagrees with the Comment. Each sequencing timing relay has its own tolerance requirement and these are listed in CTS Tables 4.8-1. These tables have been moved from the Technical Specifications to the TRM by DOC LA.4 and will maintain the individual tolerances for each required timer. The Bases state that the individual tolerances are contained in the TRM.

**North Anna Improved Technical Specifications (ITS) Review Comments**  
**ITS Section 3.8, Electrical Power System**  
**3.8.1 AC Sources – Operating**

3.8.1-32 ITS Bases Page 3.8-10 Action B.4

STS N/A

CTS N/A

JFD 5

**NRC RAI: Comment:** In the second paragraph the licensee has added “AAC OG and the other unit EDGs.” The staff questions if this is correct. The proposed ITS is a combined document, but the LCOs, Conditions, and Required Actions are applied to each unit independently. When in Condition B on one unit, the EDGs of the other unit are not capable of providing power to the class IE buses of the affected unit as the proposed Bases indicate. The licensee should revise the Bases to delete this incorrect addition.

**Response:** The Company disagrees with the Comment. This is an introduction for Condition C and why the 14-day Completion Time is justified. The AAC DG, the other unit’s EDGs, and this unit’s remaining EDG are necessary for the PRA assumptions to have a 14 days Required Action for the subject unit. The AAC being aligned to the inoperable bus for the subject unit and the other unit’s EDGs are OPERABLE to assure the other unit does not require the AAC DG.

**North Anna Improved Technical Specifications (ITS) Review Comments**  
**ITS Section 3.8, Electrical Power System**  
**3.8.1 AC Sources – Operating**

3.8.1-33 Not used.

3.8.1-34 ITS Bases Page 3.8-11 Action E.1, E.2, E.3

STS N/A

CTS N/A

JFD 5

**NRC RAI: Comment:** The Bases discussion of Required Action E.1 states that if SR 3.8.1.1 is failed (offsite circuit inoperable), additional Conditions and Required Actions must be entered. What Conditions and Required Actions are being referred to here? There is no Condition covering the combined inoperability of opposite unit offsite circuits and EDGs.

**Response:** The Company disagrees with the Comment. The performance of SR 3.8.1.1 is required to ensure all required offsite circuits (on the subject unit or other unit if supplying shared components with electrical power) are OPERABLE. If additional offsite circuits are inoperable, additional Required Actions (i.e., Condition D for the opposite unit, or Conditions A or G, one or two offsite circuits on the subject unit) may require entry.

**North Anna Improved Technical Specifications (ITS) Review Comments**  
**ITS Section 3.8, Electrical Power System**  
**3.8.1 AC Sources – Operating**

3.8.1-35 ITS Bases Page 3.8-11 Action E.2, E.3  
STS N/A  
CTS N/A

**NRC RAI: Comment:** The Bases discussion is confusing. The Bases state that the Completion Time begins when a) the required shared component with an inoperable EDG, and b) more than one shared component in the same system is inoperable. The Required Action states that the systems supported by the inoperable EDG be declared inoperable when a redundant shared system is inoperable. Stated differently, only one redundant shared system need be inoperable in order to invoke Required Action E.2. This is different than b) above. The licensee should revise the Bases to more accurately reflect the Required Action. Also, to avoid possible confusion, the Condition and Required Actions should be revised to indicate they are applicable only to the shared systems. See also RAI regarding 14-day Completion Time for Required Action E.3.

**Response:** The Company agrees with the Comment. The Bases for D.2 is changed from “More than one shared component,” to “A required shared component(s) in the same system is inoperable.” The Bases for E.2 is changed from “More than one . . .” to “A required shared component(s) in the same system is inoperable.” These changes make the Specifications and Bases consistent.

BASES

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ACTIONS

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

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 required shared component has no offsite power; and
- b. A required shared component(s) in the same system is inoperable.

RAI  
3.8.1-35  
R3

If at any time during the existence of Condition D (one offsite circuit inoperable on the other unit needed to supply electrical power for a required shared component) another required shared component in the same system subsequently becomes inoperable, this Completion Time begins to be tracked.

Discovering no offsite power on the other unit that supports a required shared component and an additional required shared component in the same system inoperable, results in starting the Completion Times 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.

The remaining OPERABLE offsite circuits and EDGs that power the required shared components are adequate to support the SW, MCR/ESGR EVS, and Auxiliary Building central exhaust system Functions. The 24 hour Completion Time takes into account the component OPERABILITY of the remaining shared component(s), a reasonable time for repairs, and the low probability of a DBA occurring during this period.

Operation may continue in Condition D for a period of 72 hours. With one offsite circuit inoperable on the other unit supplying electrical power to a required shared component, the reliability of the SW, MCR/ESGR EVS, and Auxiliary Building central exhaust system Functions are degraded. The potential for the loss of offsite power to the other required shared components is increased, with the attendant potential for a challenge to SW, MCR/ESGR EVS, and Auxiliary Building central exhaust system Functions.

(continued)

BASES

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ACTIONS

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

The required offsite circuit must be returned to OPERABLE status within 72 hours, or the support function for the associated shared component is considered inoperable. At that time, the required shared component must be declared inoperable and the appropriate Conditions of the LCO 3.7.8, "Service Water System," LCO 3.7.10, "MCR/ESGR Emergency Ventilation System," and LCO 3.7.12, "Emergency Core Cooling System (ECCS) Pump Room Exhaust Air Cleanup System," must be entered. The 72 hour Completion Time takes into account the capacity and capability of the remaining AC sources providing electrical power to the required shared components, a reasonable time for repairs and the low probability of a DBA occurring during this period of time.

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

To ensure a highly reliable power source remains with an inoperable EDG, it is necessary to verify the availability of the required offsite circuits on a more frequent basis. Since the Required Action only specifies "perform," a failure of SR 3.8.1.1 acceptance criteria does not result in a Required Action being not met. Required Action E.1 verifies the OPERABILITY of the required offsite sources within an hour of the inoperability and every 8 hours thereafter. However, if a circuit fails to pass SR 3.8.1.1, it is inoperable. Upon offsite circuit inoperability, additional Conditions and Required Actions must be entered.

Required Action E.2 is intended to provide assurance that a loss of offsite power, during the period that an EDG is inoperable, does not result in a complete loss of the SW, MCR/ESGR EVS, or Auxiliary Building central exhaust system Functions.

The Completion Time for Required Action E.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 required shared component with an inoperable EDG; and
- b. A required shared component(s) in the same system is inoperable.

RAI  
3.8.1-35  
R3

**INSERT**

C.1 and C.2

To ensure a highly reliable electrical power source remains available when one EDG is inoperable, Condition C is established to monitor the OPERABILITY of the AAC DG and the other unit's EDGs. Condition B is entered any time an EDG becomes inoperable and the Required Actions and Completion Times are followed. Concurrently, if the AAC DG or one or more of the other unit's EDG(s) is inoperable, or become inoperable, in addition to the Required Actions of Condition B, Required Actions C.1 and C.2 limit the time the EDG may be out of service to 72 hours. If the AAC DG or the other unit's EDG(s) is inoperable when the EDG becomes inoperable, the allowed outage time (AOT) is limited to 72 hours, unless the AAC DG and the other unit's EDG(s) are returned to OPERABLE status. If during the 72 hour Completion Time of C.1 or C.2, the AAC DG and the other unit's EDG(s) are return to OPERABLE status, Condition C is exited and AOT is restricted by the Completion Time tracked in Condition B. If the AAC DG or one or more of the other unit's EDG(s) becomes inoperable at sometime after the initial EDG inoperability, Condition C requires the restoration of the AAC DG and the other unit's EDG(s) within 72 hours or Condition L is required to be entered.

The 72 hour Completion Time is considered reasonable and takes into account the assumption in the probabilistic safety analysis (PSA) for potential core damage frequency.

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

Condition D is modified by a Note indicating that separate Condition entry is allowed for each offsite circuit on the other unit that provides electrical power to required shared components.

To provide the necessary electrical power for the SW, MCR/ESGR EVS, and Auxiliary Building central exhaust functions for a unit, AC electrical sources of both units may be required to be OPERABLE. Action D is entered for one or more inoperable offsite circuit(s) on the other unit that is necessary to support required shared components. These shared components are the SW pump(s), MCR/ESGR fan(s), and Auxiliary Building central exhaust fan(s). Required Action D.1 verifies the OPERABILITY of the remaining required offsite sources within an hour of the inoperability and every 8 hours thereafter. Since the Required Action only specifies "perform," a failure of the SR 3.8.1.1 acceptance criteria does not result in a Required Action not met.

The Completion Time for Required Action D.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 required shared component has no offsite power; and
- b. A required shared component(s) in the same system is inoperable.

RAI  
3.8.1-35  
Rev 3

**INSERT (continued)**

Required Action E.2 is intended to provide assurance that a loss of offsite power, during the period that an EDG is inoperable, does not result in a complete loss of the SW, MCR/ESGR EVS, or Auxiliary Building central exhaust system Functions.

The Completion Time for Required Action E.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 required shared component with an inoperable EDG; and
- b. A required shared component(s) in the same system is inoperable.

RAI  
3.8.1-35  
REV 3

If at any time during the existence of Condition E (one EDG inoperable on the other unit needed to supply electrical power for a required shared component) another required shared component subsequently becomes inoperable, this Completion Time begins to be tracked.

Discovering an EDG on the other unit that supports a required shared component and an additional required shared component inoperable, results in starting the Completion Times for the Required Action. Four hours is 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 EDGs that power the required shared components are adequate to support the SW, MCR/ESGR EVS, or Auxiliary Building central exhaust system Functions. The 4 hour Completion Time takes into account the component OPERABILITY of the remaining shared component(s), a reasonable time for repairs, and the low probability of a DBA occurring during this period.

Operation may continue in Condition E for a period of 14 days. With one EDG inoperable on the other unit supplying electrical power to a required shared component, the reliability of the respective Function is degraded. The potential for the loss of EDGs to the other required shared components is increased, with the attendant potential for a challenge to respective Function.

The required EDG must be returned to OPERABLE status within 14 days, or the support function for the associated shared component is considered inoperable. At that time, the required shared component must be declared inoperable and the appropriate Conditions of the LCOs 3.7.8, 3.7.10, and 3.7.12 must be entered. The 14 day Completion Time takes into account the capacity and capability of the remaining AC sources providing electrical power to the required shared components, a reasonable time for repairs and the low probability of a DBA occurring during this period of time.

**North Anna Improved Technical Specifications (ITS) Review Comments**  
**ITS Section 3.8, Electrical Power System**  
**3.8.1 AC Sources – Operating**

3.8.1-36 ITS Bases Page 3.8-16 SR 3.8.1.1  
STS N/A  
CTS N/A

**NRC RAI: Comment:** The Bases discussion includes the wording “buses and loads are connected to their preferred power source.” The licensee has revised the Bases by including the words “or alternate” following “preferred.” What is the intent of this change? Does this mean that unrestricted plant operation is allowed if the safety buses are connected to either the preferred or the alternate offsite power source? The licensee is requested to explain the change. Note that the staff considers the offsite power sources to be the preferred power source. Note also that Unit 2 does not have alternate offsite power source.

**Response:** The intent of the change is to allow the normal and the alternate source of offsite AC power to satisfy the requirement of SR 3.8.1.1. For Unit 1 the alternate source is a GDC qualified circuit. Therefore, it may serve as a fully qualified circuit for satisfying SR 3.8.1.1. The Bases has been changed to reflect that this is for “Unit 1 only” since Unit 2 does not have an alternate.

BASES

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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 GDC 18 (Ref. 1). Periodic component tests are supplemented by extensive functional tests during refueling outages (under simulated accident conditions). The SRs for demonstrating the OPERABILITY of the EDGs are in accordance with the recommendations of Safety Guide 9 (Ref. 3), Regulatory Guide 1.108 (Ref. 8), and Regulatory Guide 1.137 (Ref. 9), as addressed in the UFSAR.

Where the SRs discussed herein specify voltage and frequency tolerances, the following is applicable. The minimum steady state output voltage of 3740 V is 90% of the nominal 4160 V output voltage. This value, which is specified in ANSI C84.1 (Ref. 10), allows for voltage drop to the terminals of 4000 V motors whose minimum operating voltage is specified as 90% or 3600 V. It also allows for voltage drops to motors and other equipment down through the 120 V level where minimum operating voltage is also usually specified as 90% of name plate rating. The specified maximum steady state output voltage of 4580 V is equal to the maximum operating voltage specified for 4000 V motors. It ensures that for a lightly loaded distribution system, the voltage at the terminals of 4000 V motors is no more than the maximum rated operating voltages. The specified minimum and maximum frequencies of the EDG are 59.5 Hz and 60.5 Hz, respectively. These values are  $< \pm 1\%$  of the 60 Hz nominal frequency and are derived from the safety analysis assumptions for operation of ECCS pump criteria.

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 the preferred or alternate power sources for Unit 1 or the preferred power source for Unit 2, 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.

RAI  
3.8.1-36  
R3

BASES

SURVEILLANCE  
REQUIREMENTS  
(continued)

ANSI C84.1 (Ref. 10), allows for voltage drop to the terminals of 4000 V motors whose minimum operating voltage is specified as 90% or 3600 V. It also allows for voltage drops to motors and other equipment down through the 120 V level where minimum operating voltage is also usually specified as 90% of name plate rating. The specified maximum steady state output voltage of (4756) V is equal to the maximum operating voltage specified for 4000 V motors. It ensures that for a lightly loaded distribution system, the voltage at the terminals of 4000 V motors is no more than the maximum rated operating voltages. The specified minimum and maximum frequencies of the DG are 58.8 Hz and 61.2 Hz, respectively. These values are equal to  $\pm 2\%$  of the 60 Hz nominal frequency and are derived from the recommendations given in Regulatory Guide 1.9 (Ref. 3).

4580

59.5

60.5

Safety analysis assumptions for operation  
OF ECCS pump criteria

SR 3.8.1.1

E  
<math>\pm 1\%</math>

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.

or alternate power sources for Unit 1 or the performed for Unit 2

RAI  
3.8.1-36  
R3

SR 3.8.1.2 and SR 3.8.1.7

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 2 for SR 3.8.1.2) to indicate that at TDG starts for these Surveillances may be preceded by an engine prelube period and followed by a warmup period prior to loading.

TSTF  
253  
①

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

①

(continued)

Rev 3

**North Anna Improved Technical Specifications (ITS) Review Comments**  
**ITS Section 3.8, Electrical Power System**  
**3.8.1 AC Sources – Operating**

3.8.1-37 ITS Bases Page 3.8-20 SR 3.8.1.6

STS N/A

CTS N/A

JFD 7

**NRC RAI: Comment:** The Bases have been revised to indicate the fuel oil transfer pumps must be started manually. Does this accurately reflect the system design? The staff is of the impression that the fuel oil transfer pumps are controlled by level switches in the day tank. The licensee is requested to provide clarification.

**Response:** Level switches control the makeup to the EDG's day tank. The volume of fuel oil used for SRs 3.8.1.2 (EDG monthly start) and SR 3.8.1.3 (EDG monthly run for 1 hour) may not decrease day tank oil level sufficiently to start the fuel oil transfer pump each month. Therefore, manually starting a transfer pump would be required to makeup to the day tank after the monthly test. Both fuel oil transfer pumps for an EDG are tested on a quarterly basis per the safety related ASME pump requirements. Therefore, the 92-day frequency should be sufficient for verifying the transfer requirements. Refer to RAI 3.8.1-03.

**North Anna Improved Technical Specifications (ITS) Review Comments**  
**ITS Section 3.8, Electrical Power System**  
**3.8.1 AC Sources – Operating**

3.8.1-38 ITS Bases Page 3.8-20 SR 3.8.1.16

STS N/A

CTS N/A

JFD 5

**NRC RAI:** Comment: The phrase “and loss of offsite power” is deleted from the Bases discussion. JFD 5 does not provide an adequate justification for this change. The licensee is requested to provide a discussion of the North Anna design with emphasis on whether or not loads are sequenced onto the EDGs during a loss of offsite power. If the loads are sequenced onto the EDGs, the Bases will require correction.

**Response:** The Company agrees with the Comment. The loss of offsite power does not sequence all loads controlled by the sequencing timing relays. Some of the loads are loaded on to the emergency bus by the loss of voltage signal. Other ESF loads from SI, Containment Spray and Recirculation Spray Systems are sequenced onto the bus by timing relays that are not associated with a loss of offsite power. Therefore, the phrase “and loss of offsite power “ is replaced with “with a loss of offsite power, Safety Injection, Containment Spray, or Recirculation Spray.”

BASES

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SURVEILLANCE  
REQUIREMENTS

SR 3.8.1.15 (continued)

The Frequency of 18 months is consistent with the recommendations of Regulatory Guide 1.108 (Ref. 8), 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, 2, 3, or 4 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 unit 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 on-site 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 unit shutdown and startup to determine that unit safety is maintained or enhanced when the Surveillance is performed in MODE 1, 2, 3, or 4. Risk insights or deterministic methods may be used for this assessment.

R3

SR 3.8.1.16

Under accident conditions, with a loss of offsite power, safety injection, containment spray, or recirculation spray, loads are sequentially connected to the bus by the automatic load sequencing timing relays. The sequencing timing relays control the permissive and starting signals to motor breakers to prevent overloading of the EDGs due to high motor starting currents. The load sequence time interval tolerances, listed in the Technical Requirements Manual (Ref. 12), ensure that sufficient time exists for the EDG 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.

RAI  
3.8.1-38  
R3

(continued)

BASES

SURVEILLANCE  
REQUIREMENTS

SR 3.8.1.17 (continued)

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. Credit may be taken for unplanned events that satisfy this SR.

5

RAI  
3.8.1-38  
REV 3

SR 3.8.1.10 (6) (with a loss of offsite power Safety Injection, Containment Spray, or Recirculation Spray)

ing timing relays

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.

timing relays

2  
5  
2  
1  
1  
6  
1

(INSERT 1)

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

2  
9

This SR is modified by a Note. The reason for the Note is that performing the Surveillance would remove a required offsite circuit from service, perturb the electrical distribution system, and challenge safety systems. Credit may be taken for unplanned events that satisfy this SR.

TSTF  
283  
(INSERT 2) 10  
TSTF 8

(continued)

Rev 3

**North Anna Improved Technical Specifications (ITS) Review Comments**  
**ITS Section 3.8, Electrical Power System**  
**3.8.2 AC Sources – Shutdown**

3.8.2-01 ITS N/A  
STS N/A  
CTS Unit 1 3.8.1.2 Applicability b and Action  
DOC L.5

**NRC RAI: Comment:** Deletion of the CTS requirement will be considered acceptable when the licensee confirms that load handling at North Anna is conducted in accordance with the recommendations of NUREG-0612, "Control of Heavy Loads at Nuclear Power Plants."

**Response:** In response to NRC Bulletin 96-02, Movement of Heavy Loads over Spent Fuel, Over Fuel in the Reactor Core, or Over Safety-Related Equipment, North Anna corresponded with the NRC via letter, dated May 13, 1996. The letter stated how the plant was in compliance with the requirements of the Bulletin. NRC issued a letter on May 6, 1998 that stated that the North Anna responses to NRCB-96-02 were acceptable (TAC NOS M95611 and M95612). Also see the response to Question 3.

**North Anna Improved Technical Specifications (ITS) Review Comments**  
**ITS Section 3.8, Electrical Power System**  
**3.8.2 AC Sources – Shutdown**

3.8.2-02 ITS Action A.1  
STS Action A.1  
CTS Unit 1 Action  
DOC L.5

**NRC RAI: Comment:** Proposed ITS Action A.1 would allow declaring inoperable those features associated with an inoperable offsite source. The NUREG Bases clearly indicate that this allowance is acceptable because the LCO requires two trains to be powered from offsite power. The licensee has deleted the reference to a second train in the North Anna ITS. Therefore, this allowance to declare features inoperable is no longer valid. It should be deleted from the ITS.

**Response:** The Company disagrees with the Comment. The CTS and ITS LCO requirements clearly state that only one EDG and one offsite circuit electrical sources are required in the applicable MODES. The ISTS Bases for Action A.1 states, "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, the one train with offsite power available may be capable of supporting sufficient required features to allow continuation of CORE ALTERATIONS and . . ." This is not correct. ITS 3.8.2 Action A.1 allows the one required offsite circuit to be inoperable and continue to move recently irradiated fuel assemblies and perform CORE ALTERATIONS provided the affected features with no offsite power are declared inoperable. This assumes the required feature would be in a degraded condition with one train of the feature remaining OPERABLE. The modified ITS Bases for Action A.1 reflects the requirements for electrical sources LCO 3.8.2 and the distribution system requirements of LCO 3.8.10, and is changed to read, "An offsite circuit would be considered inoperable if it were not available to the necessary portions of the electrical power distribution subsystem. One train may be capable of supporting sufficient required features to allow continuation of CORE ALTERATIONS and . . ." The allowance provided by Action A.1 that allows the affected required feature(s) with no offsite power available to be declared inoperable and does not require additional electrical sources to be OPERABLE. The Electrical Distribution Systems of LCO 3.8.10 states, "The necessary portions of AC . . . electrical power distribution subsystems shall be OPERABLE to support equipment required to be OPERABLE," The requirement stated in LCO 3.8.10 does not change the electrical source requirements of LCO 3.8.2. Also see the response to Questions 4 and 7.

**North Anna Improved Technical Specifications (ITS) Review Comments**  
**ITS Section 3.8, Electrical Power System**  
**3.8.2 AC Sources – Shutdown**

3.8.2-03 ITS N/A  
STS N/A  
CTS Unit 1 3.8.1.2 Applicability b and Action  
DOC L.5

**NRC RAI:** See RAI 3.8.2-01 **Comment:** Deletion of the CTS requirement will be considered acceptable when the licensee confirms that load handling at North Anna is conducted in accordance with the recommendations of NUREG-0612, "Control of Heavy Loads at Nuclear Power Plants."

**Response:** In response to NRC Bulletin 96-02, Movement of Heavy Loads over Spent Fuel, Over Fuel in the Reactor Core, or Over Safety-Related Equipment, North Anna corresponded with the NRC via letter, dated May 13, 1996. The letter stated how the plant was in compliance with the requirements of the Bulletin. NRC issued a letter on May 6, 1998 that stated that the North Anna responses to NRCB-96-02 were acceptable (TAC NOS M95611 and M95612). Also see the response to Question 1.

**North Anna Improved Technical Specifications (ITS) Review Comments**  
**ITS Section 3.8, Electrical Power System**  
**3.8.2 AC Sources – Shutdown**

3.8.2-04 ITS Action A.1  
STS Action A.1  
CTS Unit 1 Action  
DOC L.5

**NRC RAI:** See RAI 3.8.2-02 **Comment:** Proposed ITS Action A.1 would allow declaring inoperable those features associated with an inoperable offsite source. The NUREG Bases clearly indicate that this allowance is acceptable because the LCO requires two trains to be powered from offsite power. The licensee has deleted the reference to a second train in the North Anna ITS. Therefore, this allowance to declare features inoperable is no longer valid. It should be deleted from the ITS.

**Response:** The Company disagrees with the Comment. The CTS and ITS LCO requirements clearly state that only one EDG and one offsite circuit electrical sources are required in the applicable MODES. The ISTS Bases for Action A.1 states, "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, the one train with offsite power available may be capable of supporting sufficient required features to allow continuation of CORE ALTERATIONS and . . ." This is not correct. ITS 3.8.2 Action A.1 allows the one required offsite circuit to be inoperable and continue to move recently irradiated fuel assemblies and perform CORE ALTERATIONS provided the affected features with no offsite power are declared inoperable. This assumes the required feature would be in a degraded condition with one train of the feature remaining OPERABLE. The modified ITS Bases for Action A.1 reflects the requirements for electrical sources LCO 3.8.2 and the distribution system requirements of LCO 3.8.10, and is changed to read, "An offsite circuit would be considered inoperable if it were not available to the necessary portions of the electrical power distribution subsystem. One train may be capable of supporting sufficient required features to allow continuation of CORE ALTERATIONS and . . ." The allowance provided by Action A.1 that allows the affected required feature(s) with no offsite power available to be declared inoperable and does not require additional electrical sources to be OPERABLE. The Electrical Distribution Systems of LCO 3.8.10 states, "The necessary portions of AC . . . electrical power distribution subsystems shall be OPERABLE to support equipment required to be OPERABLE," The requirement stated in LCO 3.8.10 does not change the electrical source requirements of LCO 3.8.2. Also see the response to Questions 2 and 7.

**North Anna Improved Technical Specifications (ITS) Review Comments**  
**ITS Section 3.8, Electrical Power System**  
**3.8.2 AC Sources – Shutdown**

3.8.2-05 ITS SR 3.8.2.1  
STS SR 3.8.2.1  
CTS SR 4.8.1.2  
JFD 2 and 3

**NRC RAI: Comment:** The staff does not agree with the classification of LCO 3.8.1 SRs in SR 3.8.2.1. The following is the staff's view of how the 3.8.1 SRs should be classified. The following SR are applicable and are required to be performed: SR 3.8.1.1, SR 3.8.1.2, SR 3.8.1.4, SR 3.8.1.5, and SR 3.8.1.7. The following SRs are applicable, but are not required to be performed: SR 3.8.1.3, SR 3.8.1.6, SR 3.8.1.9, SR 3.8.1.10, SR 3.8.1.12, SR 3.8.1.13, SR 3.8.1.14, SR 3.8.1.15, and SR 3.8.1.16. The following SRs are not applicable: SR 3.8.1.8, SR 3.8.1.11, SR 3.8.1.17, and SR 3.8.1.18. The licensee is to revise the submittal accordingly.

**Response:** The original submittal agrees with the classification of 14 of the 18 surveillance requirements. The submittal was not consistent with the staff's classification of the following SRs: SR 3.8.1.6, 3.8.1.10, 3.8.1.12, and 3.8.1.16. The Company agrees with the changing of SR 3.8.1.6 from a classification of applicable and performed to applicable and not performed. This would require the addition of SR 3.8.1.6 to the SR Note. JFD 2, the NUREG markup, the typed ITS and Bases, and the DOCs have been modified to address this change. The Company does not agree with a change in the classification for SRs 3.8.1.10, 3.8.1.12, and 3.8.1.16. SR 3.8.1.10 is the start of the EDG on a loss of offsite power. SR 3.8.1.12 is the bypass of non-critical functions with an automatic start. SR 3.8.1.16 verifies sequencing timing relays for Loss of Offsite Power, SI, Containment Spray and other non-ESF functions. These SRs are not applicable because an automatic start or loading of the required EDG is not required by system design. Operator action is assumed for starting the EDG and actuating any required safety function(s) in MODE 5, 6, or defueled. Also see the response to Question 8.

SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
<p>SR 3.8.2.1 -----NOTE-----                      The following SRs are not required to be performed: SR 3.8.1.3, SR 3.8.1.6, SR 3.8.1.9, SR 3.8.1.13, SR 3.8.1.14, and SR 3.8.1.15.                      -----</p> <p>For AC sources required to be OPERABLE, the following SRs are applicable:</p> <p>SR 3.8.1.1   SR 3.8.1.5   SR 3.8.1.13                      SR 3.8.1.2   SR 3.8.1.6   SR 3.8.1.14                      SR 3.8.1.3   SR 3.8.1.7   SR 3.8.1.15                      SR 3.8.1.4   SR 3.8.1.9</p>	<p>In accordance with applicable SRs</p>

RAI  
3.8.2-05  
R3

CTS

SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
<p>4.8.1.2 SR 3.8.2.1</p> <p>NOTE</p> <p>The following SRs are not required to be performed: SR 3.8.1.3, SR 3.8.1.9, <del>through SR 3.8.1.11, SR 3.8.1.13 through SR 3.8.1.15, SR 3.8.1.16, SR 3.8.1.18, and SR 3.8.1.19.</del></p> <p>For AC sources required to be OPERABLE, the <u>following</u> SRs of Specification 3.8.1, "AC Sources Operating," except SR 3.8.1.8, SR 3.8.1.17, and SR 3.8.1.20, are applicable.</p>	<p>SR 3.8.1.6</p> <p>SR 3.8.1.14</p> <p>In accordance with applicable SRs</p>

RAI  
3.8.2-05  
R3

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TSTF ⑤  
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Rev. 0

**JUSTIFICATION FOR DEVIATIONS**  
**ITS 3.8.2 - AC SOURCES - SHUTDOWN**

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1. Changes are made (additions, deletions, and/or changes) to the ISTS, which reflect the plant specific nomenclature, number, reference, system description, analysis, or licensing basis description.
2. The NOTE to ISTS SR 3.8.2.1 is modified to include a list of 3.8.1 SRs that are not applicable to ITS 3.8.2. The Note precludes the performance of the ITS SRs 3.8.1.3, 3.8.1.6, 3.8.1.9, 3.8.1.13, 3.8.1.15 to ensure the one OPERABLE EDG is not made inoperable. Inoperability would occur if the EDG were paralleled with the offsite source. ITS SR 3.8.1.14 is only performed on the EDG within 5 minutes of shutting down the EDG after it has been fully loaded. Therefore, this SR is not required because the EDG is not required to be tested in this condition. This Note includes the concept allowed by TSTF-300. The ISTS allowance is modified for the specific SRs applicable to the North Anna design. RAI  
3.8.2-05  
Rev 3
3. ISTS SR 3.8.2.1 is modified to require SRs of ITS 3.8.1 that are applicable for the EDG and offsite circuit required in MODES 5, 6, and during the movement of recently irradiated fuel assemblies. The EDG requirements in ITS SRs 3.8.1.11, 3.8.1.12, 3.8.1.16, and 3.8.1.17 require the ESF signal to actuate the start of the EDG or the train's sequencing timing relays for loading. In MODE 5 or 6 the instrumentation that provides these signals is not required to be OPERABLE and the function to start or load the EDG is also not required. ITS SR 3.8.1.10 requires a loss of offsite power signal, which is not required to be OPERABLE in MODE 5 or 6. Therefore, these SRs are not required to be included in ITS SR 3.8.2.1. ITS SR 3.8.1.18 requires that both EDGs be started simultaneously. Since only one EDG is required to be OPERABLE, two EDGs cannot be required to start at the same time. The offsite circuit requirement in ITS SR 3.8.1.8 requires the transfer from the normal to the alternate circuit. Since only one circuit is required to be OPERABLE, the transfer is not required to be performed to an inoperable circuit for Unit 1 and does not exist for Unit 2. The requirement is therefore not necessary and eliminated. The remaining SRs are listed in a column format.
4. ISTS Actions are modified by approved TSTF-36 that adds a Note which states, "LCO 3.0.3 is not applicable." The TSTF is not incorporated into the ITS 3.8.2 requirements. This is acceptable because LCO 3.8.2 is applies in MODES 5 and 6, and ITS LCO 3.0.3 states, "LCO 3.0.3 is only applicable in MODES 1, 2, 3, and 4." With the unit in MODES 1, 2, 3, and 4 and recently irradiated fuel being moved, the electrical requirements are contained within LCO 3.8.1, "AC Sources – Operating." Therefore, the addition of the Note is not required.
5. The concept of TSTF-300 is incorporated into SR 3.8.2.1 with the deletion of ISTS SRs 3.8.1.12 and 3.8.1.19 from the list of SRs that are applicable during MODES 5 and 6. With the deletion of these SRs from the SR list, the Note proposed by the TSTF is not required and is deleted. This is acceptable because the list of SRs from LCO 3.8.1 provides the necessary testing requirements to ensure the required EDG(s) are OPERABLE during shutdown.

**DISCUSSION OF CHANGES**  
**ITS 3.8.2 - AC SOURCES - SHUTDOWN**

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REMOVED DETAIL CHANGES

None

LESS RESTRICTIVE CHANGES

- L.1 *(Category 4 – Relaxation of Required Action)* CTS 3.8.1.2 Action a requires with less than the minimum required A.C. electrical power sources of one train (one circuit, between the offsite transmission network and the onsite Class 1E distribution system, and one diesel generator) immediately suspend all operations involving specific tasks. These activities include CORE ALTERATIONS, positive reactivity changes, and the movement, or movement of load over, irradiated fuel assemblies. ITS 3.8.2 Action A.1 adds an allowance to this requirement. This allows the affected required feature(s) with no offsite power available to be declared inoperable and enter the feature(s) Conditions and Required Actions requirements for the specific function. This would allow the utilization of the feature(s) Required Actions while continuing with activities, such as a plant cooldown. The CTS requirements do not allow this provision.

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 Required Actions of the affected features will provide appropriate compensatory measures to ensure the required safety functions can be performed. This change is designated as less restrictive because less stringent Required Actions are being applied in the ITS than were applied in the CTS.

- L.2 *(Category 6 – Relaxation Of Surveillance Requirement Acceptance Criteria)* CTS surveillance requirement 4.8.1.2 states, “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, 4.8.1.1.2, 4.8.1.1.3, and 4.8.1.1.4.” ITS SR 3.8.2.1 states the required SRs but adds a Note which states, “The following SRs are not required to be performed: SR 3.8.1.3, SR 3.8.1.6, SR 3.8.1.9, SR 3.8.1.13, SR 3.8.1.14, and SR 3.8.1.15.” This changes the CTS to allow specific surveillance requirements to not be performed on the required equipment during the time that only one offsite source and one EDG are required to be OPERABLE.

RAI  
3.8.2-05  
REV 3

This change is acceptable because it has been determined that the eliminated Surveillance Requirement acceptance criteria are not necessary for verification that the equipment used to meet the LCO can perform its required functions. The intent of the required testing for AC sources in a condition of limited resource is to ensure the

**DISCUSSION OF CHANGES**  
**ITS 3.8.2 - AC SOURCES - SHUTDOWN**

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source remain OPERABLE and performing required tests is undesirable in a condition when only one offsite circuit or EDG is required to be OPERABLE. The Note precludes the performance of the SRs that would parallel the EDG with an offsite source. These are SRs 3.8.1.3, 3.8.1.9, 3.8.1.13, and 3.8.1.15. SR 3.8.1.14 is only performed on the EDG within 5 minutes of shutdown after it has been fully loaded. If the EDG is not loaded in the SRs above, then SR 3.8.1.14 should also be excluded because it has not been loaded. SR 3.8.1.6 is not required to be performed because the EDG day tank level would be required to be lowered below the minimum requirement of 450 gallons. This change is designated as less restrictive because less stringent Surveillance Requirements are being applied in the ITS than were applied in the CTS.

RAI  
3.8.2-05  
REV 3

- L.3 *(Category 6 – Relaxation Of Surveillance Requirement Acceptance Criteria)* CTS Surveillance Requirement 4.8.1.2 states, “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, 4.8.1.1.2, 4.8.1.1.3, and 4.8.1.1.4.” ITS SR 3.8.2.1 states that the listed SRs are applicable. The list is composed of SRs 3.8.1.1, 3.8.1.2, 3.8.1.3, 3.8.1.4, 3.8.1.5 3.8.1.6, 3.8.1.7, 3.8.1.9, 3.8.1.13, 3.8.1.14, and 3.8.1.15. This changes the CTS by not requiring Surveillances 4.8.1.1.1.b, 4.8.1.1.2.d.2, 4.8.1.1.2.d.3, 4.8.1.1.2.d.4, 4.8.1.1.2.d.5, and 4.8.1.1.2.e to be performed on the AC circuit and EDG that are OPERABLE.

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 EDG requirements in 4.8.1.1.2.d.2, 3, 4, and 5 (ITS SRs 3.8.1.10, 3.8.1.11, 3.8.1.12, 3.8.1.16, and 3.8.1.17) require instrumentation signals from loss of offsite power or ESF to actuate the start of the EDG or to energize the emergency train’s sequencing timing relays for loading. In MODE 5 or 6 the instrumentation that provides these signals is not required to be OPERABLE and the function to start or load the EDG is also not required. Therefore, these SRs are not required for EDG OPERABILITY. CTS requirement 4.8.1.1.2.e (ITS SR 3.8.1.18) requires that both EDGs be started simultaneously. Since only one EDG is required to be OPERABLE, two EDGs cannot be required to start at the same time. The offsite circuit requirement in CTS 4.8.1.1.1.b (ITS SR 3.8.1.8) requires the transfer from the normal to the alternate circuit. Since only one circuit is required to be OPERABLE, the transfer is not required to be performed to an inoperable circuit and the requirement is eliminated. This change is designated as less restrictive because less stringent Surveillance Requirements are being applied in the ITS than were applied in the CTS.

- L.4 *(Category 4 – Relaxation of Required Action)* CTS 3.8.1.2 Action a. specifies with less than the required AC electrical sources OPERABLE, operations involving positive reactivity changes shall be immediately suspended. ITS 3.8.2 Required Actions B.2.3 and C.3 modify this requirement and state, “Suspend operations involving positive reactivity additions that could result in loss of required SDM or

**North Anna Improved Technical Specifications (ITS) Review Comments**  
**ITS Section 3.8, Electrical Power System**  
**3.8.2 AC Sources – Shutdown**

3.8.2-06 ITS Bases Page 3.8-37 LCO

STS N/A

CTS N/A

JFD 2

**NRC RAI: Comment:** The Bases discussion regarding offsite circuits and EDGs is proposed to be deleted. JFD 2 does not provide an adequate justification for the proposed deletions. The licensee is requested to provide a specific justification for why the Bases discussions on offsite power and EDGs are not applicable to North Anna, and can, therefore, be deleted.

**Response:** The Company agrees with the Comment and restores the deleted paragraph.

BASES

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LCO  
(continued)

powered from offsite power. An OPERABLE EDG, associated with the distribution system trains 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 EDG 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).

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) bus(es). Qualified offsite circuits are those that are described in the UFSAR and are part of the licensing basis for the unit.

RAI  
3.8.2-06  
R3

Offsite circuits consist of the 34.5 kV buses supplying the Reserve Station Service Transformer(s) (RSST) which feed the transfer buses. The D, E, and F transfer buses supply the onsite electrical power to the four emergency buses for the two units. Unit 1 emergency bus H is fed through the F transfer bus from the C RSST that is supplied from 34.5 kV bus #3. Unit 1 emergency bus J is fed through the D transfer bus from the A RSST that is fed from 34.5 kV bus #4. Unit 1 station service bus 1B can be an alternate feed for Unit 1 H emergency bus, while Unit 1 J emergency bus may be fed from Unit 2 station service bus 2B. Unit 2 emergency bus H is fed through the E transfer bus from the B RSST and it is fed from 34.5 kV bus #4. Unit 2 emergency bus J is fed through the F transfer bus from the C RSST that is fed from 34.5 kV bus #3. This arrangement provides a separation of the offsite circuits by one 34.5 kV (bus #4) supplying the A and B RSSTs and the other offsite circuit being supplied from 34.5 kV (bus #3) supplying the C RSST.

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

BASES

LCO  
(continued)

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).

E 2

*Involving handling recently irradiated fuel*

TSTF  
51  
RAI  
3.8.2-06  
R3

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) bus(es). Qualified offsite circuits are those that are described in the FSAR and are part of the licensing basis for the unit.

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. The second offsite circuit 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> 3

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

2

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

4

(continued)

Rev.3

**North Anna Improved Technical Specifications (ITS) Review Comments**  
**ITS Section 3.8, Electrical Power System**  
**3.8.2 AC Sources – Shutdown**

3.8.2-06aITS Bases Page 3.8-38 LCO

STS N/A

CTS N/A

JFD 4

**NRC RAI: Comment:** The Bases discussion regarding sequencing is proposed to be deleted. JFD 4 does not provide an adequate justification for the proposed deletions. The licensee is requested to provide a specific discussion on why sequencing, which is required in LCO 3.8.1 and is part of the North Anna design, is not applicable in shutdown, and discussion of sequencing can be deleted from the Bases.

**Response:** The Company agrees with the Comment and provides the following for a JFD. No automatic action for the EDG is required in MODE 5, 6, or defueled condition including an automatic start or loading. All required actions assumed by the safety analysis are manual actions for any required equipment. Therefore, the sequencing timing relays are not required to perform any required safety function. This will be classified as JFD 8. Also see the response to Question 5.

**JUSTIFICATION FOR DEVIATIONS**  
**ITS 3.8.2 BASES - AC SOURCES - SHUTDOWN**

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1. The criteria of the NRC Final Policy Statement on Technical Specifications Improvements have been included in 10 CFR 50.36(c)(2)(ii). Therefore, references in the ISTS Bases to the NRC Final Policy Statement are revised in the ITS Bases to reference 10 CFR 50.36.
2. Changes are made (additions, deletions, and/or changes) to the ISTS, which reflect the plant specific nomenclature, number, reference, system description, analysis, or licensing basis description.
3. The brackets have been removed and the proper plant specific information/value has been provided.
4. This information is deleted because it is not applicable to North Anna.
5. Changes are made to the ITS Bases which reflect changes in the ITS Specifications.
6. Bases changes made by TSTF-51 are incorporated with modifications. These modifications incorporate the concept of the approved changes made by TSTF-51, but the analysis value for the required time has not been determined. When the analysis is completed, the required time will be substituted for the phrase, "a time frame established by analysis. The term recently is defined as all irradiated fuel assemblies, until analysis is performed to determine a specific time frame."
7. This is an editorial change for clarity, for consistency with the Improved Technical Specifications Writer's Guide, or for consistency with similar statements in the other ITS Bases.
8. No automatic loading of the EDG is required in MODE 5, 6, or defueled condition. This includes the automatic start or loading of EDG. All required actions assumed by the safety analysis are manual actions for any required equipment. Therefore, the sequencing timing relays are not required to perform any required safety function.

RAI  
3.8.2  
6a  
R3

**North Anna Improved Technical Specifications (ITS) Review Comments**  
**ITS Section 3.8, Electrical Power System**  
**3.8.2 AC Sources – Shutdown**

3.8.2-07 ITS Bases Page 3.8-38 Action A.1  
STS N/A  
CTS N/A  
JFD 2

**NRC RAI: Comment:** As proposed, the revised Bases are not acceptable. The NUREG discussion is developed around the concept that more than one train is required to be OPERABLE, and that offsite power is not available to one of the trains. The proposed Bases wording indicates an offsite circuit is inoperable when it is not available to “the necessary portions of the electrical power distribution subsystem(s);” i.e., not available to any safety bus. Under this condition, Required Action A.1 is not applicable because no bus would have offsite power.

**Response:** The Company disagrees with the Comment. The CTS and ITS LCO requirements clearly state that only one EDG and one offsite circuit electrical source are required in the applicable MODES. The ISTS Bases for Action A.1 states, “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, the one train with offsite power available may be capable of supporting sufficient required features to allow continuation of CORE ALTERATIONS and . . .” This is not correct. ITS 3.8.2 Action A.1 allows the one required offsite circuit to be inoperable and continue to move recently irradiated fuel assemblies and perform CORE ALTERATIONS provided the affected features with no offsite power are declared inoperable. This assumes the required feature would be in a degraded condition with one train of the feature remaining OPERABLE. The modified ITS Bases for Action A.1 reflects the requirements for electrical sources LCO 3.8.2 and the distribution system requirements of LCO 3.8.10, and is changed to read, “An offsite circuit would be considered inoperable if it were not available to the necessary portions of the electrical power distribution subsystem. One train may be capable of supporting sufficient required features to allow continuation of CORE ALTERATIONS and . . .” The allowance provided by Action A.1 allows the affected required feature(s) with no offsite power available to be declared inoperable and does not require additional electrical sources to be OPERABLE. The Electrical Distribution Systems of LCO 3.8.10 states, “The necessary portions of AC . . . electrical power distribution subsystems shall be OPERABLE to support equipment required to be OPERABLE.” The requirement stated in LCO 3.8.10 does not change the electrical source requirements of LCO 3.8.2. Also see the response to Questions 2 and 4.

**North Anna Improved Technical Specifications (ITS) Review Comments**  
**ITS Section 3.8, Electrical Power System**  
**3.8.2 AC Sources – Shutdown**

3.8.2-08 ITS Bases Page 3.8-40

STS N/A  
CTS N/A  
JFD 5

**NRC RAI:** See RAI 3.8.2-05 **Comment:** The licensee is requested to provide the basis for why the loss of offsite power signals and the sequencing timing relays are not required to be OPERABLE in shutdown. The statement that no ESF loads are assumed to be powered from the emergency buses does not appear to be adequate. As a minimum, RHR must be powered from the emergency buses, as are any other systems/components required to mitigate the consequences of an accident during shutdown.

**Response:** The Company does not agree with a change in the classification for SRs 3.8.1.10, 3.8.1.12, and 3.8.1.16. SR 3.8.1.10 is the start of the EDG on a loss of offsite power. SR 3.8.1.12 is the bypass of non-critical functions with an automatic start. SR 3.8.1.16 verifies sequencing timing relays for Loss of Offsite Power, SI, Containment Spray and other non-ESF functions. These SRs are not applicable because the safety analysis does not credit an automatic start or loading of the required EDG. Operator action is assumed for starting the EDG and actuating any required safety function(s) in MODE 5, 6, or defueled. The RHR system does not provide the safety function of low head safety injection. The RHR pumps are power from a stub bus that may be separated from the emergency bus on an undervoltage or degraded voltage condition.

**North Anna Improved Technical Specifications (ITS) Review Comments**  
**ITS Section 3.8, Electrical Power System**  
**3.8.3 Fuel Oil and Starting Air**

3.8.3-01 ITS N/A  
STS SR 3.8.3.6  
CTS Unit 1 SR 4.8.1.1.4  
DOC L.2

**NRC RAI: Comment:** Technical Specifications Task Force (TSTF)-002 was approved for inclusion in the NUREG on the basis that this CTS requirement would be relocated to a licensee-controlled document such as the TRM. Complete deletion of this SR is not acceptable. The licensee should revise the submittal accordingly.

**Response:** The Company agrees with the Comment. DOC L.2 has been deleted and DOC LA.4 has been added to require the surveillance requirement to be moved to the Technical Requirement Manual. Also see the response to Questions 4 and 8.

ELECTRICAL POWER SYSTEMS  
LIMITING CONDITION FOR OPERATION

ACTION: (Continued):

e. With two of the above required EDGs 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 one of the inoperable EDGs 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. Following restoration of one EDG, follow Action Statement b with the time requirement of that Action Statement based on the time of initial loss of the remaining inoperable EDG.

see ITS 3.8.1

f. With one ~~underground~~ fuel oil storage tank of 3.8.1.1.b.2 inoperable for the performance of Surveillance Requirement 4.8.1.1.4 or for tank repairs.

L.A.1  
L.A.4 | RAI 3.8.3-01 Rev 3

1. Verify 45,000 gallons of fuel is available in the operable ~~underground~~ fuel oil storage tank at least once per 12 hours,
2. Verify a minimum of 100,000 gallons of fuel is maintained in the above ground main fuel oil storage tank at least once per 12 hours,
3. Verify an available source of fuel oil and transportation to supply 50,000 gallons of fuel in less than ~~48~~ hour period, and
4. Restore the storage tank to OPERABLE status within 7 days or place both Units in at least HOT STANDBY within the next 6 hours and COLD SHUTDOWN within the following 30 hours.

L.A.1

L.A.2

Action A  
A.2  
A.3  
A.1  
A.4  
Action B

~~INSERT PROPOSED ACTION C~~

L.1

~~INSERT PROPOSED ACTION D~~

M.2

~~INSERT PROPOSED ACTION E~~

L.3

~~INSERT PROPOSED ACTION F~~

M.1

~~INSERT PROPOSED ACTION G~~

A.4

Action C  
Action D  
Action E  
Action F  
Action G

ELECTRICAL POWER SYSTEMS  
SURVEILLANCE REQUIREMENTS

4.8.1.1.4 For each underground EDG fuel oil storage tank perform the following at least once per 10 years:

1. Drain each fuel oil storage tank
2. Remove sediment from each fuel oil storage tank
3. Inspect each fuel oil storage tank for integrity
4. Clean each fuel oil storage tank.

RAI  
3.8.3-01  
R3  
LAH

A.1

ELECTRICAL POWER SYSTEMS  
SHUTDOWN  
LIMITING CONDITION FOR OPERATION

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

- a. One circuit between the offsite transmission network and the onsite Class 1E distribution system, and
- b. One emergency diesel generator with:
  1. A day tank containing a minimum volume of 450 gallons of fuel;

See ITS 3.8.2

2. A fuel storage system consisting of two underground storage tanks each containing a minimum volume of 45,000 gallons of fuel (This is a shared system with Unit 2), and
3. A fuel transfer system.

LA.1  
See ITS 3.8.3.1

APPLICABILITY:

- a. Modes 5 and 6
- b. During movement of irradiated fuel assemblies or loads over irradiated fuel assemblies when no fuel assemblies are in the reactor vessel.

See ITS 3.8.2

ACTION:

- a. With less than the above minimum required A.C. electrical power sources OPERABLE, immediately suspend all operations involving CORE ALTERATIONS, positive reactivity changes, movement of irradiated fuel assemblies, and movement of loads over irradiated fuel assemblies until the minimum required A.C. electrical power sources are restored to OPERABLE status.

- b. With one underground fuel oil storage tank of 3.8.1.2.b.2 inoperable for the performance of Surveillance Requirement 4.8.1.1.4 or for tank repairs:
  1. Verify 45,000 gallons of fuel is available in the operable underground fuel oil storage tank at least once per 12 hours,
  2. Verify a minimum of 100,000 gallons of fuel oil is maintained in the above ground main fuel oil storage tank at least once per 12 hours,
  3. Verify an available source of fuel oil and transportation to supply 30,000 gallons of fuel in less than a 48 hour period, and
  4. Restore the storage tank to OPERABLE status within 7 days or place both Unit in at least HOT STANDBY within the next 6 hours and COLD SHUTDOWN within the following 30 hours, and perform ACTION a. above.

LA.1  
LA.4  
LA.1  
RAI 3.8.3-01 R3  
LA.2  
the UNIT A.1

Action A

Action B

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, 4.8.1.1.2, 4.8.1.1.3, and 4.8.1.1.4.

See ITS 3.8.2  
See ITS 3.8.5

LA.4  
RAI 3.8.3-01 R3

A.1

ITS ELECTRICAL POWER SYSTEMS  
LIMITING CONDITION FOR OPERATION

ACTION: (Continued):

e. With two of the above required EDGs 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 one of the inoperable EDGs 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. Following restoration of one EDG, follow Action Statement b with the time requirement of that Action Statement based on the time of initial loss of the remaining inoperable EDG.

See ITS 3.8.1

f. With one underground fuel oil storage tank of 3.8.1.1.b.2 inoperable for the performance of Surveillance Requirement 4.8.1.1.4 or for tank repairs:

LA.1  
LA.4

Action A

A.2

1. Verify 45,000 gallons of fuel is available in the operable underground fuel oil storage tank at least once per 12 hours,

LA.1

A.3

2. Verify a minimum of 100,000 gallons of fuel is maintained in the above ground main fuel oil storage tank at least once per 12 hours,

RAI 3.8.3-01 R3

A.1

3. Verify an available source of fuel oil and transportation to supply 50,000 gallons of fuel in less than a 48 hour period, and

LA.2

Action B

A.4

4. Restore the storage tank to OPERABLE status within 7 days or place both Units in at least HOT STANDBY within the next 6 hours and COLD SHUTDOWN within the following 30 hours.

Action C

X INSERT PROPOSED ACTION C

L.1

Action D

X INSERT PROPOSED ACTION D

M.2

Action E

X INSERT PROPOSED ACTION E

L.3

Action F

X INSERT PROPOSED ACTION F

M.1

Action G

X INSERT PROPOSED ACTION G

A.4

ELECTRICAL POWER SYSTEMS  
SURVEILLANCE REQUIREMENTS

ITS

4.8.1.1.3 (continued)

*(see 3.8.6)*

- b. At least once per 92 days and within 7 days after a battery discharge where the battery terminal voltage decreased below 110 volts or battery overcharge above 150 volts, by verifying that:
  - 1. The parameters in Table 4.8-3 meet Category B limits and
  - 2. There is no visible corrosion at either terminals or connectors, or the connection resistance of these items is less than  $150 \times 10^{-6}$  ohms.
- c. At least once per 18 months by verifying that:
  - 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.
  - 3. The resistance of each cell-to-cell and terminal connection is less than or equal to  $150 \times 10^{-6}$  ohms.
  - 4. The battery charger will supply at least ten amperes at 125 volts for at least 4 hours.
- d. At least once per 60 months, during shutdown, by verifying that the battery capacity is at least 80% of the manufacturer's rating when subjected to a performance discharge test.
- e. At least once per 18 months, during shutdown, perform a performance discharge test of battery capacity if the battery shows signs of degradation or has reached 85% of its service life expected for the application. Degradation is indicated when the battery capacity drops more than 10% of rated capacity from its average from previous performance discharge tests, or is below 90% of the manufacturer's rating.

*(see ITS 3.8.6)*

4.8.1.1.4 For each underground EDG fuel oil storage tank perform the following at least once per 10 years:

- 1. Drain each fuel oil storage tank
- 2. Remove sediment from each fuel oil storage tank
- 3. Inspect each fuel oil storage tank for integrity
- 4. Clean each fuel oil storage tank

*LA.4*  
*RAI*  
*3.8.3-01*  
*R3*

*SR*  
*3.8.3.2*  
*SR*  
*3.8.3.3*

*INSERT PROPOSED SR 3.8.3.2*  
*INSERT PROPOSED SR 3.8.3.3*

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*M.2*  
*M.1*

Rev 3

A.1

ITS ELECTRICAL POWER SYSTEMS  
LIMITING CONDITION FOR OPERATION

ACTION: (Continued):

e. With two of the above required EDGs 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 one of the inoperable EDGs 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. Following restoration of one EDG, follow Action Statement b with the time requirement of that Action Statement based on the time of initial loss of the remaining inoperable EDG.

See ITS 3.8.1

f. With one ~~underground~~ fuel oil storage tank of 3.8.1.1.b.2 inoperable for the performance of ~~Surveillance Requirement 4.8.1.1.4~~ or for tank repairs:

LA.1  
LA.4

Action A

A.2

1. Verify 45,000 gallons of fuel is available in the operable ~~underground~~ fuel oil storage tank at least once per 12 hours,

LA.1

A.3

2. Verify a minimum of 100,000 gallons of fuel is maintained in the above ground main fuel oil storage tank at least once per 12 hours,

RAI 3.8.3-01 R3

A.1

3. Verify an available source of fuel oil and transportation to supply 50,000 gallons of fuel in less than a 48 hour period, and

LA.2

Action B

A.4

4. Restore the storage tank to OPERABLE status within 7 days or place both Units in at least HOT STANDBY within the next 6 hours and COLD SHUTDOWN within the following 30 hours.

Action C

INSERT PROPOSED ACTION C

L.1

Action D

INSERT PROPOSED ACTION D

M.2

Action E

INSERT PROPOSED ACTION E

L.3

Action F

INSERT PROPOSED ACTION F

M.1

Action G

INSERT PROPOSED ACTION G

A.4

A.1

ITS ELECTRICAL POWER SYSTEMS  
SHUTDOWN

LIMITING CONDITION FOR OPERATION

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

- a. One circuit between the offsite transmission network and the onsite Class 1E distribution system, and
- b. One emergency diesel generator with:
  1. A day tank containing a minimum volume of 450 gallons of fuel;
  2. A fuel storage system consisting of two underground storage tanks each containing a minimum volume of 45,000 gallons of fuel (This is a shared system with Unit 1), and
  3. A fuel transfer system.

LA.1

See ITS  
SR 3.8.3.1

APPLICABILITY:

- a. Modes 5 and 6
- b. During movement of irradiated fuel assemblies or loads over irradiated fuel assemblies when no fuel assemblies are in the reactor vessel.

See ITS  
3.8.2

ACTION:

- a. With less than the above minimum required A.C. electrical power sources OPERABLE, immediately suspend all operations involving CORE ALTERATIONS, positive reactivity changes, movement of irradiated fuel assemblies, and movement of loads over irradiated fuel assemblies until the minimum required A.C. electrical power sources are restored to OPERABLE status.
- b. With one underground fuel oil storage tank of 3.8.1.2.b.2 inoperable for the performance of Surveillance Requirement 4.8.1.1.4 or for tank repairs:
  1. Verify 45,000 gallons of fuel is available in the operable underground fuel oil storage tank at least once per 12 hours,
  2. Verify a minimum of 100,000 gallons of fuel oil is maintained in the above ground main fuel oil storage tank at least once per 12 hours.
  3. Verify an available source of fuel oil and transportation to supply 50,000 gallons of fuel in less than a 48 hour period, and
  4. Restore the storage tank to OPERABLE status within 7 days or place both Units in at least HOT STANDBY within the next 6 hours and COLD SHUTDOWN within the following 30 hours, and perform ACTION a. above.

LA.1 / R3  
LA.4  
LA.1

RAI  
3.8.3-01  
R3

LA.2

the UNIT A.1

Action A A.2  
A.3  
A.1  
Action B A.4

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, 4.8.1.1.2, 4.8.1.1.3 and 4.8.1.1.4.

See ITS  
3.8.2

See ITS  
3.8.5

LA.4

RAI  
3.8.3-01  
R3

Rev 3

**DISCUSSION OF CHANGES**  
**ITS 3.8.3 - DIESEL FUEL OIL AND STARTING AIR**

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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 contained within the fuel oil testing program with the appropriate standards referenced. 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.

- LA.4 *(Type 3 – Removing Procedural Details for Meeting TS Requirements and Related Reporting Problems)* CTS 3.8.1.1 Action f allows the inoperability of one underground fuel oil tank for the performance of Surveillance Requirement 4.8.1.1.4 or tank repairs. CTS SR 4.8.1.1.4 requires each underground EDG fuel oil storage tank every 10 years to be drained, the sediment to be removed, and the tank to be inspected for integrity, and cleaned. ITS 3.8.3 does not specify tank cleaning or inspection. This changes the CTS by moving these requirements from the specification to the Technical Requirements Manual (TRM).

The removal of these details for performing surveillance 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 retains the requirement for the tank to maintain an OPERABLE underground fuel oil tank, the above ground tank with a minimum of 100,000 gallons of acceptable fuel oil, and the capability to transport an additional 50,000 gallons from a local supplier. This change is acceptable because these types of procedural details will be adequately controlled in the TRM. 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 procedural details for meeting Technical Specification requirements are being removed from the Technical Specifications.

RAI  
3.8.3-01  
R3

**LESS RESTRICTIVE CHANGES**

- L.1 *(Category 4 – Relaxation of Required Action)* CTS 3.8.1.1 requirements for diesel fuel oil states the fuel oil tanks will contain 45,000 gallons each to support the EDGs' OPERABILITY requirements. If the volume is less than this amount, the associated EDGs are to be declared inoperable. ITS 3.8.3 Condition C allows 48 hours to restore a fuel oil level to 45,000 gallons, provided the level is 38,600 gallons or greater, before declaring the EDG(s) inoperable. This changes the CTS by allowing the diesel fuel oil requirement to decrease below the current limit.

**DISCUSSION OF CHANGES**  
**ITS 3.8.3 - DIESEL FUEL OIL AND STARTING AIR**

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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. A minimum of 38,600 gallons of diesel fuel oil will continue to be required for the EDGs. This represents the amount of fuel oil needed for one EDG to run at full load for 6 days instead of the normal limit of 7 days. The limited period of time, 48 hours, that the allowance provides is reasonable to restore the inventory to the 45,000-gallon limit. It is very unlikely that an event would occur that would require an EDG to run at full load for greater than 6 days. This change is designated as less restrictive because less stringent Required Actions are being applied in the ITS than were applied in the CTS.

L.2 Not used.

L.3 (*Category 3 – Relaxation of Completion Time*) CTS 3.8.1.1.2.b states that every 92 days a sample from the fuel oil storage tank is verified to be within acceptable limits. If this requirement can not be met, the associated EDGs are declared inoperable. ITS Action E states that with one or more EDGs with new fuel oil properties not within limits, 30 days is allowed to restore stored fuel oil properties within limits. This changes the CTS by allowing 30 days to restore fuel oil within required limits.

RAI  
3.8.3 -  
01  
R3

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. Diesel fuel oil is capable of powering EDGs in an acceptable manner with elevated particulate levels. The effect of higher than normal particulate levels does not immediately impact the capability of the EDG to perform its required safety function. This change is designated as less restrictive because additional time is allowed to restore parameters to within the LCO limits than was allowed in the CTS.

**North Anna Improved Technical Specifications (ITS) Review Comments**  
**ITS Section 3.8, Electrical Power System**  
**3.8.3 Fuel Oil and Starting Air**

3.8.3-02 ITS Action A.1  
STS N/A  
CTS Unit 1 Action 3.8.1.2 b.3  
DOC L.2

**NRC RAI: Comment:** As noted in comments on CTS 4.8.1.1.4, deletion of this SR is not acceptable. The SR should be relocated to a licensee-controlled document, but the activity (tank cleaning) will be expected to be done. In light of this, the licensee may want to reconsider changes to this CTS with a view of retaining the CTS permissive related to tank cleaning.

**Response:** The Company agrees with the Comment. DOC L.2 has been changed to LA.4 and allows a fuel oil tank to be not within limits for a period of 7 days. This change has eliminated the reference to tank cleaning, inspection, or repair requirements. Also see the response to Question 5.

3.8 ELECTRICAL POWER SYSTEMS

3.8.3 Diesel Fuel Oil and Starting Air

LC0 3.8.3 The stored diesel fuel oil and starting air subsystem shall be within limits for each required emergency diesel generator (EDG).

APPLICABILITY: When associated EDG is required to be OPERABLE.

ACTIONS

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

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One fuel oil storage tank not within limits.	A.1 Verify replacement fuel oil is available.	Prior to removing tank from service
	<u>AND</u>	
	A.2 Verify remaining fuel oil storage tank contains $\geq 45,000$ gal.	
	<u>AND</u>	
A.3 Verify above ground fuel oil tank contains $\geq 100,000$ gal.	A.3 Verify above ground fuel oil tank contains $\geq 100,000$ gal.	Once per 12 hours
	<u>AND</u>	
	A.4 Restore fuel oil storage tank to within limits.	
	<u>AND</u>	
B. Required Action and associated Completion Time for Condition A not met.	B.1 Be in MODE 3.	6 hours
	<u>AND</u>	
	B.2 Be in MODE 5.	36 hours

RAI  
3.8.3-02  
R3

**ITS 3.8.3 - DIESEL FUEL OIL AND STARTING AIR**

**INSERT**

CONDITION	REQUIRED ACTION	COMPLETION TIME
<p>A. One fuel oil storage tank not within limits.</p>	<p>A.1 Verify replacement fuel oil is available.</p>	<p>Prior to removing tank from service</p>
	<p><u>AND</u></p>	
	<p>A.2 Verify remaining fuel oil storage tank contains <math>\geq 45,000</math> gal.</p>	<p>Once per 12 hours</p>
	<p><u>AND</u></p> <p>A.3 Verify above ground fuel oil tank contains <math>\geq 100,000</math> gal.</p>	<p>Once per 12 hours</p>
<p><u>AND</u></p> <p>A.4 Restore fuel oil storage tank to within limits.</p>	<p>7 days</p>	
<p>B. Required Action and associated Completion Time for Condition A not met.</p>	<p>B.1 Be in MODE 3.</p>	<p>6 hours</p>
	<p><u>AND</u></p> <p>B.2 Be in MODE 5.</p>	<p>36 hours</p>

RAF  
3.8.3-02  
R3

R3

**JUSTIFICATION FOR DEVIATIONS**  
**ITS 3.8.3 - DIESEL FUEL OIL AND STARTING AIR**

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1. The Lube Oil portion of ISTS 3.8.3 is not adopted. This change is acceptable because the Emergency Diesel Generators (EDGs) do not rely on a storage tank for make up to the lube oil system. Operating experience has shown that the EDGs have a very low rate of consumption of lube oil on the required 24-hour full load runs. Lube oil is made up to the engine's sump from 55 gallon barrels. An adequate reserve is maintained to support extended EDG runs. The deletion of the Lube Oil requirement causes the elimination of ISTS ACTION B and SR 3.8.3.2. The remaining ACTIONS and SRs have been renumbered.
2. Changes are made (additions, deletions, and/or changes) to the ISTS, which reflect the plant specific nomenclature, number, reference, system description, analysis, or licensing basis description. This includes the change of diesel generator (DG) to emergency diesel generator (EDG).
3. CTS 3.8.1.1 Action f is translated into the ITS format and presented in ITS Actions A and B. This allows the inoperability of one required underground fuel oil tank. This change is acceptable because one of the underground tanks serves all of the EDGs' lead fuel oil transfer pumps and the other tank provides fuel oil for the EDGs' backup pumps. The lead pump normally supply fuel oil to the EDG day tank and the backup pump only operate when the lead pump cannot maintain the day tank required level. The CTS allowance is therefore reasonable and included in the ITS Specifications. The subsequent Actions are renumbered.
4. The brackets are removed and the proper plant specific information/value is provided.

RAI  
3.8.3-02  
R3

**North Anna Improved Technical Specifications (ITS) Review Comments**  
**ITS Section 3.8, Electrical Power System**  
**3.8.3 Fuel Oil and Starting Air**

3.8.3-03 ITS Action A.1  
STS N/A  
CTS Unit 1 Action 3.8.1.2 b.2  
DOC LA.2

**NRC RAI: Comment:** The CTS requirement proposed for deletion is not a detail of system design such as the fuel oil tanks being underground. The CTS has a specific requirement for 50,000 gallons of fuel oil and the ability to transport the fuel oil. DOC LA.2 does not provide an adequate justification for relocating this requirement. The licensee should revise the DOC to provide an adequate justification, or retain the CTS.

**Response:** The Company agrees with the Comment. DOC LA.2 has been changed to justify the movement of these details. The requirement for verifying an available source of fuel oil will continue to be required by ITS Action A.1. Also see the response to Questions 6 and 10.

**DISCUSSION OF CHANGES**  
**ITS 3.8.3 - DIESEL FUEL OIL AND STARTING AIR**

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The removal of these details for performing actions 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 the fuel oil system that are necessary to ensure the OPERABILITY of the required EDG(s). 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.

- LA.2 *(Type 3 – Removing Procedural Details for Meeting TS Requirements and Related Reporting Problems)* CTS 3.8.1.1 Action f and 3.8.1.2 Action b require, with one underground fuel oil storage tank of 3.8.1.1.b.2 inoperable, the performance of Surveillance 4.8.1.1.4 or tank repairs, and that replacement fuel oil must be verified as available. This includes the verification of availability of 50,000 gallons of fuel oil and transportation that can deliver it within a 48-hour period. ITS 3.8.3 Condition A states, “One fuel oil storage tank not within limits,” verify replacement oil is available, prior to removing tank from service. This changes the CTS by moving the details of transportation of 50,000 gallons of fuel oil within a 48-hour period from the Technical Specifications to the ITS Bases.

The removal of these details for performing actions 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 to verify the availability of replacement fuel oil. Specific details, such as transportation of 50,000 gallons within a 48-hour period, is not required to be stated in the specification but may be moved to the TS Bases. The Bases provide for adequate controls of the detail of this specific requirement. 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.

- LA.3 *(Type 3 – Removing Procedural Details for Meeting TS Requirements and Related Reporting Problems)* CTS Surveillance Requirement 4.8.1.1.2.b states that the fuel oil tank is within the acceptable limits specified in Table 1 of ASTM D975 when checked for viscosity, water, and sediment. ITS SR 3.8.3.4 states check for and remove accumulated water from each stored fuel oil tank. This changes the CTS by moving the requirements of viscosity and sediment from the Technical Specifications to the ITS Bases.

RAT  
38.3-  
03  
R3

**North Anna Improved Technical Specifications (ITS) Review Comments**  
**ITS Section 3.8, Electrical Power System**  
**3.8.3 Fuel Oil and Starting Air**

3.8.3-04 ITS N/A  
STS SR 3.8.3.6  
CTS Unit 2 SR 4.8.1.1.4  
DOC L.2

**NRC RAI:** See RAI 3.8.3-01 **Comment:** Technical Specifications Task Force (TSTF)-002 was approved for inclusion in the NUREG on the basis that this CTS requirement would be relocated to a licensee-controlled document such as the TRM. Complete deletion of this SR is not acceptable. The licensee should revise the submittal accordingly.

**Response:** The Company agrees with the Comment. DOC L.2 has been deleted and DOC LA.4 has been added to require the surveillance requirement to be moved to the Technical Requirement Manual. Also see the response to Questions 1 and 8.

**North Anna Improved Technical Specifications (ITS) Review Comments**  
**ITS Section 3.8, Electrical Power System**  
**3.8.3 Fuel Oil and Starting Air**

See Revised Submittal Pages for RAI 3.8.3-01.

**North Anna Improved Technical Specifications (ITS) Review Comments**  
**ITS Section 3.8, Electrical Power System**  
**3.8.3 Fuel Oil and Starting Air**

3.8.3-05 ITS Action A.1  
STS N/A  
CTS Unit 2 Action 3.8.1.2 b.3  
DOC L.2

**NRC RAI:** See RAI 3.8.3-02 **Comment:** As noted in comments on CTS 4.8.1.1.4, deletion of this SR is not acceptable. The SR should be relocated to a licensee-controlled document, but the activity (tank cleaning) will be expected to be done. In light of this, the licensee may want to reconsider changes to this CTS with a view of retaining the CTS permissive related to tank cleaning.

**Response:** The Company agrees with the Comment. DOC L.2 has been changed to LA.4 and allows a fuel oil tank to be not within limits for a period of 7 days. This change has eliminated the reference to tank cleaning, inspection, or repair requirements. Also see the response to Question 2.

**North Anna Improved Technical Specifications (ITS) Review Comments**  
**ITS Section 3.8, Electrical Power System**  
**3.8.3 Fuel Oil and Starting Air**

See Revised Submittal Pages for RAI 3.8.3-02.

**North Anna Improved Technical Specifications (ITS) Review Comments**  
**ITS Section 3.8, Electrical Power System**  
**3.8.3 Fuel Oil and Starting Air**

3.8.3-06 ITS Action A.1  
STS N/A  
CTS Unit 2 Action 3.8.1.2 b.2  
DOC LA.2

**NRC RAI:** See RAI 3.8.3-03 **Comment:** The CTS requirement proposed for deletion is not a detail of system design such as the fuel oil tanks being underground. The CTS has a specific requirement for 50,000 gallons of fuel oil and the ability to transport the fuel oil. DOC LA.2 does not provide an adequate justification for relocating this requirement. The licensee should revise the DOC to provide an adequate justification, or retain the CTS.

**Response:** The Company agrees with the Comment. DOC LA.2 has been changed to justify the movement of these details. The requirement for verifying an available source of fuel oil will continue to be required by ITS Action A.1. Also see the response to Questions 3 and 10.