

VIRGINIA ELECTRIC AND POWER COMPANY
RICHMOND, VIRGINIA 23261
January 31, 2002

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

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

Gentlemen:

VIRGINIA ELECTRIC AND POWER COMPANY (DOMINION)
NORTH ANNA POWER STATION UNITS 1 AND 2
PROPOSED IMPROVED TECHNICAL SPECIFICATIONS
REQUEST FOR ADDITIONAL INFORMATION (RAI)
SECTION 3.8 (TAC Nos. MB0799 and MB0800)

This letter transmits our additional responses to the NRC's request for additional information (RAI) regarding the North Anna Power Station (NAPS) 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). Dominion submitted responses to the NRC's RAIs in a letter dated August 13, 2001 (Serial No. 01-334). After reviewing Dominion's responses, the NRC requested additional information. This letter transmits the additional information, in addition to minor changes to ITS Section 3.8 that are a result of internal comments.

Attached are the NRC's RAIs, our responses to the RAIs, and the revised pages of the submittal, which complete our responses to the subject RAIs. 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. Additionally, we have marked up the pages of the draft Safety Evaluation to incorporate these changes, and included them as attachments to this letter.

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

Very truly yours,

 For:

Leslie N. Hartz
Vice President - Nuclear Engineering

Attachment

Commitments made in this letter: None



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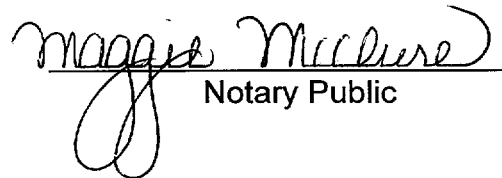
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COMMONWEALTH OF VIRGINIA)
)
COUNTY OF HENRICO)

The foregoing document was acknowledged before me, in and for the County and Commonwealth aforesaid, today by Stephen P. Sarver, who is Director - Nuclear Licensing and Operations Support, of Virginia Electric and Power Company. He has affirmed before me that he is duly authorized to execute and file the foregoing document in behalf of that Company, and that the statements in the document are true to the best of his knowledge and belief.

Acknowledged before me this 31st day of January, 2002.

My Commission Expires: March 31, 2004.



Notary Public

(SEAL)

Attachment

Proposed Improved Technical Specifications Responses to Requests for Additional Information ITS 3.8, "Electrical Power Systems"

**Virginia Electric and Power Company
(Dominion)**

North Anna Power Station Units 1 and 2

Attachment

Proposed Improved Technical Specifications Changes Not Associated with RAIs ITS 3.8, "Electrical Power Systems"

**Virginia Electric and Power Company
(Dominion)**

North Anna Power Station Units 1 and 2

North Anna ITS RAIs
ITS Section 3.8, Electrical Power Systems

NRC Comment: (1) Response to RAI 3.8.1-09: NAPS to revise the submittal and add DOC L.18 to the CTS mark-up.

Response: The Company will take the action proposed in the comment. The response to RAIs 3.8.1-02 and 3.8.1-09 added DOC L.18. CTS pages 7 of 10 for the Unit 1 and Unit 2 markup were revised to show the inclusion of DOC L.18. As indicated in the response, the revised pages were included in the response to RAI 3.8.1-02. However, DOC L.18 and the CTS markups for ITS SR 3.8.1.18 were marked RAI 3.8.1-02 instead of 3.8.1-09. This has been corrected and the revised pages are provided.

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

SR
3.8.1.14

SR
3.8.1.18

Insert
steady state
limit
requirements

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:
 - 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.
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 ± 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 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.
- 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.

** 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.

L.13

L.15 A.14

M.3

LA.6

L.19

A.16

L.19

A.16

RAI
3.8.1-04
REV 3

RAI
3.8.1-04
REV 3

L.8

L.19

L.18

M.5

LA.7

Rev3 RAI
3.8.1-09

Rev3 RAI
3.8.1-04

L.19

A.16

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 ± 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 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. 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

A.16
L.19

RAI-04
3.8.1-04
Rev 3

L.8

L.19

L.18

M.5

LA.7

RAI
3.8.1-
091R11
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 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.

L.19

A.16

DISCUSSION OF CHANGES
ITS 3.8.1 - AC SOURCES - OPERATING

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.

RAI
3.8.1-
02
3.8.1-
09/R11
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

RAI
3.8.1-
04
R3

North Anna ITS RAIs
ITS Section 3.8, Electrical Power Systems

NRC Comment: (2): Response to RAI 3.8.1-12: NAPS to revise DOC L.7 and explain how is CTS SR 4.8.1.1.1.b currently being performed.

Response: The Company will take the action proposed in the comment. Currently the performance of SR 4.8.1.1.1.b is accomplished during shutdown by closing breaker 25H1. The closing of this breaker for Unit 2 ties the H and J 4160 VAC emergency buses together and provides an alternate feed for each emergency bus. However, performance of the SR does not demonstrate an OPERABILITY requirement which can be utilized in MODES 1, 2, 3, or 4 (the MODES of Applicability of the subject specification). If breaker 25H1 is closed in MODES 1, 2, 3, or 4, the two emergency busses are no longer independent and both are rendered inoperable. As a result, this arrangement is not allowed. Therefore, performance of this SR does not demonstrate any aspect of OPERABILITY and can be deleted. DOC L.7 is revised to include this information.

DISCUSSION OF CHANGES
ITS 3.8.1 - AC SOURCES - OPERATING

- 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 eliminates a CTS Surveillance.

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

RAI
3.8.1-12
R3, RH

DISCUSSION OF CHANGES
ITS 3.8.1 - AC SOURCES - OPERATING

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. The CTS Surveillance is performed during shutdown, but the CTS and ITS LCOs are Applicable in MODES 1, 2, 3, and 4. Using the capability tested by the CTS Surveillance would render both of the 4160 VAC emergency buses inoperable because the busses are tied together and no longer independent as required in MODES 1, 2, 3, and 4. As a result, use of the alternate circuit is not allowed. As performance of this SR does not demonstrate an aspect of OPERABILITY, it 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,
R11

- 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

North Anna ITS RAIs
ITS Section 3.8, Electrical Power Systems

NRC Comment: (3) Response to RAI 3.8.1-37: NAPS to revise JFD and explain how will the level switch [and its associated wiring and circuitry from the day tank to the pump starting circuit] be tested to demonstrate its designed function, i.e.; to automatically start the fuel oil transfer pump at its specified frequency. This surveillance is needed to demonstrate that the Operability of the level switch [or at least its associated wiring and circuitry] will meet the intent of ISTS 3.8.1.6 at a frequency of 92 days. If the Operability of the level switch can not be demonstrated due to its plant specific design, then NAPS should provide some past data in the JFD to justify the long term reliability of the level switch.

Response: The company does not agree with the action recommended in the Comment. It takes approximately 3 hours with the EDG running at full load to exercise the automatic filling of the day tank by both the primary and the backup pump. The EDGs are not typically run for this length of time except during the Surveillance which requires a 24 hour run (CTS 4.8.1.1.2.d.6 and ITS SR 3.8.1.13). Therefore, testing the EDG day tank level switches every 92 days would require extended EDG runs to drain the day tank, which would increase EDG unavailability. Another option is to manually drain fuel oil from the day tank, but this presents a fire and personnel hazard. The level switches and associated wiring and circuitry are tested every 18 months. In the past five years, only one level switch has required replacement (a bad float contactor for the low-level alarm). However, as there are 3 separate floats for 3 separate functions, and 2 separate level switches controlling 2 different Fuel Oil Transfer Pumps, this failure would not have prevented the day tank from being filled.

The ITS recognizes that it may not be possible to test the level switches every 92 days. The STS SR states, "Verify the fuel oil transfer system operates to [automatically] transfer fuel oil from storage tank[s] to the day tank [and engine mounted tank.]" The Bases states, "the design of fuel transfer system 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." Bracketed words and phrases are optional, based on plant design. The design of the fuel oil system is such that pumps must usually be started manually to refill the day tank following EDG testing because the level has not dropped to the point that automatic filling is initiated. Therefore, our proposed Bases are an accurate implementation of our plant design. The North Anna CTS also does not require testing of the level switches. Surveillance 4.8.1.1.2.a.3 states, "[Each EDG shall be demonstrated OPERABLE by] Verifying the fuel transfer pump can be started and transfers fuel from the storage system to the day tank." However, it is recognized that the automatic filling of the day tank is required to support EDG OPERABILITY.

Therefore, the proposed ITS and Bases are consistent with the plant design and the CTS, are consistent with safe operation, and are supported by plant operating data.

North Anna ITS RAIs
ITS Section 3.8, Electrical Power Systems

NRC Comment: (4) Response to RAI 3.8.2-08: NAPS to revise JFD 5 and explain how power is supplied to RHR pumps and other systems/ components required to mitigate the consequences of an accident during shutdown. NAPS to explain how the power supply [e.g.; a stub bus] to RHR pumps and to the systems/ components required for mitigation of the consequences of an accident is controlled during shutdown.

Response: The company will take the action proposed in the comment. JFD 5 is revised to provide additional information regarding the provision of electrical power to necessary systems during shutdown.

The DBA and transient analyses assume that manual action is taken to provide electrical power to necessary systems, such as RHR, on a loss of power during shutdown. The RHR pumps are powered from the emergency bus through a stub bus breaker. The stub bus breaker is designed to open on a loss of voltage or degraded voltage conditions and will automatically close to provide electrical power to the RHR pump. However, the RHR pump must be manually re-started in accordance with plant procedures (0-AP-10, "Loss of Electrical Power," and 1/2-AP-11, "Loss of RHR"). The restoration of the RHR pump can be accomplished within a short period of time to provide core cooling during shutdown. The only other component electrically powered from the stub bus is a Component Cooling (CC) pump. During shutdown, CC provides cooling water to the RHR system. The CC pump can be also be manually restarted on a loss of voltage or degraded voltage conditions within a short period of time.

JUSTIFICATION FOR DEVIATIONS
ITS 3.8.2 - AC SOURCES - SHUTDOWN

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
R3
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. These SRs are associated with automatically supplying electrical power to necessary components following a loss of offsite electrical power. The DBA and transient analyses assume that manual action is taken to provide electrical power to necessary systems, such as RHR, on a loss of offsite power during shutdown. While the breaker will restore power to the bus which powers the RHR pumps following a loss of voltage or degraded RAI
3.8.2-08
R11

JUSTIFICATION FOR DEVIATIONS
ITS 3.8.2 - AC SOURCES - SHUTDOWN

voltage, the RHR pumps must be manually restarted. The same is true for the Component Cooling pumps which provide cooling water to the RHR system. Therefore, these SRs demonstrating automatic restoration of electrical power are not applicable during shutdown. With the deletion of these SRs from the SR list, the Note proposed by TSTF-300 is not required and is deleted. This is acceptable because the list of SRs from LCO 3.8.1 which are applicable during shutdown provides the necessary testing requirements to ensure the required EDG(s) are OPERABLE during MODES 5 and 6.

RAI
3.8.2-08
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North Anna ITS RAIs
ITS Section 3.8, Electrical Power Systems

Revised Response to RAI 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 incorporate 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.

Revised Response: As stated in the earlier response, the changes associated with TSTF-283, Revision 3, are incorporated. However, one exception is taken. The MODE restriction Note is not added to ITS SR 3.8.1.9. ITS SR 3.8.1.9 verifies that each required EDG can reject a load greater than or equal to its associated single largest post-accident load and subsequently operate within the required frequency and voltage. A Note was added by TSTF-283, Revision 3, which states "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." This Note is not required in the North Anna ITS. SR 3.8.1.9 may be performed in MODE 1 or 2 because it does not significantly disturb the associated electrical bus. This test is currently performed when an EDG is returned to OPERABLE status following on-line maintenance with the unit in MODE 1, 2, 3, or 4. This practice was described in a letter from the company to the NRC dated April 8, 1996 (Serial # 96-172) in response to an NRC Request for Additional Information dated April 2, 1996. This correspondence was associated with a Technical Specification amendment request, which was approved as Amendment 214 for Unit 1 and Amendment 195 for Unit 2. The amendments increased the allowed outage time for the North Anna EDGs from 72 hours to 14 days. The amendment was approved with no discussion of the RAI response in the accompanying Safety Evaluation. This change modifies DOC L.10 and results in creation of DOC L.20. JFD 16 is added to describe the change.

VIRGINIA ELECTRIC AND POWER COMPANY
RICHMOND, VIRGINIA 23261

April 8, 1996

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U. S. Nuclear Regulatory Commission
Washington, D. C. 20005

Serial No. 96-172
NLOS/ETS: R6
Docket Nos. 50-338
50-339
License Nos. NPF-4
NPF-7

Dear Sir:

VIRGINIA ELECTRIC AND POWER COMPANY
NORTH ANNA POWER STATION UNITS 1 AND 2
RESPONSE TO ADDITIONAL INFORMATION
PROPOSED TECHNICAL SPECIFICATION CHANGE
EMERGENCY DIESEL GENERATOR ALLOWED OUTAGE TIMES

By letter dated April 13, 1996, the NRC Staff requested additional information to continue their review of our proposed Technical Specification change for Emergency Diesel Generator Allowed Outage Times. A detailed response to each question, including the corrected Technical Specification pages, is provided in the attachment to this letter.

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

Very truly yours,



M. L. Bowling, Manager
Nuclear Licensing and Operations Support

Attachment

cc: United States Nuclear Regulatory Commission
Regional Administrator
Region II
101 Marietta Street, N. W.
Suite 2900
Atlanta, Georgia 30323

Mr. R. D. McWhorter
NRC Senior Resident Inspector
North Anna Power Station

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for a short duration. The transfer of station service loads is a manual transfer and is performed one bus at a time, therefore exposure to a loss of offsite power to both emergency buses (loss of more than one RSST) on a given unit is minimized.

A major difference between North Anna Power Station (NAPS) today and in the past is that there are now five diesels available to supply power to four emergency buses, two emergency buses for each unit. In the past, it would have been appropriate to have Technical Specification 3.0.4 applicable when one of the two EDGs assigned to a unit was unavailable due to maintenance. This is because the unit would have been capable of recovering electrical power to only one of its two emergency buses if an EDG were in maintenance. Now that NAPS has the AAC DG Technical Specification 3.0.4 should no longer be applicable when only one of the five diesels is unavailable due to the proposed preventive maintenance inspection. If two of the five diesels are inoperable then the unit should be limited by Technical Specification 3.0.4.

3. On Pages 1-3 of the proposed Technical Specifications for Unit 2, the word "emergency" has been added to the last sentence of Definition 1.12. This change is also applicable to Unit 1 but has apparently not been included in the amendment request. Is this change also requested?

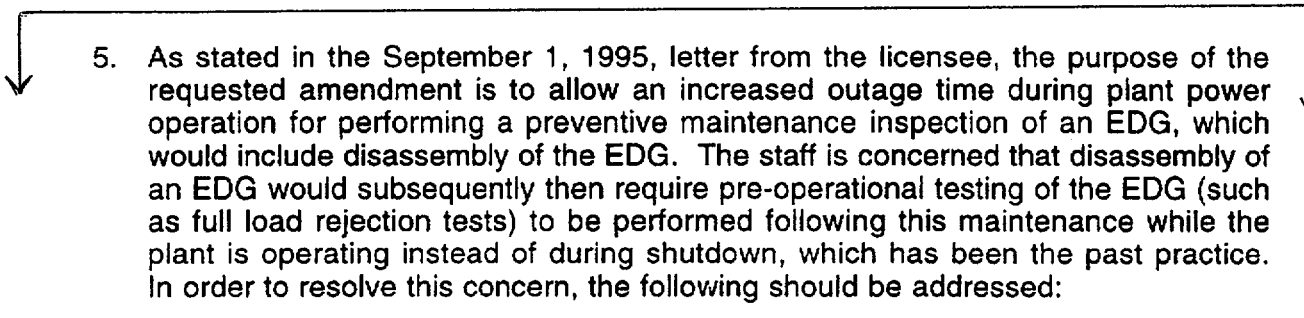
Response

Yes, this change is also requested. The revised Technical Specification page is attached. This change is discussed in general in the Specific Changes Section of our Proposed Technical Specification Change on Page 5 of 10 of Attachment 1.

4. On Page 7 of Attachment 1 to the licensee's September 1, 1995, letter, the last sentence ends with "of that unit." That phrase has apparently not been included in the actual Technical Specifications contained in Attachment 2 to the September 1 letter. Address this apparent conflict.

Response

The conflict was the result of an editorial error. The phrase "of that unit" was intended to be included. The revised Technical Specification pages are attached.

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5. As stated in the September 1, 1995, letter from the licensee, the purpose of the requested amendment is to allow an increased outage time during plant power operation for performing a preventive maintenance inspection of an EDG, which would include disassembly of the EDG. The staff is concerned that disassembly of an EDG would subsequently then require pre-operational testing of the EDG (such as full load rejection tests) to be performed following this maintenance while the plant is operating instead of during shutdown, which has been the past practice. In order to resolve this concern, the following should be addressed:

- a. What would be the typical and worse-case voltage transients on the 4160-V safety buses as a result of a full-load rejection?
- b. If a full-load rejection test is used to test the EDG governor after maintenance, what assurance would there be that an unsafe transient condition on the safety bus (i.e., load swing or voltage transient) due to improperly performed maintenance or repair of a governor would not occur?
- c. Using maintenance and testing experience on the EDG, identify possible transient conditions caused by improperly performed maintenance on the EDG governor and voltage regulator. Predict the electrical system response to these transients.

Response

The testing requirements following the proposed preventive maintenance inspection will be the same at power as they are during shutdown. Virginia Power does not anticipate any additional concerns as the result of performing this testing at power. As an example, under our current Technical Specifications, post maintenance testing was successfully completed at power following the recent replacement of an EDG governor.

- a. A full-load rejection test is not performed on the EDG. Our Technical Specifications require a load rejection test of 610 kW or greater. The load rejection is performed by paralleling the EDG to the system, adjusting load to the desired value and opening the diesel output breaker. The voltage transient seen by the bus/system is minimal and is bounded by "transients" which occur during normal 4 kV motor starting and stopping.
- b. Technical Specifications do not require the performance of a full-load rejection test. A load-rejection test of 610 kW or greater is required as stated in part a. Potential transient conditions associated with improperly performed maintenance on the governor or voltage regulator are discussed in section c.
- c. Improperly performed maintenance on the governor or voltage regulator could result in unstable EDG operation. While operating parallel with the system, possible transient conditions would include over or under excitation for voltage regulator problems and overload or reverse power for governor problems. These conditions would result in either an automatic trip of the generator output breaker or require a manual trip of the breaker. Under these conditions the worst case transients expected on the emergency bus would be the result of an increased load (kW or kVAR) on the system either due to a reverse power, under excitation, or a trip of the generator breaker resulting in a full load rejection to the system. The expected load transients associated with an EDG of this size (rated 4063 kVA) are bounded by other normal operating load transients. For example, the transfer of Station Service loads to the Reserve Station Service Transformer (RSST) following a unit trip results in a 20,000 kVA load addition to the RSST for which the system responds adequately. It should be noted that North Anna recently experienced an over

excitation trip of the EDG output breaker with the EDG fully loaded and connected to the system resulting in a rated load reject to the system with no adverse impact on emergency bus voltage.

Verification of stable voltage regulator and governor operation in the single unit mode (with the EDG output breaker open) is performed and the necessary corrections are made prior to connecting the EDG to the emergency bus. Further testing may be performed with the EDG connected to the bus (and the system disconnected) to verify proper voltage response during starting of a large load. Should the voltage regulator or governor become unstable during this testing the bus would be de-energized and would require manual re-connection of the offsite source.

6. Provide the current calculated total core damage frequency (CDF) resulting from all probabilistic safety assessment (PSA) sequences involving station blackout (SBO). Also provide the calculated total CDF from all SBO sequences after accounting for the increase in EDG unavailability due to the extended allowed outage time requested. Provide the instantaneous change in the CDF value for the worst-case plant configuration allowed under the proposed Specification 3.8.1.1.b.2.

Response

The SBO contribution to CDF for North Anna, Unit 1 before the AAC DG installation was determined to be $1.2\text{E-}5$ per year from a complete solution of the model "NO-AAC". The calculated CDF for SBO sequences is $5.9\text{E-}6$ per year based on solution of the model "95-JUNE" (i. e., with the AAC DG). When the increase in EDG unavailability due to the proposed preventive maintenance inspection is added to this model, the SBO CDF is $6.5\text{E-}6$ per year. The calculated increase in CDF associated with the proposed preventive maintenance inspection represents only a small offset ($\sim 10\%$) from the reduction in CDF achieved with AAC DG installation. These values can be found on page 23 of the Probabilistic Safety Assessment package. The Virginia Power PSA nomenclature for SBO sequences in these models is T1EE.

Sensitivity studies were performed to estimate the configuration risk assuming different EDGs were inoperable for the proposed preventive maintenance inspection. The instantaneous change in CDF for the worst-case plant configuration allowed under the proposed Specification 3.8.1.1.b.2 is $1.5\text{E-}5$ when one EDG is inoperable and $1.4\text{E-}4$ when one EDG and the AAC DG are inoperable. These results are based on a complete solution of the model with zero test and maintenance unavailability for all other equipment.

7. Provide the values for the EDG reliability and availability values used in the PSA analysis to calculate the SBO CDF values requested in Question 6 above. Discuss these values in relationship to any goals associated with the implementation of the maintenance rule and in comparison to actual past

SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY	
<p>SR 3.8.1.9 -----NOTE----- If performed with EDG synchronized with offsite power, it shall be performed at a power factor ≤ 0.9. However, if grid conditions do not permit, the power factor limit is not required to be met. Under this condition, the power factor shall be maintained as close to the limit as practicable. -----</p> <p>Verify each required EDG rejects a load greater than or equal to its associated single largest post-accident load, and:</p> <ul style="list-style-type: none"> a. Following load rejection, the frequency is ≤ 66 Hz; b. Within 3 seconds following load rejection, the voltage is ≥ 3740 V and ≤ 4580 V; and c. Within 3 seconds following load rejection, the frequency is ≥ 59.5 Hz and ≤ 60.5 Hz. 	<p>18 months</p>	<p>RAI 3.8.1-02 R3 R11</p>

BASES

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 a Note. The Note 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 ≤ 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 ≤ 0.9 . These conditions occur when grid voltage is high, and the additional field excitation needed to get the power factor to ≤ 0.9 results in voltages on the emergency busses that are too high. Under these conditions, the power factor should be maintained as close as practicable to 0.9 while still maintaining acceptable voltage limits on the emergency busses. In other circumstances, the grid voltage may be such that the 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.

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SR 3.8.1.10

Consistent with the recommendations of Regulatory Guide 1.108 (Ref. 8), paragraph 2.a.(1), this Surveillance demonstrates the as designed operation of the standby power sources during loss of the offsite source. This test verifies all actions encountered from the loss of offsite power, including shedding of the nonessential loads and energization of the emergency buses and respective loads

(continued)

RAI 3.8.1-02

CTS

SURVEILLANCE REQUIREMENTS (continued)

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. 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 ≤ 0.90.</p> <p>3. 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 ≤ 63.1 Hz; 66</p> <p>b. Within 030 seconds following load rejection, the voltage is ≥ 037400 V and ≤ 045800 V; and</p> <p>c. Within 030 seconds following load rejection, the frequency is ≥ 58.8 Hz and ≤ 61.2 Hz.</p> <p>59.5 60.5</p> <p>required</p>	<p>16</p> <p>18 months</p> <p>INSERT 2</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 ≤ 0.9 does not trip and voltage is maintained ≤ 5000 V during and following a load rejection of ≥ 4500 kW and ≤ 5000 kW.</p>	<p>18 months</p>

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ITS 3.8.1 - AC SOURCES - OPERATING

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R3 R11

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

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 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.

16. Note 1 to ISTS SR 3.8.1.9 states, in part, "The Surveillance shall not be performed in MODE 1 or 2." TSTF 283 modifies the Note to state "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." ITS SR 3.8.1.9 does not include a Note that restricts the MODE in which the SR may be performed. The deletion of the Note is acceptable because the SR has been performed many times to reestablish OPERABILITY of an inoperable EDG after maintenance as a part of the post maintenance testing requirements. North Anna has a 14-day Completion Time for the return of an EDG to OPERABLE status. This allowance was granted by TS amendments 214 (Unit 1) and 195 (Unit 2) that allows major on-line maintenance and required post-maintenance testing. This SR was specifically discussed as a part of the TS amendment process.

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BASES

SURVEILLANCE
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SR 3.8.1.9 (continued)

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

- a. Tripping the DG output breaker with the DG carrying greater than or equal to its associated single largest post-accident load while paralleled to offsite power, or while solely supplying the bus; or
- b. Tripping its associated single largest post-accident load with the DG 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 Regulatory Guide 1.9 (Ref. 3) recommendations for response during load sequence intervals. The 3 seconds specified is equal to 60% of a typical 5 second load sequence interval associated with sequencing of the largest load. The voltage and frequency specified are consistent with the design range of the equipment powered by the DG. SR 3.8.1.9.a corresponds to the maximum frequency excursion, while SR 3.8.1.9.b and SR 3.8.1.9.c are steady state voltage and frequency values to which the system must recover following load rejection. The 18 month frequency is consistent with the recommendation of Regulatory Guide 1.108 (Ref. 9).

This SR is modified by Note 1. 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, upset safety systems. Credit may be taken for unplanned events that satisfy this SR. In order to ensure that the DG is tested under load

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The Note 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 ≤ 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 ≤ 0.9 . These conditions occur when grid voltage is high, and the additional field excitation needed to get the power factor to ≤ 0.9 results in voltages on the emergency busses that are too high. Under these conditions, the power factor should be maintained as close as practicable to 0.9 while still maintaining acceptable voltage limits on the emergency busses. In other circumstances, the grid voltage may be such that the 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.

A.1

ELECTRICAL POWER SYSTEMS
SURVEILLANCE REQUIREMENTS

ITS

SR
3.8.1.7

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 ± 420 volts and 60 ± 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:

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

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.

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

- 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.
- Verifying that the load sequencing timers are OPERABLE with times within the tolerances shown in Table 4.8-1.

Insert proposed Notes

SR
3.8.1.9

SR
3.8.1.16

single largest post accident load

design

** 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.

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L.17 RAI 3.8.1-02

L.20 RAI 3.8.1-02 Rev 3

L.10 M.7

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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:

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

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.

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

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 ± 420 volts and 60 ± 0.5 Hz.
2. ~~INSERT PROPOSED NOTES~~ Verifying that the load sequencing timers are OPERABLE with times within the tolerances (shown in Table 4.8-1) design.
3. ~~INSERT PROPOSED NOTES~~ Simulating a loss of offsite power by itself, and:
 - a) Verifying de-energization of the emergency busses and load shedding from the emergency busses actual or simulated signal
 - 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 ± 420 volts and 60 ± 0.5 Hz.

** 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.

DISCUSSION OF CHANGES
ITS 3.8.1 - AC SOURCES - OPERATING

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, 3.8.1.12, 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.

- 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 changes the CTS by allowing a shared components to be considered OPERABLE for

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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.

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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.

- L.20 (*Category 6 – Relaxation Of Surveillance Requirement Acceptance Criteria*) CTS Surveillance Requirement 4.8.1.1.2.d.1 requires verification that an EDG provides power at the appropriate frequency and voltage following a load rejection. CTS 4.8.1.1.2.d states that this test is to be performed every 18 months "during shutdown." This Surveillance is performed during shutdown, but an identical test is performed at power following on-line EDG maintenance. ITS SR 3.8.1.9 does not restrict performance of the SR in any MODE. This changes the CTS by allowing the MODE 1, 2, 3 or 4 performance of the load rejection test to be credited for meeting the Surveillance.

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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 function. This test is currently performed when an EDG is returned to OPERABLE status following on-line maintenance with the unit in MODE 1, 2, 3, or 4. This practice was described in a letter from the company to the NRC dated April 8, 1996 (Serial # 96-172) in response to an NRC Request for Additional Information dated April 2, 1996. This correspondence was associated with a Technical Specification amendment request, which was approved as Amendment 214 for Unit 1 and Amendment 195 for Unit 2. The amendments increased the allowed outage time for the North Anna EDGs from 72 hours to 14 days. The amendment was approved with no discussion of the RAI response in the accompanying Safety Evaluation. Because of the wording of CTS 4.8.1.1.2.d, performance of the load rejection test at power is not credited with satisfying CTS 4.8.1.1.2.d.1. The test is repeated at shutdown to satisfy the Surveillance. This change is acceptable because operating experience has demonstrated that the load rejection test can be performed safely in MODES 1, 2, 3,

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or 4. This change is designated as less restrictive because less stringent Surveillance Requirements are being applied in the ITS than were applied in the CTS.

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North Anna ITS RAIs
ITS Section 3.8, Electrical Power Systems

Revised Response to 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.

Revised Response: Upon further consideration, the company has determined that the elimination of the phrase "for performance of inspection or repairs" from Condition A is inappropriate. The elimination of the phrase creates a conflict with Condition C. Therefore, Condition A is revised to state, "One fuel oil storage tank inoperable to perform inspection or repairs" which is consistent with the CTS requirements. DOC LA.4 is revised to reflect the change.

3.8 ELECTRICAL POWER SYSTEMS

3.8.3 Diesel Fuel Oil and Starting Air

LCO 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(s) is required to be OPERABLE.

R11

ACTIONS

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

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One fuel oil storage tank inoperable to perform an inspection or repairs.	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.	Once per 12 hours
	<u>AND</u>	
	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.	7 days

RAI
3.8.3-02
R3
R11

ITS 3.8.3 - DIESEL FUEL OIL AND STARTING AIR

INSERT

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One fuel oil storage tank inoperable to perform inspection or repairs.	A.1 Verify replacement fuel oil is available. <u>AND</u>	Prior to removing tank from service
	A.2 Verify remaining fuel oil storage tank contains $\geq 45,000$ gal. <u>AND</u>	Once per 12 hours
	A.3 Verify above ground fuel oil tank contains $\geq 100,000$ gal. <u>AND</u>	Once per 12 hours
	A.4 Restore fuel oil storage tank to within limits.	7 days

PAI
3.8.3-02
R3
R11

R3

R11

ITS

ELECTRICAL POWER SYSTEMS
LIMITING CONDITION FOR OPERATION

A.1

ITS 3.8.3
08-26-98

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 inspection performance of Surveillance Requirement 4.8.1.1.4 or for tank repairs:

LA.1

LA.4

RAJ 3.8.3-02 R3, R11

LA.1

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 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.

LA.2

L.4/R11

Action A

A.2

A.3

A.1

A.4

Action B

INSERT PROPOSED ACTION B

L.1/R11

Action C

INSERT PROPOSED ACTION C

M.2/R11

Action D

INSERT PROPOSED ACTION D

L.3/R11

Action E

INSERT PROPOSED ACTION E

M.1/R11

Action F

INSERT PROPOSED ACTION F

A.4/R11

ITS

ELECTRICAL POWER SYSTEMS

LIMITING CONDITION FOR OPERATION

A.1

ITS 3.8.3
08-26-98

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.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 inspection performance of Surveillance Requirement 4.8.1.1.4 or for tank repairs:

Action
A

A.2

A.3

A.1

A.4

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 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.

LA.1

LA.4

LA.1

RAI
3.8.3-02
R3, R11

LA.2

L.4 | R11

Action
B

X INSERT PROPOSED ACTION B

L.1 | R11

Action
C

X INSERT PROPOSED ACTION C

M.2 | R11

Action
D

X INSERT PROPOSED ACTION D

L.3 | R11

Action
E

X INSERT PROPOSED ACTION E

M.1 | R11

Action
F

X INSERT PROPOSED ACTION F

A.4 | R11

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

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.

RAI
3.8.3-03
R3

- 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 3.8.3.2 verifies fuel oil properties and SR 3.8.3.4 checks for and removes accumulated water from each stored fuel oil tank. The Bases for SR 3.8.3.2 discusses viscosity and sediment. This changes the CTS by moving the requirements on viscosity and sediment from the Technical Specifications to the ITS Bases.

R11

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, Condition A, allows one fuel oil storage tank to be inoperable to perform inspection or repair. This changes the CTS by moving the requirement to drain, clean, inspect each underground tank every 10 years to the Technical Requirements Manual (TRM).

RAI
3.8.3-01
3.8.3-02
R3, R11

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. ITS 3.8.3, Condition A, retains the CTS conditions for removing a tank from service in that replacement fuel oil must

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

be available, the remaining tank must have $\geq 45,000$ gallons of fuel oil, and the above ground tank must have $\geq 100,000$ gallons of acceptable fuel oil. 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
3.8.3-02
R3, R11

LESS RESTRICTIVE CHANGES

- L.1 (Category 4 – Relaxation of Required Action) CTS 3.8.1.1 states each of the two underground fuel oil tanks must contain 45,000 gallons 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 B allows 48 hours to restore a fuel oil inventory to 90,000 gallons, provided the inventory is 77,200 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.

R11

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 77,200 gallons of diesel fuel oil will continue to be required for the EDGs. This represents the amount of fuel oil needed for two EDGs 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 limit. It is very unlikely that an event would require two EDGs 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.

R11

- L.2 Not used.

RAI
3.8.3-01
R3

- 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 D 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.

Changes to ITS Submittal Not Associated With RAIs
ITS Section 3.8, Electrical Power Systems

1. The Bases to LCO 3.8.1 and LCO 3.8.2 are revised to more clearly describe the plant design. This change does not affect the application of the Technical Specifications. The Bases are revised to state, "Offsite circuits consist of 34.5 kV buses 3, 4, and 5 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. Unit 1 emergency bus J is fed through the D transfer bus from the A RSST. 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. Unit 2 emergency bus J is fed through the F transfer bus from the C RSST. The RSSTs can be fed by any 34.5 kV bus (3, 4, or 5) provided RSSTs A and B are fed from a different 34.5 kV bus than RSST C."

BASES

LCO
(continued)

Offsite circuits consist of 34.5 kV buses 3, 4, and 5 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. Unit 1 emergency bus J is fed through the D transfer bus from the A RSST. Unit 1 station service bus 1B can be an alternate feed for Unit 1 H emergency bus, while Unit 1 J 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. Unit 2 emergency bus J is fed through the F transfer bus from the C RSST. The RSSTs can be fed by any 34.5 kV bus (3, 4, or 5) provided RSSTs A and B are fed from a different 34.5 kV bus than RSST C. Specific breaker nomenclature for individual circuits may be obtained from drawings in the UFSAR, Chapter 8 (Ref. 2).

R11

R11

R11

Each EDG must be capable of starting, accelerating to rated speed and voltage, and connecting to its respective ESF bus on detection of bus undervoltage or degraded voltage. This will be accomplished within 10 seconds. Each EDG must also 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 EDG in standby with the engine hot and EDG in standby with the engine at ambient conditions. Additional EDG capabilities must be demonstrated to meet required Surveillances.

Proper sequencing of loads is a required function for EDG OPERABILITY.

The other unit's offsite circuit(s) and EDG(s) are required to be OPERABLE to support the SW, MCR/ESGR ventilation, and Auxiliary Building central exhaust functions needed for this unit. These functions share components, pump or fans, which are electrically powered from both units.

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

For the offsite AC sources, separation and independence are to the extent practical.

ITS 3.8.1 - AC SOURCES - OPERATING

INSERT

Offsite circuits consist of 34.5 kV buses 3, 4, and 5 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. Unit 1 emergency bus J is fed through the D transfer bus from the A RSST. 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. Unit 2 emergency bus J is fed through the F transfer bus from the C RSST. The RSSTs can be fed by any 34.5 kV bus (3, 4, or 5) provided RSSTs A and B are fed from a different 34.5 kV bus than RSST C. Specific breaker nomenclature for individual circuits may be obtained from drawings in the UFSAR Chapter 8 (Ref. 2).

R#

R#

R#

BASES

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.

Offsite circuits consist of 34.5 kV buses 3, 4, and 5 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. Unit 1 emergency bus J is fed through the D transfer bus from the A RSST. Unit 1 station service bus 1B can be an alternate feed for Unit 1 H emergency bus, while Unit 1 J 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. Unit 2 emergency bus J is fed through the F transfer bus from the C RSST. The RSSTs can be fed by any 34.5 kV bus (3, 4, or 5) provided RSSTs A and B are fed from a different 34.5 kV bus than RSST C.

The EDG must be capable of manual starting, accelerating to rated speed and voltage, and connecting to its respective ESF bus. The EDG must be capable of accepting required loads, and continue to operate until offsite power can be restored to the ESF bus.

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

RAI
3.8.2-06
R3

R11

R11

R11

R3

INSERT

Offsite circuits consist of 34.5 kV buses 3, 4, and 5 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. Unit 1 emergency bus J is fed through the D transfer bus from the A RSST. 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. Unit 2 emergency bus J is fed through the F transfer bus from the C RSST. The RSSTs can be fed by any 34.5 kV bus (3, 4, or 5) provided RSSTs A and B are fed from a different 34.5 kV bus than RSST C.

R11

R4

R11

Changes to ITS Submittal Not Associated With RAIs
ITS Section 3.8, Electrical Power Systems

2. The response to RAI 3.8.2-06 in Revision 3 revised the Bases of LCO 3.8.2. NUREG Bases page 3.8 – 37 was modified to incorporate this change, but was inadvertently omitted from the Revision 3 response. The affected page is provided.

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).

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.

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.

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.

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

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.

(continued)

Changes to ITS Submittal Not Associated With RAIs
ITS Section 3.8, Electrical Power Systems

3. CTS markups for Unit 1 page 3/4 8-7 and Unit 2 page 3/4 8-12 for LCOs 3.8.5 and 3.8.10 were marked to indicate material would be addressed in LCO 3.8.7. The proper reference is LCO 3.8.8. The pages are revised.

4-21-92

A.1

R11

ITS

3.8

3.8.5

ELECTRICAL POWER SYSTEMSA.C. and D.C. DISTRIBUTION - SHUTDOWNLIMITING CONDITION FOR OPERATION

3.8.2.2 As a minimum, one of the following trains of A.C. and D.C. busses shall be OPERABLE and energized in the specified manner:

- a. "H" Train (Orange) consisting of the following:
1. 4160-volt Emergency Bus 1H
 2. 480-volt Emergency Busses 1H and 1H1
 3. 120-volt A.C. Vital Bus 1-1 energized from its associated inverter connected to D.C. bus 1-1, and
 4. 120-volt A.C. Vital Bus 1-2 energized from its associated inverter connected to D.C. bus 1-2.
 5. 125-volt D.C. Busses No. 1-1 & 1-2, and
 6. 125-volt D.C. Battery Banks 1-I & 1-II and Chargers 1-I & 1-II D.C. Battery Charger 1C-I may be used in place of either of the above Chargers.
- b. "J" Train (Purple) consisting of the following:
1. 4160-volt Emergency Bus 1J
 2. 480-volt Emergency Busses 1J and 1J1
 3. 120-volt A.C. Vital Bus 1-3 energized from its associated inverter connected to D.C. bus 1-3, and
 4. 120-volt A.C. Vital Bus 1-4 energized from its associated inverter connected to D.C. bus 1-4.
 5. 125-volt D.C. Busses No. 1-3 & 1-4, and
 6. 125-volt D.C. Battery Banks 1-III & 1-IV and Chargers 1-III & 1-IV D.C. Battery Charger 1C-II may be used in place of either of the above Chargers.

APPLICABILITY:

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

A.1

R11

ITS
3.8
3.8.5

ELECTRICAL POWER SYSTEMS

A.C. and D.C. DISTRIBUTION - SHUTDOWN

see ITS
3.8.10

see ITS
3.8.8

LIMITING CONDITION FOR OPERATION

LCO
3.8.5

3.8.2.2 As a minimum, one of the following trains of A.C. and D.C. busses shall be OPERABLE and energized in the specified manner

INSERT LCO
3.8.5

L.6

a. "H" Train (Orange) consisting of the following:

1. 4160-volt Emergency Bus 2H
2. 480-volt Emergency Busses 2H and 2H1
3. 120-volt A.C. Vital Bus 2-1 energized from its associated inverter connected to D.C. bus 2-1, and
4. 120-volt A.C. Vital Bus 2-2 energized from its associated inverter connected to D.C. bus 2-2.
5. 125-volt D.C. Busses No. 2-1 & 2-2, and
6. 125-volt D.C. Battery Banks 2-I & 2-II and Chargers 2-I & 2-II D.C. Battery Charger 2C-I may be used in place of either of the above Chargers.

LA.1

b. "J" Train (Purple) consisting of the following:

1. 4160-volt Emergency Bus 2J
2. 480-volt Emergency Busses 2J and 2J1
3. 120-volt A.C. Vital Bus 2-3 energized from its associated inverter connected to D.C. bus 2-3, and
4. 120-volt A.C. Vital Bus 2-4 energized from its associated inverter connected to D.C. bus 2-4.
5. 125-volt D.C. Busses No. 2-3 & 2-4, and
6. 125-volt D.C. Battery Banks 2-III & 2-IV and Chargers 2-III & 2-IV D.C. Battery Charger 2C-II may be used in place of either of the above Chargers.

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.

recently

L.5

L.1

ITS 3.8.10

4-21-92

A.1

ITS

3.8

ELECTRICAL POWER SYSTEMS

SYSTEMS

3.8.10

A.C. and D.C. DISTRIBUTION - SHUTDOWN

LIMITING CONDITION FOR OPERATION

LCO
3.8.10

3.8.2.2 As a minimum, one of the following trains of A.C. and D.C. busses shall be OPERABLE and energized in the specified manner:

INSERT PROPOSED LCO 3.8.10

a. "H" Train (Orange) consisting of the following:

1. 4160-volt Emergency Bus 1H
2. 480-volt Emergency Busses 1H and 1H1
3. 120-volt A.C. Vital Bus 1-1 energized from its associated inverter connected to D.C. bus 1-1, and
4. 120-volt A.C. Vital Bus 1-2 energized from its associated inverter connected to D.C. bus 1-2.
5. 125-volt D.C. Busses No. 1-1 & 1-2, and
6. 125-volt D.C. Battery Banks 1-I & 1-II and Chargers 1-I & 1-II D.C. Battery Charger 1C-I may be used in place of either of the above Chargers.

L.5

See ITS 3.8.8

L.A.1

b. "J" Train (Purple) consisting of the following:

1. 4160-volt Emergency Bus 1J
2. 480-volt Emergency Busses 1J and 1J1
3. 120-volt A.C. Vital Bus 1-3 energized from its associated inverter connected to D.C. bus 1-3, and
4. 120-volt A.C. Vital Bus 1-4 energized from its associated inverter connected to D.C. bus 1-4.
5. 125-volt D.C. Busses No. 1-3 & 1-4, and
6. 125-volt D.C. Battery Banks 1-III & 1-IV and Chargers 1-III & 1-IV D.C. Battery Charger 1C-II may be used in place of either of the above Chargers.

See ITS 3.8.8

L.A.1

APPLICABILITY:

a. Modes 5 and 6

recently

L.4

b. During movement of irradiated fuel assemblies or loads over irradiated fuel assemblies when no fuel assemblies are in the reactor vessel.

L.1

Action
A.1

INSERT PROPOSED REQUIRED ACTION A.1

L.2

ITS

3.8 ELECTRICAL POWER SYSTEMS

3.8.10 AC and DC DISTRIBUTION - SHUTDOWN

A.1

LIMITING CONDITION FOR OPERATION

LCO
3.8.10

3.8.2.2 As a minimum, one of the following trains of A.C. and D.C. busses shall be OPERABLE and energized in the specified manner:

INSERT PROPOSED LCO 3.8.10

a. "H" Train (Orange) consisting of the following:

1. 4160-volt Emergency Bus 2H
2. 480-volt Emergency Busses 2H and 2H1
3. 120-volt A.C. Vital Bus 2-1 energized from its associated inverter connected to D.C. bus 2-1, and
4. 120-volt A.C. Vital Bus 2-2 energized from its associated inverter connected to D.C. bus 2-2.
5. 125-volt D.C. Busses No. 2-1 & 2-2, and
6. 125-volt D.C. Battery Banks 2-I & 2-II and Chargers 2-I & 2-II D.C. Battery Charger 2C-I may be used in place of either of the above Chargers.

b. "J" Train (Purple) consisting of the following:

1. 4160-volt Emergency Bus 2J
2. 480-volt Emergency Busses 2J and 2J1
3. 120-volt A.C. Vital Bus 2-3 energized from its associated inverter connected to D.C. bus 2-3, and
4. 120-volt A.C. Vital Bus 2-4 energized from its associated inverter connected to D.C. bus 2-4.
5. 125-volt D.C. Busses No. 2-3 & 2-4, and
6. 125-volt D.C. Battery Banks 2-III & 2-IV and Chargers 2-III & 2-IV D.C. Battery Charger 2C-II may be used in place of either of the above Chargers.

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.

Action
A.1

INSERT PROPOSED Required Action A.1

Changes to ITS Submittal Not Associated With RAIs
ITS Section 3.8, Electrical Power Systems

4. ITS 3.8.3 is revised.
 - a. The CTS provides an Action which allows one underground fuel oil storage tank to be removed from service for inspection or repair provided that certain conditions are met and the tank is restored within 7 days. The CTS requires both units to shutdown if the conditions are not met or if the tank is not restored within 7 days. The ITS is revised to eliminate the shutdown requirement in Condition B and utilize a requirement that the associated EDGs be declared inoperable in Condition G (now Condition F). This is more consistent with the plant design, as the only safety function of the fuel oil storage system is to support the EDGs, and more consistent with ISTS 3.8.3. The subsequent Conditions are renumbered.
 - b. ITS SR 3.8.3.1 requires each of the two underground fuel oil storage tanks to contain > 45,000 gallons. This is revised to require a fuel oil inventory of 90,000 gallons. Condition B is revised from applying when there is > 33,600 gallons and < 45,000 gallons to applying when there is > 77,200 gallons and < 90,000 gallons. All four EDGs draw fuel oil from both underground tanks. Requiring 45,000 in each tank implies that inventory in each tank has significance, when only the total is important. Revising the presentation simplifies the requirements and is consistent with the accident analysis and the design basis. The ITS Bases are also revised to clearly state the fuel oil requirements in terms of total inventory, not the inventory in each underground fuel oil tank.
 - c. Use of the term "OPERABLE" in the Bases in reference to an air start subsystem are eliminated. The requirements on the air start subsystem are not changed. In the ISTS 3.8.3 Bases, the term OPERABILITY is only used in reference to EDGs. The air start subsystem and fuel oil storage system support EDG OPERABILITY. This change is made for consistency with the ISTS.
 - d. DOC LA.3 documents the movement of information regarding ASTM D975 from the Technical Specification to the ITS Bases for SR 3.8.3.4. This information is also contained in the ITS Bases for SR 3.8.3.2. Therefore, DOC LA.3 is revised to state that the information is also moved to SR 3.8.3.2.

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(s) is required to be OPERABLE.

R11

ACTIONS

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

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One fuel oil storage tank inoperable to perform an inspection or repairs.	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.	Once per 12 hours
	<u>AND</u>	
	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.	7 days

RAI
3.8.3-02
R3
R11

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
B. One or more EDGs with fuel oil inventory < 90,000 gal and > 77,200 gal for reasons other than Condition A.	B.1 Restore fuel oil inventory to within limits.	48 hours
C. One or more EDGs with stored fuel oil total particulates not within limit.	C.1 Restore fuel oil total particulates within limit.	7 days
D. One or more EDGs with new fuel oil properties not within limits.	D.1 Restore stored fuel oil properties to within limits.	30 days
E. One or more EDGs with the required starting air receiver pressure < 175 psig and ≥ 150 psig.	E.1 Restore starting air receiver pressure to ≥ 175 psig.	48 hours
F. Required Action and associated Completion Time not met. OR One or more EDGs diesel fuel oil or starting air subsystem not within limits for reasons other than Condition A, B, C, D, or E.	F.1 Declare associated EDG(s) inoperable.	Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY	
SR 3.8.3.1	Verify fuel oil inventory \geq 90,000 gal.	31 days	^{R11}
SR 3.8.3.2	Verify fuel oil properties of new and stored fuel oil are tested in accordance with, and maintained within the limits of, the Diesel Fuel Oil Testing Program.	In accordance with the Diesel Fuel Oil Testing Program	
SR 3.8.3.3	Verify each EDG air start receiver pressure is \geq 175 psig.	31 days	
SR 3.8.3.4	Check for and remove accumulated water from each stored fuel oil storage tank.	92 days	

B 3.8 ELECTRICAL POWER SYSTEMS

B 3.8.3 Diesel Fuel Oil and Starting Air

BASES

BACKGROUND

The fuel oil storage system has sufficient capacity to operate two EDGs for a period of 7 days with each supplying the maximum post loss of coolant accident load demand discussed in the UFSAR, Section 9.5.4.2 (Ref. 1). This onsite fuel oil capacity is sufficient to operate the EDGs for longer than the time to replenish the onsite supply from outside sources.

R11

The fuel oil storage system consists of two underground tanks. Fuel oil is transferred from an underground tank to each EDG day tank by a lead fuel oil transfer pump. An additional underground tank and fuel oil transfer pump is associated with each EDG day tank to provide a redundant subsystem. Independent level switches on the day tank operate the lead and backup fuel oil transfer subsystems. All outside tanks, pumps, and piping are located underground or in a missile protected area.

R11
RAI
3.8.3-09
R3

For proper operation of the standby EDGs, it is necessary to ensure the proper quality of the fuel oil. Regulatory Guide 1.137 (Ref. 2) addresses the recommended fuel oil practices as supplemented by ANSI N195 (Ref. 3). The fuel oil properties governed by these SRs are the water and sediment content, the kinematic viscosity, specific gravity (or API gravity), and impurity level.

Each EDG has an air start system that contains two separate and independent subsystems. Normally, each subsystem is aligned to provide starting air to the associated EDG. Each subsystem consists of a receiver and a compressor. Only one air start subsystem is required for the EDG to be considered OPERABLE.

R11

APPLICABLE
SAFETY ANALYSES

The initial conditions of Design Basis Accident (DBA) and transient analyses in the UFSAR, Chapter 6 (Ref. 4), and in the UFSAR, Chapter 15 (Ref. 5), assume Engineered Safety Feature (ESF) systems are OPERABLE. The EDGs are designed to provide sufficient capacity, capability, redundancy, and reliability to ensure the availability of necessary power to ESF systems so that fuel, Reactor Coolant System and

(continued)

BASES

APPLICABLE
SAFETY ANALYSES
(continued)

containment design limits are not exceeded. These limits are discussed in more detail in the Bases for Section 3.2, Power Distribution Limits; Section 3.4, Reactor Coolant System (RCS); and Section 3.6, Containment Systems.

The DBA and transient analyses assume the operation of one EDG associated with the unit on which an accident is postulated to occur and the operation of one EDG on the unit which is unaffected by the accident to support shared systems. LCO 3.8.1 requires two EDGs to be OPERABLE and one EDG from the other unit to be OPERABLE. However, only sufficient fuel oil to operate one EDG and one EDG on the other unit is required to satisfy the assumptions of the DBA and transient analysis and to support EDG OPERABILITY.

R11

Since diesel fuel oil and the air start subsystem support the operation of the standby AC power sources, they satisfy Criterion 3 of 10 CFR 50.36(c)(2)(ii).

LCO

Stored diesel fuel oil is required to have sufficient supply for 7 days of full load operation for two EDGs. It is also required to meet specific standards for quality. This requirement, in conjunction with an ability to obtain replacement supplies within 2 days, supports the availability of EDGs required to shut down the reactor and to maintain it in a safe condition for an anticipated operational occurrence (AOO) or a postulated DBA with loss of offsite power. EDG day tank fuel requirements, as well as transfer capability from the storage tank to the day tank, are addressed in LCO 3.8.1, "AC Sources—Operating," and LCO 3.8.2, "AC Sources—Shutdown."

R11

One air start subsystem is required to ensure EDG OPERABILITY. The required starting air subsystem receiver is required to have a minimum of 175 psig to provide the EDG with more than one start attempt without recharging the air start receivers.

R11

APPLICABILITY

The AC sources (LCO 3.8.1 and LCO 3.8.2) are required to ensure the availability of the required power to shut down the reactor and maintain it in a safe shutdown condition after an AOO or a postulated DBA. Since stored diesel fuel oil and the starting air subsystem support LCO 3.8.1 and
(continued)

BASES

APPLICABILITY
(continued)

LCO 3.8.2, stored diesel fuel oil and starting air are required to be within limits when the EDG(s) is required to be OPERABLE. ^{R11}

All four EDGs (two per unit) are normally associated with both tanks which make up the fuel oil storage system. All EDGs that are required to be OPERABLE are associated with the fuel oil storage system. The determination of which EDGs are required to be OPERABLE is based on the requirements of LCO 3.8.1, "AC Sources—Operating," and LCO 3.8.2, "AC Sources—Shutdown." ^{R11}

ACTIONS

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

A.1, A.2, A.3, and A.4

In this Condition, an underground fuel oil storage tank is not within limits for the purpose of tank repair or inspection. Every ten years a fuel oil tank must be inspected for integrity under the requirements of ASME Code, Section XI. Because both tanks are the source of fuel oil for all EDGs on both units, a dual unit outage would be required in order to provide the necessary time to complete the required maintenance or inspection. Prior to removal of the tank for repairs or inspection, verify 50,000 gallons of replacement fuel oil is available offsite and transportation is available to deliver that volume of fuel oil within 48 hours. Restrictions are placed on the remaining fuel oil storage tank and the 210,000-gallon above ground tank. Under this Condition, verification of the redundant fuel oil tank is required to confirm the required minimum amount of diesel fuel oil. In addition, the above ground tank, used to supply make up to the underground tanks, is required to be verified to contain the minimum level corresponding to 100,000 gallons. Verifications of onsite fuel oil are required on a 12 hour frequency to ensure an adequate source of fuel oil to the EDGs remains available. The underground fuel oil tank that is being inspected or repaired must be ^{R11}
(continued)

BASES

ACTIONS

A.1, A.2, A.3, and A.4 (continued)

restored within limits in 7 days. This time is considered reasonable based on the required maintenance and the requirements provided by the Required Actions.

R11

B.1

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

C.1

R11

This Condition is entered as a result of a failure to meet the acceptance criterion of SR 3.8.3.2. Normally, trending of particulate levels allows sufficient time to correct high particulate levels prior to reaching the limit of acceptability. Poor sample procedures (bottom sampling), contaminated sampling equipment, and errors in laboratory analysis can produce failures that do not follow a trend. Since the presence of particulates does not mean failure of the fuel oil to burn properly in the diesel engine, and particulate concentration is unlikely to change significantly between Surveillance Frequency intervals, and proper engine performance has been recently demonstrated (within 31 days), it is prudent to allow a brief period prior to declaring the associated EDG inoperable. The 7 day
(continued)

BASES

ACTIONS

C.1 (continued)

|R11

Completion Time allows for further evaluation, resampling and re-analysis of the EDG fuel oil stored in the below ground tanks.

D.1

|R11

With the new fuel oil properties defined in the Bases for SR 3.8.3.2 not within the required limits, a period of 30 days is allowed for restoring the stored fuel oil properties. This period provides sufficient time to test the stored fuel oil to determine that the new fuel oil, when mixed with previously stored fuel oil, remains acceptable, or to restore the stored fuel oil properties. This restoration may involve feed and bleed procedures, filtering, or combinations of these procedures. Even if an EDG start and load was required during this time interval and the fuel oil properties were outside limits, there is a high likelihood that the EDG would still be capable of performing its intended function.

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R3

RAI
3.8.3-11
R3

E.1

|R11

With the one required starting air receiver pressure < 175 psig, sufficient capacity for several EDG start attempts does not exist. However, as long as the receiver pressure is > 150 psig, there is adequate capacity for at least one start attempt, and the EDG can be considered OPERABLE while the air receiver pressure is restored to the required limit. A period of 48 hours is considered sufficient to complete restoration to the required pressure prior to declaring the EDG inoperable. This period is acceptable based on the remaining air start capacity, the fact that most EDG starts are accomplished on the first attempt, and the low probability of an event during this brief period.

F.1

|R11

With a Required Action and associated Completion Time not met, or one or more EDG's fuel oil or the required starting air subsystem not within limits for reasons other than addressed by Conditions A through E, the associated EDG(s) may be incapable of performing its intended function and must be immediately declared inoperable. Only one starting air subsystem is required.

|R11

|R11

BASES

SURVEILLANCE
REQUIREMENTS

SR 3.8.3.1

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

R11

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

SR 3.8.3.2

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

- a. Sample the new fuel oil in accordance with ASTM D4057-88 (Ref. 6);
- b. Verify in accordance with the tests specified in ASTM D975-83 (Ref. 6) that the sample has an absolute specific gravity at 60/60°F of ≥ 0.83 and ≤ 0.89 or an API gravity at 60°F of $\geq 27^\circ$ and $\leq 39^\circ$, a kinematic viscosity at 100°F of ≥ 1.9 centistokes and ≤ 4.1 centistokes, and a flash point of $\geq 125^\circ\text{F}$; and
- c. Verify that the new fuel oil is checked for water and sediment in accordance with the Diesel Fuel Oil Testing Program.

(continued)

Diesel Fuel Oil, Lube Oil, and Starting Air
3.8.3

CTS

3.8 ELECTRICAL POWER SYSTEMS

3.8.3 Diesel Fuel Oil, Lube Oil, and Starting Air

LCO 3.8.3

The stored diesel fuel oil, Lube oil, and starting air subsystem shall be within limits for each required diesel generator (DG).

emergency

APPLICABILITY: When associated DG is required to be OPERABLE.

ACTIONS

NOTE
Separate Condition entry is allowed for each DG.

CONDITION	REQUIRED ACTION	COMPLETION TIME
<p>One or more DGs with fuel level <u>90,000</u> gal and <u>(33,000)</u> gal and <u>(28,285)</u> gal in storage tank for reasons other than Condition A.</p>	<p>Restore fuel oil level to within limits. <u>Inventory</u></p>	<p>48 hours</p>
<p>One or more DGs with lube oil inventory < [500] gal and > [425] gal.</p>	<p>Restore lube oil inventory to within limits.</p>	<p>48 hours</p>
<p>One or more DGs with stored fuel oil total particulates not within limit.</p>	<p>Restore fuel oil total particulates within limit.</p>	<p>7 days</p>

(continued)

ITS 3.8.3 - DIESEL FUEL OIL AND STARTING AIR

INSERT

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One fuel oil storage tank inoperable to perform inspection or repairs.	A.1 Verify replacement fuel oil is available. <u>AND</u>	Prior to removing tank from service
	A.2 Verify remaining fuel oil storage tank contains $\geq 45,000$ gal. <u>AND</u>	Once per 12 hours
	A.3 Verify above ground fuel oil tank contains $\geq 100,000$ gal. <u>AND</u>	Once per 12 hours
	A.4 Restore fuel oil storage tank to within limits.	7 days

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3.8.3-02
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R11

R3

R11

Diesel Fuel Oil, Lube Oil, and Starting Air 3.8.3

CTS

ACTIONS (continued)

	CONDITION	REQUIRED ACTION	COMPLETION TIME
New	D. One or more ^(E) DGs with new fuel oil properties not within limits.	D.1 Restore stored fuel oil properties to within limits.	30 days
New	E. One or more ^(E) DGs with starting air receiver pressure \leq ⁽²²⁵⁾ psig and \geq ⁽¹²⁵⁾ psig. ⁽¹⁵⁰⁾ ⁽¹⁷⁵⁾	E.1 Restore starting air receiver pressure to \geq ⁽¹⁷⁵⁾ psig.	48 hours
New	F. Required Action and associated Completion Time not met. OR ^(E) One or more ^(E) DGs diesel fuel oil <u>Lube oil</u> , or starting air subsystem not within limits for reasons other than Condition A, B, C, D, or E.	F.1 Declare associated ^(E) DG ⁽¹⁵⁾ inoperable.	Immediately

SURVEILLANCE REQUIREMENTS

	SURVEILLANCE	FREQUENCY
4.8.1.1.2 a.2	SR 3.8.3.1 Verify <u>each</u> fuel oil <u>storage tank contains</u> <u>inventory</u> \geq ^(33,000) gal of fuel. ^(90,000)	31 days

(continued)

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

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 Action A. This allows the inoperability of one required underground fuel oil tank for inspection or repair. The remaining fuel oil storage tank is available to provide fuel oil to all of the EDGs. The subsequent Actions are renumbered. R11
4. The brackets are removed and the proper plant specific information/value is provided.
5. CTS 3.8.1.1.b.2 requires a fuel oil storage system consisting of two underground storage tanks each containing a minimum of 45,000 gallons of fuel. ITS SR 3.8.3.1 states, "Verify fuel oil inventory \geq 90,000 gal of fuel." This revises the ITS to refer to total fuel oil inventory instead of fuel oil level in each tank. Because the two underground fuel oil storage tanks each provide fuel oil to all four EDGs, referring to the total inventory instead of the level of fuel oil in each tank is a more accurate depiction of the design basis. Reference to fuel oil level in ISTS Action A (ITS Action B) is also revised to refer to inventory. R11

2

B 3.8 ELECTRICAL POWER SYSTEMS

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

2

BASES

The fuel oil storage system has sufficient capacity to operate two EOGs

BACKGROUND

Each diesel generator (DG) is provided with a storage tank having a fuel oil capacity sufficient to operate that diesel for a period of 7 days (while the DG is supplying maximum post loss of coolant accident load demand discussed in the FSAR, Section 9.5.4.2) (Ref. 1). The maximum load demand is calculated using the assumption that a minimum of any two DGs is available. This onsite fuel oil capacity is sufficient to operate the DGs for longer than the time to replenish the onsite supply from outside sources.

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1 R11

The fuel oil storage system consists of two underground tanks.

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

INSERT 1

1 RAI / R11
3.8.3-09
R 3

or in a missile protected area

1

For proper operation of the standby DGs, it is necessary to ensure the proper quality of the fuel oil. Regulatory Guide 1.137 (Ref. 2) addresses the recommended fuel oil practices as supplemented by ANSI N195 (Ref. 3). The fuel oil properties governed by these SRs are the water and sediment content, the kinematic viscosity, specific gravity (or API gravity), and impurity level.

The DG lubrication system is designed to provide sufficient lubrication to permit proper operation of its associated DG under all loading conditions. The system is required to circulate the lube oil to the diesel engine working surfaces and to remove excess heat generated by friction during operation. Each engine oil sump contains an inventory capable of supporting a minimum of [7] days of operation. [The onsite storage in addition to the engine oil sump is sufficient to ensure 7 days of continuous operation.] This supply is sufficient to allow the operator to replenish lube oil from outside sources.

2

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

INSERT 2

RAI
3.8.3-09
Rev
3

(continued)

ITS 3.8.3 - DIESEL FUEL OIL AND STARTING AIR

INSERT 1

a lead fuel oil transfer pump. An additional underground tank and fuel oil transfer pump is associated with each EDG day tank to provide a redundant subsystem. Independent level switches from the lead subsystem operate the backup fuel oil transfer subsystem.

PAI
3.8.3-
09
R3

INSERT 2

Each EDG has an air start system that contains two separate and independent subsystems. Normally, each subsystem is aligned to provide starting air to the associated EDG. Each subsystem consists of a receiver and a compressor. Only one air start subsystem is required for the EDG to be considered OPERABLE.

R11

BASES (continued)

APPLICABLE
SAFETY ANALYSES

The initial conditions of Design Basis Accident (DBA) and transient analyses in the FSAR, Chapter P60 (Ref. 4), and in the FSAR, Chapter P150 (Ref. 5), assume Engineered Safety Feature (ESF) systems are OPERABLE. The DGs are designed to provide sufficient capacity, capability, redundancy, and reliability to ensure the availability of necessary power to ESF systems so that fuel, Reactor Coolant System and containment design limits are not exceeded. These limits are discussed in more detail in the Bases for Section 3.2, Power Distribution Limits; Section 3.4, Reactor Coolant System (RCS); and Section 3.6, Containment Systems.

Since diesel fuel oil, lube oil, and the air start subsystem support the operation of the standby AC power sources, they satisfy Criterion 3 of the NRC Policy Statement.

10 CFR 50.36(c)(2)(LL)

Insert 11 11

LCO

Stored diesel fuel oil is required to have sufficient supply for 7 days of full load operation. It is also required to meet specific standards for quality. Additionally, sufficient lubricating oil supply must be available to ensure the capability to operate at full load for 7 days. This requirement, in conjunction with an ability to obtain replacement supplies within 2 days, supports the availability of DGs required to shut down the reactor and to maintain it in a safe condition for an anticipated operational occurrence (AOO) or a postulated DBA with loss of offsite power. DG day tank fuel requirements, as well as transfer capability from the storage tank to the day tank, are addressed in LCO 3.8.1, "AC Sources—Operating," and LCO 3.8.2, "AC Sources—Shutdown."

The starting air system is required to have a minimum capacity for five successive DG start attempts without recharging the air start receivers.

for two EOGs 11

INSERT 2 11

APPLICABILITY

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

(continued)

INSERT 1

The DBA and transient analyses assume the operation of one EDG associated with the unit on which an accident is postulated to occur and the operation of one EDG on the unit which is unaffected by the accident to support shared systems. LCO 3.8.1 requires two EDGs to be OPERABLE and one EDG from the other unit to be OPERABLE. However, only sufficient fuel oil to operate one EDG and one EDG on the other unit is required to satisfy the assumptions of the DBA and transient analysis and to support EDG OPERABILITY.

R11

INSERT 2

One air start subsystem is required to ensure EDG OPERABILITY. The required starting air subsystem receiver is required to have a minimum of 175 psig to provide the EDG with more than one start attempt without recharging the air start receivers.

R11

R11

②

BASES

APPLICABILITY
(continued)

and starting air are required to be within limits when the associated DG is required to be OPERABLE.

②

← Insert 1

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①

1 R11

ACTIONS

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

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B 1

← INSERT 2

②

①

1 R11

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

②

①

①

This Condition applies for reasons other than Condition A

②

B 1

With lube oil inventory < 500 gal, sufficient lubricating oil to support 7 days of continuous DG operation at full load conditions may not be available. However, the Condition is restricted to lube oil volume reductions that maintain at least a 6 day supply. This restriction allows sufficient time to obtain the requisite replacement volume. A period of 48 hours is considered sufficient to complete

②

(continued)

ITS 3.8.3 - DIESEL FUEL OIL AND STARTING AIR

INSERT 1

All four EDGs (two per unit) are normally associated with both tanks which make up the fuel oil storage system. All EDGs that are required to be OPERABLE are associated with the fuel oil storage system. The determination of which EDGs are required to be OPERABLE is based on the requirements of LCO 3.8.1, "AC Sources - Operating," and LCO 3.8.2, "AC Sources - Shutdown."

RU

INSERT 2

RU

A.1, A.2, A.3, and A.4

In this Condition, an underground fuel oil storage tank is not within limits for the purpose of tank repair or inspection. Every ten years a fuel oil tank must be inspected for integrity under the requirements of ASME Code, Section XI. Because both tanks are the source of fuel oil for all EDGs on both units, a dual unit outage would be required in order to provide the necessary time to complete the required maintenance or inspection. Prior to removal of the tank for repairs or inspections, verify 50,000 gallons of replacement fuel oil is available offsite and transportation is available to deliver that volume of fuel oil within 48 hours. Restrictions are placed on the remaining fuel oil storage tank and the 210,000-gallon above ground tank. Under this Condition, verification of the redundant fuel oil tank is required to confirm the required minimum amount of diesel fuel oil. In addition, the above ground tank, used to supply make up to the underground tanks, is required to be verified to contain the minimum level corresponding to 100,000 gallons. Verification of onsite fuel oil is required on a 12 hour frequency to ensure an adequate source of fuel oil to the EDGs remains available. The underground fuel oil tank that is being inspected or repaired must be restored to within limits in 7 days. This time is considered reasonable based on the required maintenance and the requirements provided by the Required Actions.

RU

RU

RU

RU

2

BASES

ACTIONS

B.1 (continued)

restoration of the required volume prior to declaring the DG inoperable. This period is acceptable based on the remaining capacity (> 6 days), the low rate of usage, the fact that procedures will be initiated to obtain replenishment, and the low probability of an event during this brief period.

2

C.1

2

1R11

This Condition is entered as a result of a failure to meet the acceptance criterion of SR 3.8.3.3. Normally, trending of particulate levels allows sufficient time to correct high particulate levels prior to reaching the limit of acceptability. Poor sample procedures (bottom sampling), contaminated sampling equipment, and errors in laboratory analysis can produce failures that do not follow a trend. Since the presence of particulates does not mean failure of the fuel oil to burn properly in the diesel engine, and particulate concentration is unlikely to change significantly between Surveillance Frequency intervals, and proper engine performance has been recently demonstrated (within 31 days), it is prudent to allow a brief period prior to declaring the associated DG inoperable. The 7 day Completion Time allows for further evaluation, resampling and re-analysis of the DG fuel oil.

2

E

1

stored in the below ground tanks

E

D.1

2

2

1R11

With the new fuel oil properties defined in the Bases for SR 3.8.3.3 not within the required limits, a period of 30 days is allowed for restoring the stored fuel oil properties. This period provides sufficient time to test the stored fuel oil to determine that the new fuel oil, when mixed with previously stored fuel oil, remains acceptable, or to restore the stored fuel oil properties. This restoration may involve feed and bleed procedures, filtering, or combinations of these procedures. Even if a DG start and load was required during this time interval and the fuel oil properties were outside limits, there is a high likelihood that the DG would still be capable of performing its intended function.

RAI
3.8.3-11
R3

1

1

(continued)

Rev. 11

(2)

BASES

ACTIONS
(continued)

E.1

the required

several

(E)

(175)

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

(150)

(E)

(E)

(1)

(2)

1 RII

(4)

(1)

(4)

F.1

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

(E)

(E)

(E)

(25)

Only one starting air subsystem is required.

RII

(2) (1)

(1) RII

SURVEILLANCE
REQUIREMENTS

SR 3.8.3.1

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

(E)

(two)

(1)

RII

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

SR 3.8.3.2

This Surveillance ensures that sufficient lube oil inventory is available to support at least 7 days of full load.

(2)

(continued)

ITS

ELECTRICAL POWER SYSTEMS

LIMITING CONDITION FOR OPERATION

A.1

ITS 3.8.3
08-26-98

ACTION: (Continued):

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

- 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.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.
- f. With one underground fuel oil storage tank of 3.8.1.1.b.2 inoperable for the inspection 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 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.

See ITS
3.8.1

LA.1
LA.4
RAI
3.8.3-02
R3.11
LA.1

LA.2

L.4/R11

L.1/R11

M.2/R11

L.3/R11

M.1/R11

A.4/R11

Action
B

INSERT PROPOSED ACTION B

Action
C

INSERT PROPOSED ACTION C

Action
D

INSERT PROPOSED ACTION D

Action
E

INSERT PROPOSED ACTION E

Action
F

INSERT PROPOSED ACTION F

ITS

ITS 3.8.3
12-10-98

A.1

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:

- 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.

See ITS
3.8.1

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

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

1. Verifying the fuel level in the day tank.
2. Verifying the fuel level in the fuel storage tank 290,000 gal every 31 days LA.3 RW
3. Verifying the fuel transfer pump can be started and transfers fuel from the storage system to the day tank.
4. Verifying the EDG can start** and gradually accelerate to a steady state voltage and frequency of 4160 ± 420 volts and 60 ± 0.5 Hz. Subsequently, verifying the generator is synchronized, gradually loaded** to an indicated 2500-2600 kw*** and operates for at least 60 minutes.
5. Verifying the EDG is aligned to provide standby power to the associated emergency busses.

FROM CTS
LCO 3.8.1.1
b.2
A.6

See ITS
3.8.1

- 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 LA.3

(when checked for viscosity, water, and sediment)

and removal
of accumulated water

M.3

M.2

M.1

INSERT PROPOSED SR 3.8.3.2

INSERT PROPOSED SR 3.8.3.3

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

*** 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.

See ITS
3.8.1

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3/4 8-3

Amendment No. 83, 214, 216

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Rev. 11

SR
3.8.3.1

SR
3.8.3.4

SR
3.8.3.2

SR
3.8.3.3

ITS

ITS 3.8.3
08-26-98

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:

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

See ITS
3.8.2

LA.1

See ITS
3.8.3.1

APPLICABILITY:

- Modes 5 and 6
- 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:

- 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.

- 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:
 - Verify 45,000 gallons of fuel is available in the operable underground fuel oil storage tank at least once per 12 hours,
 - 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,
 - Verify an available source of fuel oil and transportation to supply 80,000 gallons of fuel in less than a 48 hour period, and
 - 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

LA.4

LA.11

RAI
3.8.3-01
R3

LA.2

LA.4 / R11

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

NORTH ANNA - UNIT 1

3/4 8-5

Amendment No. 41, 83, 128, 156,
203, 214

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Rev. 11

Action
A

ITS

ELECTRICAL POWER SYSTEMS

LIMITING CONDITION FOR OPERATION

A.1

ITS 3.8.3
08-26-98

ACTION: (Continued):

Action
A

- 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.
- f. With one underground fuel oil storage tank of 3.8.1.1.b.2 inoperable for inspection 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 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.

See ITS
3.8.1

LA.1
LA.4

LA.1

RAI
3.8.3-02
R3, R11

LA.2

L.4/R11

Action
B

INSERT PROPOSED ACTION B

L.1 1R11

Action
C

INSERT PROPOSED ACTION C

M.2 1R11

Action
D

INSERT PROPOSED ACTION D

L.3 1R11

Action
E

INSERT PROPOSED ACTION E

M.1 1R11

Action
F

INSERT PROPOSED ACTION F

A.4 1R11

A.1

ITS 3.8.3
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:

- 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.

See ITS 3.8.1

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

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

1. Verifying the fuel level in the day tank.
2. Verifying the fuel level in the fuel storage tank. 90,000 gallons every 31 days
3. Verifying the fuel transfer pump can be started and transfers fuel from the storage system to the day tank.
4. Verifying the EDG can start** and gradually accelerate to a steady state voltage and frequency of 4160 ± 420 volts and 60 ± 0.5 Hz. Subsequently, verifying the generator is synchronized, gradually loaded** to an indicated 2500-2600 kw*** and operates for at least 60 minutes.
5. Verifying the EDG is aligned to provide standby power to the associated emergency busses.

From CTS LCO 3.8.1.1 b.2
A.6/A.11
A.5

See ITS 3.8.1

- 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. and remove all accumulated water

L.A.3

M.3

- 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 ± 420 volts and 60 ± 0.5 Hz.

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

See ITS 3.8.1

*** 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.

SR
3.8.3.1

SR
3.8.3.4

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 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

LA.4

LA.1

RAT 3.8.3-01 R3

LA.2

L.4/R11

Action A

A.2

A.3

A.1

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

NORTH ANNA - UNIT 2

3/4 8-10

Amendment No. 48, 70, 112, 138, 184, 195

LA.4

RAT 3.8.3-01 R3

Rev 11

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

- A.4 CTS 3.8.1.1 Actions do not specifically state Required Actions for an EDG if sufficient fuel oil is not available. ITS Condition F states, "Required Action and associated Completion Time not met, or one or more EDGs diesel fuel oil or starting air systems not within limits for reasons other than Condition A, B, C, D, or E, declare associated EDG inoperable immediately." Starting air requirements are addressed in DOC M.1. This changes the CTS by specifically stating that if Actions are not met, the associated EDG would be declared inoperable. R11

This change is acceptable because the CTS requirements are structured as a support system for EDGs OPERABILITY. Specifically stating the requirement to declare the EDG(s) inoperable does not change the technical intent of the current requirements. This change is designated as administrative because it does not result in a technical change to the CTS.

- A.5 CTS Surveillance 4.8.1.1.2 specifies that each EDG shall be tested in accordance with CTS Table 4.8.2. This requirement is modified in ITS Section 3.8.1 and specifies the frequency of testing an EDG as 31 days. CTS requirement 4.8.1.1.2.a.2 requires the verification of fuel oil tank level to support the OPERABILITY of the EDG. ITS SR 3.8.3.1 requires verification of fuel oil inventory every 31 days. This changes the CTS by specifically stating the frequency for verification of fuel oil inventory as 31 days.

This change is acceptable because the requirements in LCO 3.8.1 specify the testing frequency of the EDG. The fuel oil level is verified to ensure OPERABILITY of the EDG. Therefore, the frequency of the testing is dependent on the testing requirements of the EDG. This change reflects the requirements of the CTS in the ITS format. This change is designated as administrative because it does not result in a technical change to the CTS.

- A.6 CTS LCO 3.8.1.1.b.2 states that the fuel storage system consists of two under ground storage tanks each containing a minimum of 45,000 gallons of fuel and this is a shared system between units. ITS Condition B states, "One or more EDGs with fuel oil inventory < 90,000 gallons . . .," and SR 3.8.3.1 requires the verification of "fuel oil inventory of $\geq 90,000$ gal of fuel." This changes the CTS by stating the total inventory requirement of fuel oil instead of the individual fuel oil tank requirement. R11

The purpose of CTS 3.8.1.1.b.2 is to require sufficient fuel oil inventory for two EDGs to operate at full load for 7 days as required to support the accident analysis. This change is acceptable because the total inventory requirement for the EDG fuel oil system of 90,000 gallons remain the same. This change is designated as administrative because it does not result in technical changes to the CTS.

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

MORE RESTRICTIVE CHANGES

- M.1 CTS LCO 3.8.1.1 does not contain requirements for the EDG starting air subsystems. ITS 3.8.3 LCO, Actions, and Surveillance Requirements add additional requirements on the EDG starting air system. This changes the CTS by placing additional requirements on the support systems required for each EDG to be considered OPERABLE.

This change is acceptable because the starting air subsystem is required to provide the motive force to start the EDG. The addition of requirements in the ITS LCO, Action, and SR provide the necessary requirements to ensure each EDG is capable of starting and achieving the required voltage and frequency within the 10 seconds assumed by the accident analyses. This change is designated as more restrictive because additional requirements are added to the Technical Specifications.

- M.2 CTS 3.8.1.1 Surveillance Requirement 4.8.1.1.2.b contains requirements for fuel oil viscosity, water and sediment. There is no specific Action if the fuel oil exceeds the requirements. ITS 3.8.3 Action C is added to impose specific limits on diesel fuel oil for total particulates. The Action requires the fuel oil total particulate be restored within limits in 7 days. ITS SR 3.8.3.2 requires the verification of new and stored fuel oil properties by testing in accordance with the requirements of the Diesel Fuel Oil Testing Program. This changes the CTS requirements by setting specific limits and testing requirements on diesel fuel oil established by the testing program.)RII

This change is acceptable because it establishes a requirement for diesel fuel oil properties and requirements for testing to determine if fuel oil is acceptable to support EDG OPERABILITY. The proposed Required Actions and associated Completion Times provide limits for factors that could cause a degradation of the EDG's capability. The ITS Completion Times allow sufficient time to correct most out of limit conditions while ensuring corrective actions are completed without significant impact on EDG OPERABILITY. This change is designated as more restrictive because new requirements are added to the CTS.

- M.3 CTS requirement 4.8.1.1.2.b requires verification at least once per 92 days that a sample of diesel fuel from the fuel storage tank is within the acceptable limits for water. ITS SR 3.8.3.4 adds the requirement that water accumulated in the tank will be removed. This changes the CTS by specifying that any water contained in the fuel oil tank will be removed.

This change is acceptable because the elimination of accumulated water will prevent an environment from being established to allow bacteria to survive and grow. The bacteria in fuel oil can cause microbiological fouling, the major cause of fuel oil degradation. Elimination of the accumulated water periodically prevents the environmental conditions necessary for the growth of the bacteria. This also will reduce the potential for entrainment of water in the fuel oil when the EDG is

DISCUSSION OF CHANGES

ITS 3.8.3 - DIESEL FUEL OIL AND STARTING AIR

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.

RAI
3.8.3-03
R3

- 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 3.8.3.2 verifies fuel oil properties and SR 3.8.3.4 checks for and removes accumulated water from each stored fuel oil tank. The Bases for SR 3.8.3.2 discusses viscosity and sediment. This changes the CTS by moving the requirements on viscosity and sediment from the Technical Specifications to the ITS Bases.

R11

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, Condition A, allows one fuel oil storage tank to be inoperable to perform inspection or repair. This changes the CTS by moving the requirement to drain, clean, inspect each underground tank every 10 years to the Technical Requirements Manual (TRM).

RAI
3.8.3-01
3.8.3-02
R3, R11

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. ITS 3.8.3, Condition A, retains the CTS conditions for removing a tank from service in that replacement fuel oil must

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

be available, the remaining tank must have $\geq 45,000$ gallons of fuel oil, and the above ground tank must have $\geq 100,000$ gallons of acceptable fuel oil. 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
3.8.3-02
R3, R11

LESS RESTRICTIVE CHANGES

- L.1 *(Category 4 – Relaxation of Required Action)* CTS 3.8.1.1 states each of the two underground fuel oil tanks must contain 45,000 gallons 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 B allows 48 hours to restore a fuel oil inventory to 90,000 gallons, provided the inventory is 77,200 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.

R11

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 77,200 gallons of diesel fuel oil will continue to be required for the EDGs. This represents the amount of fuel oil needed for two EDGs 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 limit. It is very unlikely that an event would require two EDGs 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.

R11

- L.2 Not used.

RAI
3.8.3-01
R3

- 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 D 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.

DISCUSSION OF CHANGES

ITS 3.8.3 - DIESEL FUEL OIL AND STARTING AIR

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.

- L.4 (*Category 4 – Relaxation of Required Action*) CTS 3.8.1.1.f allows one of the underground fuel oil storage tanks to be inoperable for inspection and repair provided certain conditions are met and the tank is restored within 7 days. If those conditions are not met or the tank is not restored within 7 days, both units must be in at least Hot Standby within the next 6 hours and Cold Shutdown within the following 30 hours. ITS 3.8.1, Condition A, allows one of the underground fuel oil storage tanks to be inoperable for inspection and repair provided certain conditions are met and the tank is restored within 7 days. If those conditions are not met or the tank is not restored within 7 days, ITS Condition F requires the associated EDGs to be declared inoperable immediately. Once the associated EDGs are declared inoperable, the appropriate Conditions and Required Actions of Specification 3.8.1 must be followed. ITS 3.8.1, Condition I, which applies with two EDGs inoperable, allows two hours to restore one EDG and then Condition L requires the unit to be in MODE 3 in 6 hours and MODE 5 in 36 hours. This changes the CTS by allowing an additional 2 hours to restore compliance with LCO 3.8.3 or LCO 3.8.1 if the Required Actions of Condition A are not met.

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 Fuel Oil System is a support system for the EDGs and has no safety function other than to support the EDGs. The appropriate action if the fuel oil system is inoperable is to declare the associated EDGs inoperable and follow the actions for inoperable EDG(s). This is consistent with the other Specification 3.8.3 Required Actions. This change is designated as less restrictive because less stringent Required Actions are being applied in the ITS than are applied in the CTS.

Table A – Administrative Changes
ITS Section 3.8 – Electrical Power Systems

DOC No.	Description of Change	ITS Requirement	CTS Requirement
3.8.3 A.4 (A,B)	(F) CTS 3.8.1.1 Actions do not specifically state Required Actions for an EDG if sufficient fuel oil is not available. ITS Condition (F) states, "Required Action and associated Completion Time (F) Condition C, D, E, or F not met, or one or more EDGs diesel fuel oil or starting air systems not within limits for reasons other than Condition C, D, E, or F declare associated EDG inoperable immediately." Starting air requirements are addressed in DOC M.1. This changes the CTS by specifically stating that if Actions are not met, the associated EDG would be declared inoperable.	3.8.3, Condition (F)	3.8.1.1 Actions
3.8.3 A.5	CTS Surveillance 4.8.1.1.2 specifies that each EDG shall be tested in accordance with CTS Table 4.8.2. This requirement is modified in ITS Section 3.8.1 and specifies the frequency of testing an EDG as 31 days. CTS requirement 4.8.1.1.2.a.2 requires the verification of fuel oil tank level to support the OPERABILITY of the EDG. ITS SR 3.8.3.1 requires verification of fuel oil volume every 31 days. This changes the CTS by specifically stating the frequency for verification of fuel oil tank level as 31 days	SR 3.8.3.1	4.8.1.1.2, 4.8.1.1.2.a.2
3.8.4 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).	Various	Various
3.8.4 A.2	CTS Surveillance Requirements 4.8.2.3.2 c.1 for the station batteries and 4.8.1.1.3 c.1 for the EDG batteries require, at least once per 18 months, the verification that battery cells, cell plates, and battery racks show no visual indication of physical damage or abnormal deterioration. ITS SR 3.8.4.3 requires the verification of station and EDG battery cells, cell plates, and racks show no visual indication of physical damage or abnormal deterioration that could degrade battery performance. This changes the CTS requirements by adding the clarification, "that could degrade battery performance."	SR 3.8.4.3	4.8.2.3.2.c.1 4.8.1.1.3.c.1
3.8.4 A.3	CTS 4.8.2.3.2 e and f Surveillance Requirements for the station batteries, and 4.8.1.1.3 d and e for the EDG batteries, both require a test to verify battery capacity. Each battery is tested every 60 months to ensure capacity is at least 80% of the manufacturer's rating during a performance discharge test. A discharge test is required every 18 months if the battery shows signs of degradation, or has reached 85% of its service life. ITS SR 3.8.4.9 requires the verification of the station and EDG battery capacity ≥ 80% of the manufacturer's rating when subjected to a performance discharge test or a modified performance discharge test. The allowance of the modified performance discharge test is addressed in a less restrictive change L.1. The Frequency requirements for the SR are 60 and 18 months when the battery shows degradation or has reached 85% of expected life. This change retains the CTS requirements for the batteries by expressing the testing requirements in a conditional Frequency.	SR 3.8.4.9	4.8.2.3.2.e, 4.8.2.3.2.f, 4.8.1.1.3.d, 4.8.1.1.3.e

R11

R11

Table A – Administrative Changes
ITS Section 3.8 – Electrical Power Systems
Insert

DOC No.	Description of Change	ITS Requirement	CTS Requirement
3.8.3 A.6	<p>CTS LCO 3.8.1.1.b.2 states that the fuel storage system consists of two under ground storage tanks each containing a minimum of 45,000 gallons of fuel and this is a shared system between units. ITS Condition B states, "One or more EDGs with fuel oil inventory < 90,000 gallons . . . ,"</p> <p>and SR 3.8.3.1 requires the verification of "fuel oil inventory of $\geq 90,000$ gal of fuel." This changes the CTS by stating the total inventory requirement of fuel oil instead of the individual fuel oil tank requirement. The total inventory requirement for the EDG fuel oil system of 90,000 gallons remain the same.</p>	<p>3.8.3 Condition B</p> <p>SR 3.8.3.1</p>	<p>3.8.1.1.b.2 LCO</p>

Table L – Less Restrictive Changes
ITS Section 3.8 – Electrical Power Systems

DOC No.	Description of Change	ITS Requirement	CTS Requirement	Change Type
3.8.1 L.5	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.	SR 3.8.1.2	4.8.1.1.2.a, Table 4.8-2	7
3.8.1 L.6	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.	SR 3.8.1.10, SR 3.8.1.11, SR 3.8.1.12, and SR 3.8.1.17	4.8.1.1.2.d.3, 4.8.1.1.2.d.4, 4.8.1.1.2.d.5	6
3.8.1 L.7	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 .	None	Unit 2 4.8.1.1.1.b	5

Surveillance

Change Category:

- 1 - Relaxation of LCO Requirements
- 2 - Relaxation of Applicability
- 3 - Relaxation of Completion Time
- 4 - Relaxation of Required Action
- 5 - Deletion of Surveillance Requirement
- 6 - Relaxation Of Surveillance Requirement Acceptance Criteria
- 7 - Relaxation Of Surveillance Frequency
- 8 - Deletion of Reporting Requirements

Table L – Less Restrictive Changes
ITS Section 3.8 – Electrical Power Systems

DOC No.	Description of Change	ITS Requirement	CTS Requirement	Change Type
3.8.1 L.8	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.	None	4.8.1.1.2.e	5
3.8.1 L.9	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.	SR 3.8.1.11 Note	4.8.1.1.1 and 4.8.1.1.2	6
3.8.1 L.10	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.	Note to SR 3.8.1.8, SR 3.8.1.9 , SR 3.8.1.12, and SR 3.8.1.13	4.8.1.1.1 and 4.8.1.1.2	6

R11

Change Category:

- 1 - Relaxation of LCO Requirements
- 2 - Relaxation of Applicability
- 3 - Relaxation of Completion Time
- 4 - Relaxation of Required Action
- 5 - Deletion of Surveillance Requirement
- 6 - Relaxation Of Surveillance Requirement Acceptance Criteria
- 7 - Relaxation Of Surveillance Frequency
- 8 - Deletion of Reporting Requirements

Table L – Less Restrictive Changes
ITS Section 3.8 – Electrical Power Systems

DOC No.	Description of Change	ITS Requirement	CTS Requirement	Change Type
3.8.1 L.19	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 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.	Note to SR 3.8.1.7, SR 3.8.1.10, SR 3.8.1.11, SR 3.8.1.14, SR 3.8.1.17, SR 3.8.1.18	Footnote ** to 4.8.1.1.2.a.4, 4.8.1.1.2.c, 4.8.1.1.2.d.3, 4.8.1.1.2.d.4, 4.8.1.1.2.d.5.b, 4.8.1.1.2.d.6, 4.8.1.1.2.d.10, 4.8.1.1.2.e	6
3.8.2 L.1	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.	3.8.2 Required Action A.1	3.8.1.2 Action a	4

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Change Category:

- 1 - Relaxation of LCO Requirements
- 2 - Relaxation of Applicability
- 3 - Relaxation of Completion Time
- 4 - Relaxation of Required Action
- 5 - Deletion of Surveillance Requirement
- 6 - Relaxation Of Surveillance Requirement Acceptance Criteria
- 7 - Relaxation Of Surveillance Frequency
- 8 - Deletion of Reporting Requirements

INSERT
3.8.1 L.20

Table L – Less Restrictive Changes
ITS Section 3.8 – Electrical Power Systems
Insert

DOC No.	Description of Change	ITS Requirement	CTS Requirement
3.8.1 L.20	CTS Surveillance Requirement 4.8.1.1.2.d.1 requires verification that an EDG provides power at the appropriate frequency and voltage following a load rejection. CTS 4.8.1.1.2.d states that this test is to be performed every 18 months “during shutdown.” This Surveillance is performed during shutdown, but an identical test is performed at power following on-line EDG maintenance. ITS SR 3.8.1.9 does not restrict performance of the SR in any MODE. This changes the CTS by allowing the MODE 1, 2, 3 or 4 performance of the load rejection test to be credited for meeting the Surveillance.	SR 3.8.1.9	4.8.1.1.2.d.1

Table L – Less Restrictive Changes
ITS Section 3.8 – Electrical Power Systems

DOC No.	Description of Change	ITS Requirement	CTS Requirement	Change Type
3.8.2 L.5	CTS LCO 3.8.1.2 Applicability states, "loads over irradiated fuel assemblies when no fuel assemblies are in the reactor vessel." CTS 3.8.1.2 Action a. requires with less that the minimum required A.C. electrical power sources, all operations involving movement of loads over irradiated fuel assemblies shall be immediately suspended. ITS LCO and Actions of 3.8.2 do not specify these requirements. This changes the CTS by deleting the applicability during movement of loads over irradiated fuel assemblies.	None	3.8.1.2 Applicability 3.8.1.2 Action a	2
3.8.2 L.6	The Applicability for CTS 3.8.2.1, AC sources, states, "during the movement of irradiated fuel assemblies." The associated Action states with the required AC sources not fully OPERABLE immediately suspend all operations involving movement of irradiated fuel assemblies. ITS LCO 3.8.5 Applicability states, "during the movement of recently irradiated fuel assemblies." This changes the CTS by restricting the AC sources requirements to during the movement of fuel assemblies that have been recently irradiated.	LCO 3.8.5 Applicability	3.8.2.1 Applicability	2
3.8.3 L.1	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. ^(B) ITS 3.8.3 Condition ^(B) allows 48 hours to restore a fuel oil level to 45,000 ⁽⁹⁰⁾ 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.	3.8.3 Condition ^(B) ⁽⁹⁰⁾	3.8.1.1	4
3.8.3 L.2	Not used.	N/A	N/A	N/A

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Change Category:

- 1 - Relaxation of LCO Requirements
- 2 - Relaxation of Applicability
- 3 - Relaxation of Completion Time
- 4 - Relaxation of Required Action
- 5 - Deletion of Surveillance Requirement
- 6 - Relaxation Of Surveillance Requirement Acceptance Criteria
- 7 - Relaxation Of Surveillance Frequency
- 8 - Deletion of Reporting Requirements

Table L – Less Restrictive Changes
ITS Section 3.8 – Electrical Power Systems

DOC No.	Description of Change	ITS Requirement	CTS Requirement	Change Type
3.8.3 L.3	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.	3.8.3 Action E	3.8.1.1.2.b	3
3.8.4 L.1	CTS Surveillance Requirements 4.8.2.3.2 e. and 4.8.1.1.3 d. require verification at least every 60 months that the station and EDG battery capacity is at least 80% of the manufacturer's rating when subjected to a performance discharge test. ITS SR 3.8.4.9 requires verification that the station and EDG battery capacity is $\geq 80\%$ of the manufacturer's rating when subjected to a performance discharge test or a modified performance discharge test. This changes the CTS by allowing a modified performance discharge test to be substituted for a performance discharge test.	SR 3.8.4.9	4.8.2.3.2.e 4.8.1.1.3.d	6
3.8.4 L.2	CTS Surveillance Requirements 4.8.2.3.2 b.2 and 4.8.1.1.3 b.2 require, for the station and EDG batteries that no visible corrosion is detected at either terminals or connectors within 7 days after a battery discharge below 110 volts or overcharge above 115 volts. The connection resistance of these items is limited to less than 150 micro-ohms. ITS SR 3.8.4.2 requires, for the station and EDG batteries, no visible corrosion at the battery terminal connections and connectors be detected, or the battery connection resistance is $\leq 1.5 \text{ E-4 ohms}$ for the inter-cell, inter-rack, inter-tier, or terminal connections. This changes the CTS by eliminating the verification of visible corrosion or connection resistance after a battery discharge or overcharge.	SR 3.8.4.2	4.8.2.3.2.b.2 and 4.8.1.1.3.b.2	6

Change Category:

- 1 - Relaxation of LCO Requirements
- 2 - Relaxation of Applicability
- 3 - Relaxation of Completion Time
- 4 - Relaxation of Required Action
- 5 - Deletion of Surveillance Requirement
- 6 - Relaxation Of Surveillance Requirement Acceptance Criteria
- 7 - Relaxation Of Surveillance Frequency
- 8 - Deletion of Reporting Requirements

R11

INSERT
3.8.3 L.4

Table L – Less Restrictive Changes
ITS Section 3.8 – Electrical Power Systems
Insert

DOC No.	Description of Change	ITS Requirement	CTS Requirement
3.8.3 L.4	<p>CTS 3.8.1.1.f allows one of the underground fuel oil storage tanks to be inoperable for inspection and repair provided certain conditions are met and the tank is restored within 7 days. If those conditions are not met or the tank is not restored within 7 days, both units must be in at least Hot Standby within the next 6 hours and Cold Shutdown within the following 30 hours. ITS 3.8.1, Condition A, allows one of the underground fuel oil storage tanks to be inoperable for inspection and repair provided certain conditions are met and the tank is restored within 7 days. If those conditions are not met or the tank is not restored within 7 days, ITS Condition F requires the associated EDGs to be declared inoperable immediately. Once the associated EDGs are declared inoperable, the appropriate Conditions and Required Actions of Specification 3.8.1 must be followed. ITS 3.8.1, Condition I, which applies with two EDGs inoperable, allows two hours to restore one EDG and then Condition L requires the unit to be in MODE 3 in 6 hours and MODE 5 in 36 hours. This changes the CTS by allowing an additional 2 hours to restore compliance with LCO 3.8.3 or LCO 3.8.1 if the Required Actions of Condition A are not met.</p>	<p>3.8.3 Action A 3.8.3 Action F</p>	<p>3.8.1.1.f</p>

Table M – More Restrictive Changes
ITS Section 3.8 – Electrical Power Systems

DOC No.	Description of Change	ITS Requirement	CTS Requirement
3.8.2 M.1	CTS Action a. states that with less than the minimum AC sources OPERABLE specific plant activities (CORE ALTERATIONS, positive reactivity changes, movement of irradiated fuel assemblies, etc.) shall be immediately suspended until the minimum required AC sources are restored to OPERABLE status. ITS Actions B.2.4 and C.4 require that immediate action be initiated to restore the required offsite circuit and EDG to OPERABLE status. This changes the CTS to require immediate action to restore the required AC sources to OPERABLE status.	3.8.2, Required Action B.2.4 and C.4	3.8.1.1, Action a
3.8.3 M.1	CTS LCO 3.8.1.1 does not contain requirements for the EDG starting air subsystems. ITS 3.8.3 LCO, Actions, and Surveillance Requirements add additional requirements on the EDG starting air system. This changes the CTS by placing additional requirements on the support systems required for each EDG to be considered OPERABLE.	3.8.3	None
3.8.3 M.2	CTS 3.8.1.1 Surveillance Requirement 4.8.1.1.2.b contains requirements for fuel oil viscosity, water and sediment. There is no specific Action if the fuel oil exceeds the requirements. ITS 3.8.3 Action C is added to impose specific limits on diesel fuel oil for total particulates. The Action requires the fuel oil total particulate be restored within limits in 7 days. ITS SR 3.8.3.2 requires the verification of new and stored fuel oil properties by testing in accordance with the requirements of the Diesel Fuel Oil Testing Program. This changes the CTS requirements by setting specific limits and testing requirements on diesel fuel oil established by the testing program.	3.8.3 ACTION D SR 3.8.3.2 C	4.8.1.1.2.b
3.8.3 M.3	CTS requirement 4.8.1.1.2.b requires verification at least once per 92 days that a sample of diesel fuel from the fuel storage tank is within the acceptable limits for water. ITS SR 3.8.3.4 adds the requirement that water accumulated in the tank will be removed. This changes the CTS by specifying that any water contained in the fuel oil tank will be removed.	SR 3.8.3.4	4.8.1.1.2.b
3.8.4 M.1	CTS Surveillance Requirement 4.8.2.3.2.c.3 specifies for the battery charger to supply 200 amps at 125 volts for at least 4 hours. ITS SR 3.8.4.6 states, "Verify each required station battery charger supplies ≥ 270 amps at ≥ 125 V for ≥ 4 hours. This changes the CTS by increasing the required current for the battery charger from 200 amps to 270 amps.	SR 3.8.4.6	4.8.2.3.2.c.3
3.8.4 M.2	CTS Surveillance Requirements 4.8.2.3.2 c.2 for the station batteries and 4.8.1.1.3 c.2 for the EDG batteries do not require the removal of visible corrosion from each station and EDG battery cell-to-cell and terminal connections. ITS SR 3.8.4.4 for station and EDG batteries states, "remove visible terminal corrosion." This changes the CTS requirements by specifying that any visible corrosion is removed.	SR 3.8.4.4	4.8.2.3.2.c.2, 4.8.1.1.3.c.2
3.8.5 None	N/A	N/A	N/A

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**Table R – Relocated Specifications and Removed Details
ITS Section 3.8 – Electrical Power Systems**

DOC No.	CTS Requirement	Description of Relocated Requirements	Location	Change Control Process	Change Category
3.8.3 LA.1	LCO 3.8.1.1.b.2, LCO 3.8.1.1.b.3, LCO 3.8.1.2.b.2, LCO 3.8.1.2.b.3	CTS LCO 3.8.1.1.b.2 and 3 and LCO 3.8.1.2.b.2 and 3 state a fuel oil system consisting of two underground tanks each containing a minimum of 45,000 gallons of fuel (This is a shared system with the other unit), and a separate fuel oil transfer system. The inoperability of the fuel oil system affects both units and both units would be required to shutdown if an inoperable fuel oil system were not restored to OPERABLE status within allowed outage times. ITS 3.8.3 does not state the specifics of the fuel oil system, such as the fact that the tanks are underground and that it is a shared system. This information is contained in the ITS Bases.	Bases	ITS 5.5.13, Technical Specifications Bases Control Program	3
3.8.3 LA.2	3.8.1.1 Action f, and 3.8.1.2 Action b	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.	Bases	ITS 5.5.13, Technical Specifications Bases Control Program	3
3.8.3 LA.3	4.8.1.1.2.b	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 <u>states</u> 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.	Bases	ITS 5.5.13, Technical Specifications Bases Control Program	3

Change Category:

- 1 - Removing Details of System Design and System Description, Including Design Limits
- 2 - Removing Descriptions of System Operation
- 3 - Removing Procedural Details for Meeting TS Requirements and Related Reporting
- 4 - Removing Performance Requirements for Indication-Only Instrumentation and Alarms
- 5 - Removal of Cycle-Specific Parameter Limits from the Technical Specifications to the Core Operating Limits Report

3.8.3.2 verifies fuel oil properties AND
The Bases for SR 3.8.3.2 discusses viscosity AND sediment.

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Table R – Relocated Specifications and Removed Details
ITS Section 3.8 – Electrical Power Systems

DOC No.	CTS Requirement	Description of Relocated Requirements	Location	Change Control Process	Change Category
3.8.3 LA.4	3.8.1.1 Action f, 4.8.1.1.4	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).	Technical Requirements Manual	10 CFR 50.59	3
3.8.4 LA.1	LCO 3.8.2.3	CTS LCO 3.8.2.3 describes the specific 125 volt DC buses and batteries, and associated chargers that define Trains H and J requirements. ITS LCO 3.8.4 does not contain these specific requirements and states that the Train H and J DC electrical power subsystems shall be OPERABLE. This changes the CTS by moving information from the Specifications to the Bases.	Bases	ITS 5.5.13, Technical Specifications Bases Control Program	1
3.8.4 LA.2	4.8.2.3.2 f, 4.8.1.1.3.e	CTS surveillance requirements 4.8.2.3.2 f. and 4.8.1.1.3 e. describe the limits of degradation of batteries in terms of capacity. ITS SR 3.8.4.9 does not contain these specific requirements, but continues to require specific testing requirements to ensure battery OPERABILITY. This changes the CTS by moving information from the Specifications to the Bases.	Bases	ITS 5.5.13, Technical Specifications Bases Control Program	1

, Condition A, allows one fuel oil storage tank to be inoperable to perform inspection or repair.

Change Category:

- 1 - Removing Details of System Design and System Description, Including Design Limits
- 2 - Removing Descriptions of System Operation
- 3 - Removing Procedural Details for Meeting TS Requirements and Related Reporting
- 4 - Removing Performance Requirements for Indication-Only Instrumentation and Alarms
- 5 - Removal of Cycle-Specific Parameter Limits from the Technical Specifications to the Core Operating Limits Report

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