

VIRGINIA ELECTRIC AND POWER COMPANY
RICHMOND, VIRGINIA 23261

February 22, 2002

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

Serial No.: 01- 711B
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 (ITS)
REQUESTS FOR ADDITIONAL INFORMATION
ITS SURVEILLANCE REQUIREMENT 3.3.1.6 -BSI (TAC Nos. MB 1433 and MB 1427)
ITS 3.3.5 AND 3.8.2

This letter transmits our responses to the NRC's requests 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). Over the past several months, the NRC has requested additional information regarding Surveillance Requirement (SR) 3.3.1.9. This SR involves calibration of the excore Nuclear Instrumentation System channels to agree with the incore detector measurements. This information was requested in a NRC letter and telephone calls with members of our staff, which are summarized in the attachment to this letter. As a result of the most recent telephone call, we are revising our response to Beyond Scope Issue (BSI) MB1433 and MB1427 and RAI 3.3.1-39 to address the NRC's concerns.

Additionally, in another telephone call with members of your staff, the NRC requested changes to the requirements for Emergency Diesel Generator auto-start capabilities during Modes 5 and 6. These changes, which affect ITS 3.3.5 and 3.8.2, are also included in the attachment to this letter.

Finally, one change to the Bases of ITS 3.3.5 is included in the attachment. This change is a result of an internal comment.

The attachment includes 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 the change that is not associated with the NRC's questions, and the affected ITS submittal pages.

A 001

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

Very truly yours,



Leslie N. Hartz
Vice President - Nuclear Engineering

Attachment

Commitments made in this letter: None

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Attachment

**Proposed Improved Technical Specifications
Responses to Request for Additional Information
ITS Surveillance Requirement 3.3.1.9
ITS 3.3.5 and 3.8.2**

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

North Anna Power Station Units 1 and 2

North Anna ITS RAIs
ITS Section 3.3, "Instrumentation," Section 3.8, "Electrical Power Systems," and
Beyond Scope Issue MB 1433 and MB 1427

TAC Nos. MB1433 and MB1427, RAI 3.3.1-39 (Note: Revised information is on page 5)

Standard Technical Specifications (STS) SR 3.3.1.6 calls for calibrating the excore Nuclear Instrumentation System (NIS) channels to agree with incore detector measurements every 92 Effective Full-Power Days (approximately quarterly) when thermal power is $\geq 50\%$ Rated Thermal Power (RTP). This SR is performed to verify the f (ΔI) input to the overtemperature ΔT trip.

The proposed North Anna ITS SR 3.3.1.6 calls for the comparing the results of the excore channels to incore detector measurements and adjusting the NIS channel if the absolute difference is $\geq 3\%$. The surveillance frequency and thermal power condition are the same as in the STS.

Virginia Electric and Power Company (VEPCO) has not provided any Technical Justification for applying the 3% absolute difference value. VEPCO has indicated that the 3% value was chosen to be consistent with SR 3.3.1.3, which includes the same note. However, SR 3.3.1.3 is for thermal power $\geq 15\%$ RTP and has a monthly testing requirement. The function of SR 3.3.1.3 is similar to SR 3.3.1.6 in that it is also performed to verify the f (ΔI) input to the overtemperature ΔT trip.

VEPCO is requested to address the following staff questions.

1. Provide technical justification for choosing a 3% absolute difference at power levels $\geq 50\%$ RTP. This discussion should include the impact that a 3% absolute difference between excore NIS channels and incore detector measurements may have on the Overtemperature ΔT setpoint. Also, discuss which transients/accidents credit the Overtemperature ΔT trip and how the sequence of events and results (Minimum Departure from Nucleate Boiling Ratio, Reactor Coolant System Pressure, Fuel Temperature, etc.) are impacted.
2. By not adopting the STS for SR 3.3.1.6, it appears that the proposed ITS Surveillance Requirements 3.3.1.6 and 3.3.1.3 are identical at thermal power $\geq 50\%$ RTP. Both Surveillance Requirements now include the 3% absolute difference note and they both have the function of verifying the f (ΔI) input to the overtemperature ΔT trip. Discuss how the proposed ITS SR 3.3.1.6 is different from SR 3.3.1.3 at thermal power levels $\geq 50\%$, and why the wording of STS 3.3.1.6 is not being adopted.

North Anna ITS RAIs
ITS Section 3.3, "Instrumentation," Section 3.8, "Electrical Power Systems," and
Beyond Scope Issue MB 1433 and MB 1427

NRC RAI on JFD 15 (NRC Letter dated June 4, 2001)

Changing ISTS SR 3.3.1.6 to "Compare" from "Calibrate" is a generic change that requires documentation of a design difference or an approved TSTF.

The NRC requested additional information on ITS Specification 3.3.1 in a letter dated June 4, 2001. Comment labeled 3.3.1-39 questioned a justification for a change to ITS SR 3.3.1.6 (JFD 15). The comment stated "The Company disagreed with the comment but modified JFD 15 in response to the RAI."

Original Response (Dominion letter dated November 8, 2001 – Serial No. 01-612):

As stated in the Requests for Additional Information (RAIs) quoted above (from the NRC's letters of June 4, 2001, and September 18, 2001), the North Anna Power Station (NAPS) Improved Technical Specifications (ITS) proposed certain deviations from the Standard Technical Specifications (STS). These changes were proposed to reflect current Technical Specification (CTS) requirements and operating practices.

In response to the NRC's questions, VEPCO (the Company) will delete the proposed changes and adopt a proposed generic change (TSTF) to the STS. This TSTF addresses the Company's concerns with the STS requirements. A copy of the TSTF, which justifies the proposed changes, is attached to this letter.

The following changes to the proposed NAPS ITS are a result of adopting the TSTF:

1. In Note 2 to SR 3.3.1.3, the allowance for completing the surveillance is changed from 24 hours after THERMAL POWER \geq 15 % RTP to 7 days after THERMAL POWER \geq 50 % RTP.
2. The SR 3.3.1.6 frequency is extended from 92 EFPD to 18 months. With the change in frequency, SR 3.3.1.6 is renumbered to be SR 3.3.1.9, and SR 3.3.1.9 is renumbered to be SR 3.3.1.6.
3. Note 3 is added to SR 3.3.1.3. This allows the performance of new SR 3.3.1.9 to satisfy the requirements of SR 3.3.1.3.
4. New SR 3.3.1.9 is changed from "Compare results of the excore channels to incore detector measurements," to "Calibrate excore channels to agree with incore detector measurements."

North Anna ITS RAIs
ITS Section 3.3, "Instrumentation," Section 3.8, "Electrical Power Systems," and
Beyond Scope Issue MB 1433 and MB 1427

5. New SR 3.3.1.9 Note 1 is revised to read, "Neutron detectors are excluded from CHANNEL CALIBRATION." Note 1 previously stated, "Adjust NIS channel if absolute difference $\geq 3\%$."
6. In Note 2 of the new SR 3.3.1.9, the allowance for completing the surveillance is changed from 24 hours to 7 days.
7. SR 3.3.1.11 adds Note 2, which states, "This surveillance shall include verification that the time constants are adjusted to the prescribed values."
8. SR 3.3.1.12 adds a Note that states, "Neutron detectors are excluded from CHANNEL CALIBRATION."
9. For each of the changes summarized above, a change is made to the associated Bases section to reflect the revised ITS.
10. Table 3.3.1-1 Function 6, SR 3.3.1.6 is changed to SR 3.3.1.9 and Function 12 and 13, SR 3.3.1.9 are changed to SR 3.3.1.6.

The ITS submittal pages that are revised as a result of this response are attached. With these modifications, the revised response to RAI 3.3.1-39 is that the Company agrees with the comment and deletes JFD 15 to the Specifications.

Additional Response (Dominion letter dated January 31, 2002 – Serial No. 01-711A):

During a telephone conference call on December 7, 2001, the NRC provided comments on the previous response. The NRC has not approved the proposed TSTF incorporated in the previous response. The NRC recommended that we remove the proposed TSTF from the North Anna ITS. The NRC also stated that the Frequency for SR 3.3.1.9 might be extended based on plant specific calibration history.

The Company will take the action proposed in the comment. The proposed TSTF was removed from the NAPS ITS and the Frequency for ITS SR 3.3.1.9 is revised to 12 months based on plant specific data. The following changes are made:

SR 3.3.1.3

In Note 2 to SR 3.3.1.3, the allowance for completing the surveillance is changed from 7 days after THERMAL POWER $\geq 50\%$ RTP to 72 hours after THERMAL POWER $\geq 15\%$ RTP. The THERMAL POWER value is consistent with the CTS and the ISTS. The time in the ISTS is "[24] hours." This time does not appear in the CTS. However, 24 hours is insufficient time to stabilize the plant, obtain and analyze

North Anna ITS RAIs
ITS Section 3.3, "Instrumentation," Section 3.8, "Electrical Power Systems," and
Beyond Scope Issue MB 1433 and MB 1427

a flux map, and calibrate the NIS channels. The proposed value of 72 hours allows sufficient time to perform these tasks in a quality manner. Note 3 to SR 3.3.1.3 is deleted, consistent with the ISTS.

With the exception of a bracketed value, ITS SR 3.3.1.3 is consistent with ISTS SR 3.3.1.3.

SR 3.3.1.9

Proposed Note 1 to SR 3.3.1.9 is deleted, consistent with the ISTS.

In Note 2 to SR 3.3.1.9 (now the only Note), the allowance for completing the surveillance is changed from 7 days after THERMAL POWER \geq 50 % RTP to 72 hours after THERMAL POWER \geq 50 % RTP. The THERMAL POWER value is consistent with the ISTS. A similar allowance does not appear in the CTS. The time in the ISTS is "[24] hours." This time does not appear in the CTS. However, 24 hours is insufficient time to stabilize the plant, obtain and analyze a flux map, and calibrate the NIS channels. The proposed value of 72 hours allows sufficient time to perform these tasks in a quality manner.

The SR 3.3.1.9 Frequency is changed from 18 months to 12 months. The ISTS Frequency for SR 3.3.1.6 (the equivalent of SR 3.3.1.9) is "[92] EFPD." The CTS does not require periodic calibration of the NIS channels AFD indications, but requires calibration when the difference between incore and excore AFD exceeds 3%. Plant data was examined by two different methods to demonstrate a 12 month Frequency for the North Anna ITS is appropriate.

In the first method, differences between incore and excore AFD indications recorded during monthly flux maps during the last fuel cycles for Unit 1 and Unit 2 were extrapolated to project the difference at 12 months. The extrapolation was based on the largest channel deviation between incore and excore Axial Flux Difference (AFD), increased by the ratio of 12 months to the interval between the measurement and the last calibration. This extrapolated value was compared to the 3% limit for difference between the incore and excore AFD. The largest extrapolated value was 2.5%, well below the 3% limit.

The second method used the first full power flux map in a cycle as the basis for a new NI calibration. That calibration was then assumed to be installed for the entire fuel cycle. A determination was performed of each NIS channel's theoretical AFD, i.e., the AFD that would be indicated if there were no NIS calibrations performed. This value was compared to the incore AFD measured during each flux map during the cycle (approximately 18 flux maps per cycle). Four operating cycles were considered (the two most recent cycles for Unit 1 and Unit 2). The results showed excellent agreement between the incore and excore AFD, typically under 0.2% difference. The

North Anna ITS RAIs
ITS Section 3.3, "Instrumentation," Section 3.8, "Electrical Power Systems," and
Beyond Scope Issue MB 1433 and MB 1427

largest difference between incore and excore AFD at 12 months was 1.5%, also well within the 3% limit.

As both methods of analysis show significant margin to the 3% limit, it is reasonable to apply a 12 month Frequency to the ITS SR 3.3.1.9 NIS channel calibration.

With the exception of bracketed values, ITS SR 3.3.1.9 is consistent to ISTS SR 3.3.1.6.

SR 3.3.1.11

Note 2 to SR 3.3.1.11, which stated, "This surveillance shall include verification that the time constants are adjusted to the prescribed values," is deleted, consistent with the ISTS.

ITS SR 3.3.1.11 is consistent with ISTS SR 3.3.1.11.

SR 3.3.1.12

SR 3.3.1.12 Note, which stated, "Neutron detectors are excluded from CHANNEL CALIBRATION," is deleted, consistent with the ISTS.

With the exception of design related changes described in ITS JFD 9, SR 3.3.1.12 is consistent with ISTS SR 3.3.1.12.

For each of the changes summarized above, a change is made to the associated Bases section to reflect the revised ITS.

Additional Response (Supplement 16):

Responses to this RAI were provided in Supplements 5, 8, and 15. In Supplement 15, Dominion requested a change to the ITS SR 3.3.1.9 Frequency based on plant operating data. In a telephone conference, the NRC stated that review of that plant specific change could not be completed within the existing schedule for the issuance of the ITS amendment. In response, the Company revises ITS SR 3.3.1.9 to be consistent with the wording proposed in the original North Anna ITS submittal. (Note that ITS SR 3.3.1.9 was numbered SR 3.3.1.6 in the original submittal). The revised ITS SR 3.3.1.9 requires a comparison of the excore channels to incore measurement once per 92 EFPD and adjustment of the excore channels if they do not agree within $\leq 3\%$. This is consistent with the North Anna CTS.

SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
<p>SR 3.3.1.8 -----NOTE----- This Surveillance shall include verification that interlocks P-6 and P-10 are in their required state for existing unit conditions. ----- Perform COT.</p>	<p>-----NOTE----- Only required when not performed within previous 92 days ----- Prior to reactor startup <u>AND</u> Four hours after reducing power below P-6 for source range instrumentation <u>AND</u> Twelve hours after reducing power below P-10 for power and intermediate range instrumentation <u>AND</u> Once per 92 days thereafter</p>
<p>SR 3.3.1.9 -----NOTES----- 1. Adjust NIS channel if absolute difference $\geq 3\%$. 2. Not required to be performed until 72 hours after THERMAL POWER is $\geq 50\%$ RTP. ----- Compare results of the excore channels to incore detector measurements.</p>	<p>92 EFPD</p>

RAI
3.3.1-31
3.3.1-33
R5
R12

R12

R5

RAIs
MB 1433
MB 1427
RB, R15
3.3.1-39
R5, R15, R16

BASES

SURVEILLANCE
REQUIREMENTS

SR 3.3.1.8 (continued)

and power range low instrument channels. The Frequency of "12 hours after reducing power below P-10" (applicable to intermediate and power range low channels) and "4 hours after reducing power below P-6" (applicable to source range channels) allows a normal shutdown to be completed and the unit removed from the MODE of Applicability for this surveillance without a delay to perform the testing required by this surveillance. The Frequency of every 92 days thereafter applies if the unit remains in the MODE of Applicability after the initial performances of prior to reactor startup and twelve and four hours after reducing power below P-10 or P-6, respectively. The MODE of Applicability for this surveillance is < P-10 for the power range low and intermediate range channels and < P-6 for the source range channels. Once the unit is in MODE 3, this surveillance is no longer required. If power is to be maintained < P-10 for more than 12 hours or < P-6 for more than 4 hours, then the testing required by this surveillance must be performed prior to the expiration of the time limit.

Twelve hours and four hours are reasonable times to complete the required testing or place the unit in a MODE where this surveillance is no longer required. This test ensures that the NIS source, intermediate, and power range low channels are OPERABLE prior to taking the reactor critical and after reducing power into the applicable MODE (< P-10 or < P-6) for periods > 12 and 4 hours, respectively. Verification of the surveillance is accomplished by observing the permissive annunciator windows on the Main Control board.

SR 3.3.1.9

SR 3.3.1.9 is a comparison of the excore channels to the incore channels. If the measurements do not agree, the excore channels are not declared inoperable but must be calibrated to agree with the incore detector measurements. If the excore channels cannot be adjusted, the channels are declared inoperable. This Surveillance is performed to verify the $f(\Delta I)$ input to the overtemperature ΔT Function.

Two notes modify SR 3.3.1.9. Note 1 indicates that the excore NIS channels shall be adjusted if the absolute difference between the incore and excore is $\geq 3\%$. Note 2

(continued)

R5

RAIs
MB 1433
MB 1427
R8, 15
3.3.1-39
R5, R15,
R16

BASES

SURVEILLANCE
REQUIREMENTS

SR 3.3.1.9 (continued)

states that this Surveillance is required only if reactor power is $\geq 50\%$ RTP and that 72 hours is allowed for performing the first surveillance after reaching 50% RTP.

The Frequency of 92 EFPD is adequate. It is based on industry operating experience, considering instrument reliability and operating history data for instrument drift.

SR 3.3.1.10

A CHANNEL CALIBRATION is performed every 18 months, or approximately at every refueling. CHANNEL CALIBRATION is a complete check of the instrument loop, including the sensor. The test verifies that the channel responds to a measured parameter within the necessary range and accuracy.

CHANNEL CALIBRATIONS must be performed consistent with the assumptions of the unit specific setpoint methodology. The difference between the current "as found" values and the previous test "as left" values must be consistent with the drift allowance used in the setpoint methodology.

The Frequency of 18 months is based on the assumption of an 18 month calibration interval in the determination of the magnitude of equipment drift in the setpoint methodology.

SR 3.3.1.10 is modified by a Note stating that this test shall include verification that the time constants are adjusted to the prescribed values where applicable.

SR 3.3.1.11

SR 3.3.1.11 is the performance of a CHANNEL CALIBRATION, as described in SR 3.3.1.10, every 18 months. This SR is modified by a Note stating that neutron detectors are excluded from the CHANNEL CALIBRATION. The CHANNEL CALIBRATION for the power range neutron detectors consists of a normalization of the detectors based on a power calorimetric and flux map performed above 15% RTP. The CHANNEL CALIBRATION for the source range and intermediate range neutron detectors consists of obtaining the detector plateau or preamp discriminator curves, evaluating those curves, and comparing those curves to the manufacturer's data. This Surveillance is not required for the NIS power range detectors for entry into MODE 2 or 1, and is not

(continued)

RAIs
MB 1433
MB 1427
RB, 15
3.3.1-39
R5, R15, R16

RAIs
MB 1433
MB 1427
RB, 15
3.3.1-39
R5, 15

CTS

SURVEILLANCE REQUIREMENTS (continued)

	SURVEILLANCE	FREQUENCY
Channel Functional TEST	<p>SR 3.3.1.4NOTE..... This Surveillance must be performed on the reactor trip bypass breaker prior to placing the bypass breaker in service. Perform TADOT.</p>	<p>immediately after (5) 31 days on a STAGGERED TEST BASIS</p>
Channel Functional TEST	<p>SR 3.3.1.5 Perform ACTUATION LOGIC TEST.</p>	<p>31 days on a STAGGERED TEST BASIS</p>
<p>NEW Move to 3.3.1.9</p>	<p>SR 3.3.1.9 1. Adjust the NIS channel if absolute difference $\geq 3\%$. NOTE..... 2. Not required to be performed until (24) hours after THERMAL POWER is $\geq 50\%$ RTP. Compare the results of the Calibrate excore channels to agree with incore detector measurements.</p>	<p>(18) (20) (7) (92) EFPD</p>
Channel Functional TEST	<p>SR 3.3.1.7NOTE..... Not required to be performed for source range instrumentation prior to entering MODE 3 from MODE 2 until 4 hours after entry into MODE 3. Perform COT.</p>	<p>(92) days (7)</p>

(continued)

RAIS
 MB 1433
 MB 1427
 RB, RS
 3.3.1-39
 RS, R15, R16
 Rev 1, 04/07/95

**JUSTIFICATION FOR DEVIATIONS
ITS 3.3.1, RTS INSTRUMENTATION**

19. Not used.

20. ISTS SR 3.3.1.6 states that a calibration of excore channels is required to be performed to make the channels agree with the incore detector measurements. ITS SR 3.3.1.9 requires a comparison of the results of the incore detector measurement and the excore channels. Note 1 to the SR states, "Adjust NIS channel if absolute difference is $\geq 3\%$." This change is acceptable because the results of the incore measurements to excore channels will cause the NIS channels for the ΔI function to be readjusted if the difference is 3% or more. Note 1 is added to prevent unnecessary recalibration when the difference between the NIS channels and incore measurements is small.

MB433
MB1427
R16
RA1
3.3.1.39
R16

BASES

SURVEILLANCE
REQUIREMENTS
(continued)

SR 3.3.1.4

SR 3.3.1.4 is the performance of a TADOT every 31 days on a STAGGERED TEST BASIS. This test shall verify OPERABILITY by actuation of the end devices.

← INSERT 1 → TSTF 205

The RTB test shall include separate verification of the undervoltage and shunt trip mechanisms. Independent verification of RTB undervoltage and shunt trip Function is not required for the bypass breakers. No capability is provided for performing such a test at power. The independent test for bypass breakers is included in SR 3.3.1.14. The bypass breaker test shall include a local shunt trip. A Note has been added to indicate that this test must be performed on the bypass breaker, prior to placing it in service.

⑤

of the
ACTUATION

IS

⑨ / RS
R12

← INSERT 2 →

The Frequency of every 31 days on a STAGGERED TEST BASIS is adequate. It is based on industry operating experience, considering instrument reliability and operating history data.

SR 3.3.1.5

SR 3.3.1.5 is the performance of an ACTUATION LOGIC TEST. The SSPS is tested every 31 days on a STAGGERED TEST BASIS, using the semiautomatic tester. The train being tested is placed in the bypass condition, thus preventing inadvertent actuation. Through the semiautomatic tester, all possible logic combinations, with and without applicable permissives, are tested for each protection function. The Frequency of every 31 days on a STAGGERED TEST BASIS is adequate. It is based on industry operating experience, considering instrument reliability and operating history data.

← INSERT 3 → ⑨ / RS

SR 3.3.1.8

Comparison

SR 3.3.1.8 is a calibration of the excore channels to the incore channels. If the measurements do not agree, the excore channels are not declared inoperable but must be calibrated to agree with the incore detector measurements. If the excore channels cannot be adjusted, the channels are declared inoperable. This Surveillance is performed to verify the f(ΔI) input to the overtemperature ΔI Function.

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More to
SR 3.3.1.9

(continued)

RAT
MB1433
MB1427
R8,R15
3.3.1-39
R5, R15, R16

RCU 16

RAI
3.3.1-39
RS, R15, R16
RAI
MB 1453
MB 1427
R8, R15, R16

Note 1 indicates that the excise NIS channels shall be adjusted if the absolute difference between the move and excise is 23%

BASES

SURVEILLANCE
REQUIREMENTS

SR 3.3.1 (continued)

Note modifies SR 3.3.1. The Note states that this Surveillance is required only if reactor power is $\geq 50\%$ RTP and that 24 hours is allowed for performing the first surveillance after reaching 50% RTP.

move to
SR 3.3.1.9

The Frequency of 92 EFPD is adequate. It is based on industry operating experience, considering instrument reliability and operating history data for instrument drift.

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SR 3.3.1.7

SR 3.3.1.7 is the performance of a COT every 920 days.

A COT is performed on each required channel to ensure the entire channel will perform the intended function.

INSERT TSTF/R15
205

The nominal trip Setpoints must be within the Allowable Values specified in Table 3.3.1-1.

The difference between the current "as found" values and the previous test "as left" values must be consistent with the drift allowance used in the setpoint methodology. The setpoint shall be left set consistent with the assumptions of the current unit specific setpoint methodology.

The "as found" and "as left" values must also be recorded and reviewed for consistency with the assumptions of Reference 7.

19/R6

SR 3.3.1.7 is modified by a Note that provides a 4 hour delay in the requirement to perform this Surveillance for source range instrumentation when entering MODE 3 from MODE 2. This Note allows a normal shutdown to proceed without a delay for testing in MODE 2 and for a short time in MODE 3 until the RTBs are open and SR 3.3.1.7 is no longer required to be performed. If the unit is to be in MODE 3 with the RTBs closed for > 4 hours this Surveillance must be performed prior to 4 hours after entry into MODE 3.

The Frequency of 920 days is justified in Reference 7.

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(continued)

Rev 1/6

DISCUSSION OF CHANGES
ITS 3.3.1, RTS INSTRUMENTATION

The purpose of the ITS Condition P Note is to allow a reasonable amount of time to conduct repairs on an inoperable undervoltage or shunt trip mechanism without declaring the RTB train inoperable. This change is acceptable because the RTB on the other train and the bypass RTB on this train both remain capable of tripping the reactor. Two hours is a reasonable period of time to allow the bypass RTB to substitute for the inoperable RTB. This change is more restrictive because the CTS does not limit the time for performing maintenance, whereas the ITS limits the time to 2 hours.

RAI
3.3.1-02
3.3.1-18
RS

- M.13 CTS Table 4.3-1 Surveillance Requirements do not require a test on the OTAT Functions to ensure an accurate input for the $f(\Delta I)$ from the required Power Range channels. ITS Table 3.3.1-1 Function 6 states SR 3.3.1.9 must be performed. ITS SR 3.3.1.9 states, "Compare results of the excore channels to incore detector measurements." This SR must be performed every 92 EFPD. Two Notes modify the requirement. Note 1 states, "Adjust NIS channel if absolute difference $\geq 3\%$." Note 2 states, "Not required to be performed until 72 hours after THERMAL POWER is $\geq 50\%$." This changes the CTS by requiring an additional Surveillance Requirement for the OTAT Function.

MB43
MB1427
RB, RIS, R4
RAI
3.3.1-39
RS, RIS, R4

The purpose of ITS SR 3.3.1.9 is to ensure accurate inputs to $f(\Delta I)$ from NIS channels for the OTAT Function. This change is acceptable because the OTAT Functions receive inputs for the $f(\Delta I)$ portion of the equation from the Power Range channels. This SR requires an accurate comparison and possible adjustment of the Power Range channels to the incore measurements so that the $f(\Delta I)$ can be determined for the OTAT Function. Seventy two hours is needed to obtain stable plant conditions, determine new top and bottom moveable incore detector settings (required after refueling to obtain accurate incore data), obtain the flux map data, analyze the first flux map, and perform the Surveillance using the map results. Analysis of the first flux map after refueling takes additional time to verify flux map design inputs, to perform checks such as verification of core loading, and to adjust for the deep rod insertion during the map. The change is classified as more restrictive because an additional Surveillance Requirement is added to the current requirements.

REMOVED DETAIL CHANGES

- LA.1 (*Type 3 – Removing Procedural Details for Meeting TS Requirements and Related Reporting Problems*) CTS Surveillance Requirement 4.3.1.1.2 requires the RTS trip functions to be response time tested. This requirement includes the following, "Response of the neutron flux signal portion of the channel time shall be measured from the detector output or input of the first electronic component in the channel." ITS SR 3.3.1.16 requires RESPONSE TIME testing of the RTS functions. This changes the CTS by moving the descriptive wording from the Specifications to the ITS Bases.

RAI
3.3.1-25
RS

The removal of these details for performing surveillance requirements from the Technical Specifications is acceptable because this type of information is not

North Anna ITS RAIs
ITS Section 3.3, "Instrumentation," Section 3.8, "Electrical Power Systems," and
Beyond Scope Issue MB 1433 and MB 1427

3.3.5-1 ITS N/A
STS N/A
CTS N/A
JFD 2

RAI 3.3.5-1 NUREG-1431 markup, JFD 2 ITS propose to add "required" before "bus" in the LCO for loss of power emergency diesel generator start instrumentation, "Three channels per bus...shall be OPERABLE."

Comment: This proposed change represents a generic deviation from the NUREG and therefore requires an NEI TSTF before it can be used in the North Anna ITS. Alternatively, a specific discussion of the unique design features or licensing basis discussion may be presented for review.

Response: The Company agrees with the Comment. The word "required" is deleted and the format used in ITS LCOs 3.8 for "shared equipment" is adopted. The LCOs in Chapter 3.8 require the EDGs on this unit and the other unit that are needed to support this unit's safety function(s) to be OPERABLE. This requires the other unit's EDG to be supported by its LOP EDG Start Instrumentation for this unit's safety function(s). This modifies the Specification and Bases sections.

Additional Response: Based on verbal comments provided by the NRC, the time delay requirements in ITS SR 3.3.5.2 are revised from a single upper limit to a nominal value with a tolerance. In addition, based on verbal comments provided by the NRC, a sentence is added to the LCO 3.3.5 Bases describing the shared systems. This information is taken from the Background section of Specification 3.3.5 Bases.

CONDITION	REQUIRED ACTION	COMPLETION TIME
C. Required Action and associated Completion Time not met.	C.1 Enter applicable Condition(s) and Required Action(s) for the associated EDG made inoperable by LOP EDG start instrumentation.	Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
<p>SR 3.3.5.1 -----NOTE----- Verification of setpoint is not required. -----</p> <p>Perform TADOT for LCO 3.3.5.a and LCO 3.3.5.b Functions.</p>	<p style="text-align: right;">R6</p> <p style="text-align: right;">92 days</p> <p style="text-align: right;">RAI 3.3.5-01 R6</p>
<p>SR 3.3.5.2 Perform CHANNEL CALIBRATION with Allowable Values as follows:</p> <p>a. Loss of voltage Allowable Values ≥ 2935 V and ≤ 3225 V with a time delay of 2 ± 1 seconds for LCO 3.3.5.a and LCO 3.3.5.b Functions.</p> <p>b. Degraded voltage Allowable Values ≥ 3720 V and ≤ 3772 V with:</p> <p>1. A time delay of 7.5 ± 1.5 seconds with a Safety Injection (SI) signal for LCO 3.3.5.a Function; and</p> <p>2. A time delay of 56 ± 7 seconds without an SI signal for LCO 3.3.5.a and LCO 3.3.5.b Functions.</p>	<p style="text-align: right;">18 months</p> <p style="text-align: right;">RAI 3.3.5-01 R6, R16</p> <p style="text-align: right;">RAI 3.3.5-01 R6, R16</p>
<p>SR 3.3.5.3 Verify ESF RESPONSE TIMES are within limit for LCO 3.3.5.a and LCO 3.3.5.b Functions.</p>	<p style="text-align: right;">18 months on a STAGGERED TEST BASIS</p> <p style="text-align: right;">RAI 3.3.5-01 R6</p>

BASES

APPLICABLE
SAFETY ANALYSES
(continued)

The required channels of LOP EDG start instrumentation, in conjunction with the ESF systems powered from the EDGs, provide unit protection in the event of any of the analyzed accidents discussed in Reference 5, in which a loss of offsite power is assumed.

RAI
3.3.5-05
R6

The delay times assumed in the safety analysis for the ESF equipment include the 10 second EDG start delay, and the appropriate sequencing delay, if applicable. The response times for ESFAS actuated equipment in LCO 3.3.2, "Engineered Safety Feature Actuation System (ESFAS) Instrumentation," include the appropriate EDG loading and sequencing delay if applicable.

RAI
3.3.5-01
R6

The LOP EDG start instrumentation channels satisfy Criterion 3 of 10 CFR 50.36(c)(2)(ii).

LCO

The LCO for LOP EDG start instrumentation requires that three channels per bus of both the loss of voltage and degraded voltage Functions shall be OPERABLE in MODES 1, 2, 3, and 4 when the LOP EDG start instrumentation supports safety systems associated with the ESFAS. This is associated with the requirement of LCO 3.3.5.a for this unit's H and J buses. LCO 3.3.5.b specifies that for a required H and/or J bus on the other unit that is needed to support a required shared component for this unit, the LOP EDG start instrumentation for the required bus must be OPERABLE. The other unit's required H and/or J bus are required to be OPERABLE to support the SW, MCR/ESGR EVS, and Auxiliary Building Central Exhaust functions needed for this unit. These Functions share components, pumps, or fans, which are electrically powered from both units. A channel is OPERABLE with a trip setpoint value outside its calibration tolerance band provided the trip setpoint "as-found" value does not exceed its associated Allowable Value and provided the trip setpoint "as-left" value is adjusted to a value within the "as-left" calibration tolerance band of the trip setpoint. A trip setpoint may be set more conservative than the trip setpoint specified in the TRM (Ref. 2) as necessary in response to unit conditions. In MODES 5 or 6, the three channels must be OPERABLE whenever the associated EDG is required to be OPERABLE to ensure that the automatic start of the EDG is available when needed. Loss of the LOP EDG Start Instrumentation Function could result in the delay of safety systems initiation when required. This could lead to unacceptable consequences during accidents. During the loss
(continued)

RAI
3.3.5-01
R6

RAI
3.3.5-01
R6

RAI
3.3.5-01
R16

RAI
3.8.2-5
R16

①

CTS

SURVEILLANCE REQUIREMENTS (continued)

4.3.2.1.1 and
Function 7
of Table 3.3-4

SURVEILLANCE	FREQUENCY
<p>SR 3.3.5.② Perform CHANNEL CALIBRATION with (setpoint) Allowable Value, Trip Setpoint and Allowable Value as follows:</p> <p>a. Loss of voltage Allowable Value \geq [2912] V with a time delay of [0.8] ± [] seconds. ²⁹³⁵ _③</p> <p>Loss of voltage Trip Setpoint \geq [2975] V with a time delay of [0.8] ± [] seconds. _②</p> <p>b. Degraded voltage Allowable Value \geq [3663] V with a time delay of [20] ± [] seconds. ³⁷²⁰ _③</p> <p>Degraded voltage Trip Setpoint \geq [3746] V with a time delay of [20] ± [] seconds.</p>	<p>① 18 months ^④</p> <p>② and ≤ 3225 V _{RAI 3.3.5-1 R16}</p> <p>⑨ for LCO 3.3.5.a and LCO 3.3.5.b Functions _{TSTF 365 RAI 3.3.5-1 R6}</p> <p>② and ≤ 3712 V _{TSTF 365}</p>

4.3.2.1.2

← INSERT 1 → ⑧

← INSERT 2 → ⑦

RAI
3.3.5-1
R6

ITS 3.3.5, LOP EDG START INSTRUMENTATION

INSERT 1

1. A time delay of 7.5 ± 1.5 seconds with a Safety Injection (SI) signal for LCO 3.3.5.a Functions; and
2. A time delay of 56 ± 7 seconds without an SI signal for LCO 3.3.5.a and LCO 3.3.5.b Functions.

←
RAI
3.3.5-1
RAI

INSERT 2

SR 3.3.5.3	Verify ESF RESPONSE TIMES are within limit for LCO 3.3.5.a and LCO 3.3.5.b Functions.	18 months on a STAGGERED TEST BASIS
------------	---	-------------------------------------

RAI
3.3.5-1
R6

ITS 3.3.5, LOP EDG START INSTRUMENTATION

INSERT

RAI
3.8.2-5
R16

This is associated with the requirement of LCO 3.3.5.a for this unit's H and J buses. LCO 3.3.5.b specifies that for a required H and/or J bus on the other unit that is needed to support a required shared component for this unit, the LOP EDG start instrumentation for the required bus must be OPERABLE. The other unit's required H and/or J bus are required to be OPERABLE to support the SW, MCR/ESGR EVS, and Auxiliary Building central exhaust functions needed for this unit. These Functions share components, pumps or fans, which are electrically powered from both units.

RAI
3.3.5-1
R6

RAI
3.3.5-1
R16

A channel is OPERABLE with a trip setpoint value outside its calibration tolerance band provided the trip setpoint "as-found" value does not exceed its associated Allowable Value and provided the trip setpoint "as-left" value is adjusted to a value within the "as-left" calibration tolerance band of the trip setpoint. A trip setpoint may be set more conservative than the trip setpoint specified in the TRM (Ref. 2) as necessary in response to unit conditions.

RAI
3.8.2-5
R16

ITS

NORTH ANNA - UNIT 1

page 6 of 6

3/4 3-26a

A.1

TABLE 3.3-4 (continued)
ENGINEERED SAFETY FEATURE ACTUATION SYSTEM
INSTRUMENTATION TRIP SETPOINTS

FUNCTIONAL UNIT	TRIP SETPOINT	ALLOWABLE VALUES
6. AUXILIARY FEEDWATER PUMP START		
a. Manual	N. A.	N. A.
b. Automatic Actuation Logic	N. A.	N. A.
c. Steam Generator Water Level Low-Low	≥18% of narrow range instrument span each steam generator	≥17% of narrow range instrument span each steam generator
d. S. I.	See 1 above (all S.I. Setpoints)	
e. Station Blackout	≥2392 volts on Transfer Bus	≥2184 volts on Transfer Bus
f. Trip of Main Feed Pump	N. A.	N. A.

See ITS 3.3.2

SR 3.3.5.2 7. LOSS OF POWER

- a. 4160 Volt Emergency Bus Undervoltage (Loss of Voltage)
- b. 4160 Volt Emergency Bus Undervoltage (Degraded Voltage)

LA.2

3080 ±13 volts with a time delay of 2.0 ±0.5 seconds

2935

≥2989 volts with a time delay of 5.0 seconds

and ≤ 3225V

3720

3746 ±7 volts with a time delay of 56 ±6 seconds

and ≤ 3772

3688 volts with a time delay of 56 seconds

2±1

56±7

≥3720 volts with a time delay of 7.5±1.5 seconds with an SI signal

- M.2
- L.3
- M.2
- M.1
- M.1

RAI 335-1 RIB 11-29-91

ITS 3.3.5

Amendment No. 16, 19, 22, 23, 150

Rev. 16

ITS

NORTH ANNA - UNIT 2

A,1

TABLE 3.3-4 (continued)
ENGINEERED SAFETY FEATURE ACTUATION SYSTEM
INSTRUMENTATION TRIP SETPOINTS

FUNCTIONAL UNIT	TRIP SETPOINT	ALLOWABLE VALUES
6. AUXILIARY FEEDWATER PUMP START		
a. Manual	Not Applicable	Not Applicable
b. Automatic Actuation Logic	Not Applicable	Not Applicable
c. Steam Generator Water Level Low-Low	≥18% of narrow range instrument span each steam generator	≥17% of narrow range instrument span each steam generator
d. S.I.	See 1 above (all S.I. Setpoints)	
e. Station Blackout	≥2392 volts on Transfer Bus	≥2184 volts on Transfer Bus
f. Trip of Main Feed Pump	N.A.	N.A.

See ITS 3.3.2

3/4 3-28
Page 6 of 6

SR 3.3.5.2 7. LOSS OF POWER

- a. 4160 Volt Emergency Bus Undervoltage (Loss of Voltage)
- b. 4160 Volt Emergency Bus Undervoltage (Degraded Voltage)

LA.2

3080 ±13 volts with a time delay of 2.0 ±0.5 seconds

3746 ±7 volts with a time delay of 56 ±6 seconds

2935

≥2989 volts with a time delay of 5.0 seconds and ≤3225V

3720

≥3680 volts with a time delay of 5.5 seconds and ≤3772

2372.0 volts with a time delay of 7.5 ±1.5 seconds with an SI signal

M.2

L.3

M.2

M.1

M.1

RAI 3.3.5-1 R16

ITS 3.3.5

11-29-91

Amendment No. 134

PLU16

DISCUSSION OF CHANGES
ITS 3.3.5, LOP EDG START INSTRUMENTATION

months. The requirement states, "Each test shall include at least one logic train such that both logic trains are tested at least once per 36 months." ITS SR 3.3.5.3 requires the verification of ESFAS RESPONSE TIMES are within limits every 18 months on a STAGGERED TEST BASIS (STB). This changes the CTS by deleting the logic train requirement for the LOP EDG start instrumentation.

This change is acceptable because the testing requirements of the CTS are maintained in the ITS format. The testing of every 18 months on a STB satisfies the requirement that both trains are tested every 36 months. No logic trains exist for the LOP EDG start instrumentation. The change is designated as administrative change because it does not result in technical change to the CTS requirements.

- A.5 CTS Table 4.3-2 lists for Functional Unit 7, Loss of Power 4.16KV Emergency Bus requirements for a quarterly CHANNEL FUNCTIONAL TEST for the Loss of Voltage and Degraded Voltage functions. The CHANNEL FUNCTIONAL TEST does not require a verification of relay setpoints for the Loss of Voltage and Degraded Voltage functions. ITS SR 3.3.5.1 states that a TADOT must be performed every 92 days. The SR is modified by a Note that states, "Verification of setpoint is not required." This changes the CTS by specifically stating that setpoint verification is not required for the required quarterly testing.

This change is acceptable because the verification of the relay setpoints require elaborate bench calibration and this is performed during the CHANNEL CALIBRATION. The CHANNEL CALIBRATION is performed every 18 months. The verification of relay setpoints has been consistently within the limits of the 18-month requirements. Therefore, the addition of the Note to the SR does not modify the CTS and is provided to clarify the requirement. The change is designated as administrative change because it does not result in technical change to the CTS requirements.

R6

MORE RESTRICTIVE CHANGES

- M.1 CTS Table 3.3-4, Engineered Safety Feature Actuation System Instrumentation Trip Setpoints, lists the Allowable Values for the Loss of Power on the 4160-Volt Emergency Bus Undervoltage for degraded voltage. The degraded voltage Allowable Value is stated as, " ≥ 3688 volts with a time delay of ≤ 63 seconds." This requirement is translated into ITS SR 3.3.5.2 and states the degraded voltage requirement as, " ≥ 3720 V and ≤ 3772 V with: 1. a time delay of 7.5 ± 1.5 seconds with a Safety Injection (SI) signal for LCO 3.3.5.a Function; and 2. A time delay of 56 ± 7 seconds without an SI signal for LCO 3.3.5.a and LCO 3.3.5.b Functions." This changes the CTS by changing the Allowable Value from 3688 V to a range of 3720 V to 3772 V and adding the requirement that the time delay with an SI signal be 7.5 ± 1.5 seconds and without an SI signal be 56 ± 7 seconds.

RAI
3.3.5-1
R16

DISCUSSION OF CHANGES
ITS 3.3.5, LOP EDG START INSTRUMENTATION

This change is acceptable because the ITS values for degraded voltage and time delay are consistent with the plant setpoint methodology. The start of the EDG is required to meet the accident analysis assumptions and the required testing is necessary to ensure the voltage Allowable Values and time delay are periodically verified. This change is more restrictive because the ITS provides additional requirements that are not required by the CTS.

RAI
3.3.5-1
R16

- M.2 CTS Table 3.3-4, Engineered Safety Feature Actuation System Instrumentation Trip Setpoints, lists the Allowable Values for the Loss of Power on the 4160-Volt Emergency Bus Undervoltage for loss of voltage. The loss of voltage Allowable Value is stated as, "≥ 2989 volts with a time delay of ≤ 3.0 seconds." This requirement is translated into ITS SR 3.3.5.2 and states the loss of voltage requirement as, "≥ 2935 V and ≤ 3225 V with a time delay of 2 ± 1 seconds for LCO 3.3.5.a and LCO 3.3.5.b Functions." This changes the CTS by changing the Allowable Value from 2989 V to a range of 2935 V to 3225 V and adding the requirement that the time delay be 2 ± 1 seconds instead of ≤ 3.0 seconds.

RAI
3.3.5-1
R16

This change is acceptable because the ITS values for loss of voltage and time delay are consistent with the plant setpoint methodology. The start of the EDG is required to meet the accident analysis assumptions and the required testing is necessary to ensure the voltage Allowable Values and time delay are periodically verified. This change is more restrictive because the ITS provides additional requirements that are not required by the CTS.

- M.3 CTS LCO 3.3.2.1, Engineered Safety Feature Actuation System (ESFAS) Instrumentation, states the trip setpoints for the features are required to be set consistent with the values listed in the Trip Setpoint column of Table 3.3-4. ITS LCO 3.3.5, "Loss of Power (LOP) Emergency Diesel Generator (EDG) Start Instrumentation," requires three channels per bus for the undervoltage and degraded voltage Functions for this unit H and J Train 4160 VAC buses to be OPERABLE. The LCO additionally requires the H and/or J Train 4160 VAC buses on the other unit that are needed to support shared components to be OPERABLE. This changes the LCO requirements by specifically requiring LOP EDG start instrumentation from the other unit to be OPERABLE when supporting shared components for this unit.

RAI
3.3.5-1
R6

The addition of the requirement for the other unit LOP EDG start instrumentation is acceptable because the shared components required by this unit must be electrically supported by the other unit's EDG. For the other unit to detect a loss of offsite power or degraded voltage condition, the LOP EDG start instrumentation is required to be OPERABLE. For this unit to rely on components electrically powered from the other unit, this unit must require the OPERABILITY of the other unit LOP EDG start instrumentation to ensure the shared component(s) may fulfill the unit's safety functions. This change is more restrictive because the ITS provides additional requirements that are not specified in the CTS.

North Anna ITS RAIs
ITS Section 3.3, "Instrumentation," Section 3.8, "Electrical Power Systems," and
Beyond Scope Issue MB 1433 and MB 1427

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

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

Response: The Company agrees with the classification of 14 of the 18 surveillance requirements. The SRs that we do not agree on are the following: SR 3.8.1.6, 3.8.1.10, 3.8.1.12, and 3.8.1.16. The Company agrees with the changing of SR 3.8.1.6 from a classification of applicable and performed to a classification of applicable and not performed. This will require a modification of JFD 2. The Company does not agree with a change in the classification for SRs 3.8.1.10, 3.8.1.12, and 3.8.1.16. SR 3.8.1.10 (Loss of Offsite Power) is not applicable because the safety analysis does not credit an automatic start of the required EDG for the fuel handling accident. SR 3.8.1.12 (Bypass of non-critical trips except for engine overspeed or generator differential current) on any automatic EDG start is not applicable because no automatic start of the EDG is required. SR 3.8.1.16 (Verification of sequencing timing relays) is not required because the signals for these relays, Loss of Offsite Power, SI, or Containment Spray actuation are required. None of the required safety functions are required to start automatically in these conditions. Operator action is needed and to start the EDG and actuate any safety function(s) in MODE 5, 6, or defueled. Also see the response to Question 9.

Additional Response: The NRC states that EDG surveillances which verify automatic EDG start and loading on a loss of power to the associated emergency bus should be required in MODES 5, 6 and during movement of recently irradiated fuel. In Supplement 3, the Company disagreed with that position. In response to verbal comments from the NRC, the Company agrees to require EDG automatic start on loss of power to the associated emergency bus. ITS SRs 3.8.1.10, 3.8.1.12, and 3.8.1.16 are added to those required by SR 3.8.2.1. This makes the SR 3.8.2.1 requirements consistent with the recommended changes in the NRC's RAI. In addition, ITS LCO 3.3.5, "LOP EDG Start Instrumentation," Applicability is revised to require LOP

North Anna ITS RAIs
ITS Section 3.3, "Instrumentation," Section 3.8, "Electrical Power Systems," and
Beyond Scope Issue MB 1433 and MB 1427

EDG Start Instrumentation to be OPERABLE in MODES 1, 2, 3, 4 and when the associated EDG is required to be OPERABLE by LCO 3.8.2, "AC Sources - Shutdown." This Applicability is consistent with the ISTS and will ensure a Loss of Power automatic start signal is available to start the EDG if required.

SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY															
<p>SR 3.8.2.1 -----NOTE----- The following SRs are not required to be performed: SR 3.8.1.3, SR 3.8.1.6, SR 3.8.1.9, SR 3.8.1.10, SR 3.8.1.12, SR 3.8.1.13, SR 3.8.1.14, SR 3.8.1.15, and SR 3.8.1.16. -----</p> <p>For AC sources required to be OPERABLE, the following SRs are applicable:</p> <table border="0"> <tr> <td>SR 3.8.1.1</td> <td>SR 3.8.1.6</td> <td>SR 3.8.1.13</td> </tr> <tr> <td>SR 3.8.1.2</td> <td>SR 3.8.1.7</td> <td>SR 3.8.1.14</td> </tr> <tr> <td>SR 3.8.1.3</td> <td>SR 3.8.1.9</td> <td>SR 3.8.1.15</td> </tr> <tr> <td>SR 3.8.1.4</td> <td>SR 3.8.1.10</td> <td>SR 3.8.1.16</td> </tr> <tr> <td>SR 3.8.1.5</td> <td>SR 3.8.1.12</td> <td></td> </tr> </table>	SR 3.8.1.1	SR 3.8.1.6	SR 3.8.1.13	SR 3.8.1.2	SR 3.8.1.7	SR 3.8.1.14	SR 3.8.1.3	SR 3.8.1.9	SR 3.8.1.15	SR 3.8.1.4	SR 3.8.1.10	SR 3.8.1.16	SR 3.8.1.5	SR 3.8.1.12		<p>In accordance with applicable SRs</p>
SR 3.8.1.1	SR 3.8.1.6	SR 3.8.1.13														
SR 3.8.1.2	SR 3.8.1.7	SR 3.8.1.14														
SR 3.8.1.3	SR 3.8.1.9	SR 3.8.1.15														
SR 3.8.1.4	SR 3.8.1.10	SR 3.8.1.16														
SR 3.8.1.5	SR 3.8.1.12															

RAI
3.8.2-05
R3
RAI
3.8.2-05
R16

RAI
3.8.2-05
R16

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.

RA1
3.8.2-06
R3

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.

R11

R11

R11

The 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. The EDG 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 bus. These capabilities are required to be met from a variety of initial conditions such as EDG in standby with the engine hot and the EDG in standby at ambient conditions.

R3
RA1
3.8.2-05
R16

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

(continued)

CTS

SURVEILLANCE REQUIREMENTS

4.8.1.2

SR 3.8.2.1

SURVEILLANCE

FREQUENCY

NOTE

The following SRs are not required to be performed: SR 3.8.1.3, SR 3.8.1.9, through SR 3.8.1.11, SR 3.8.1.13 through SR 3.8.1.15, SR 3.8.1.16, SR 3.8.1.18, and SR 3.8.1.19.

SR 3.8.1.10,
SR 3.8.1.12,

SR 3.8.1.6

SR 3.8.1.14, SR 3.8.1.15

For AC sources required to be OPERABLE, the following SRs of Specification 3.8.1, "AC Sources Operating," except SR 3.8.1.8, SR 3.8.1.17, and SR 3.8.1.20, are applicable.

In accordance with applicable SRs

RAI
3.8.2-05
R3

2
RAI
3.8.2-5
R16
5
TSTF
300

3

<INSERT>

ITS 3.8.2 - AC SOURCES - SHUTDOWN

INSERT

SR 3.8.1.1	SR 3.8.1.6	SR 3.8.1.13
SR 3.8.1.2	SR 3.8.1.7	SR 3.8.1.14
SR 3.8.1.3	SR 3.8.1.9	SR 3.8.1.15
SR 3.8.1.4	SR 3.8.1.10	SR 3.8.1.16
SR 3.8.1.5	SR 3.8.1.12	

RAI
3.8.2-05
R16

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 required to be performed by SR 3.8.2.1. The Note precludes the performance of the ITS SR 3.8.1.3, SR 3.8.1.6, SR 3.8.1.9, SR 3.8.1.10, SR 3.8.1.12, SR 3.8.1.13, SR 3.8.1.14, SR 3.8.1.15 and SR 3.8.1.16 to ensure the one OPERABLE EDG is not made inoperable. Most of the Surveillances are not required to be performed because the EDG would be inoperable if it 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.
3. ISTS SR 3.8.2.1 is modified to require the SRs of ITS 3.8.1 that are applicable for the EDG and offsite circuit in MODES 5, 6, and during the movement of recently irradiated fuel assemblies. All ITS 3.8.1 SRs are required by SR 3.8.2.1 except SR 3.8.1.8, SR 3.8.1.11, SR 3.8.1.17, and SR 3.8.1.18. SR 3.8.1.8 requires the transfer from the normal to the alternate circuit. Since only one circuit is required to be OPERABLE by LCO 3.8.2, this SR would require the transfer from an OPERABLE circuit to an inoperable circuit. Therefore, this SR is not included in SR 3.8.2.1. ITS SRs 3.8.1.11 and 3.8.1.17 require an ESF signal to actuate the start of the EDG or the train's sequencing timing relays for loading. In MODE 5 or 6 and during movement of recently irradiated fuel, the instrumentation that provides these signals is not required to be OPERABLE by LCO 3.3.2, "ESFAS Instrumentation." Therefore, these SRs are not included in ITS SR 3.8.2.1. ITS SR 3.8.1.18 requires both EDGs be started simultaneously. Only one EDG is required to be OPERABLE by LCO 3.8.2.1, so this Surveillance is not applicable. The remaining SRs are listed in a column format to improve readability.
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. TSTF-300 adds a Note to SR 3.8.2.1 which states, "SR 3.8.1.12 and SR 3.8.1.19 are not required to be met when associated ECCS subsystems are not required to be OPERABLE per LCO 3.5.3, "ECCS - Shutdown." ISTS SRs 3.8.1.12 and 3.8.1.19 are equivalent to ITS SRs 3.8.1.11 and 3.8.1.17. The concept of TSTF-300 is incorporated into SR 3.8.2.1. LCO 3.5.3 is applicable in MODE 4. LCO 3.8.2 is applicable in MODES 5 and 6, and during movement of recently irradiated fuel. Therefore, there is no overlap between the applicability of these LCOs and ITS SRs 3.8.1.11 and 3.8.1.17 would never be required to be met. These two SRs are not required to be met by ITS SR 3.8.2.1. This eliminates the need for the Note added by TSTF-300.

RAI
3.8.2-5
R16

RAI
3.8.2-5
R16

RAI
3.8.2-5
R16

RAI
3.8.2-08
R11

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).

involving handling recently irradiated fuel

TSTF
51
RAI
3.8.2-06
R3

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

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

<INSERT> 3

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

or degraded voltage

2
RAI
3.8.2-5
R16
R3

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.

4

(continued)

ITS 3.8.2 - AC SOURCES - SHUTDOWN

INSERT

SR 3.8.1.11 and SR 3.8.1.17 are not required to be performed because the ESF actuation signals are not required to be OPERABLE. SR 3.8.1.18 is excepted because starting independence is not required with the EDG(s) that is not required to be OPERABLE.

RAI
3.8.2-05
R16

JUSTIFICATION FOR DEVIATIONS
ITS 3.8.2 BASES - AC SOURCES - SHUTDOWN

1. The criteria of the NRC Final Policy Statement on Technical Specifications Improvements have been included in 10 CFR 50.36(c)(2)(ii). Therefore, references in the ISTS Bases to the NRC Final Policy Statement are revised in the ITS Bases to reference 10 CFR 50.36.
2. Changes are made (additions, deletions, and/or changes) to the ISTS, which reflect the plant specific nomenclature, number, reference, system description, analysis, or licensing basis description.
3. The brackets have been removed and the proper plant specific information/value has been provided.
4. This information is deleted because it is not applicable to North Anna.
5. Changes are made to the ITS Bases which reflect changes in the ITS Specifications.
6. Bases changes made by TSTF-51 are incorporated with modifications. These modifications incorporate the concept of the approved changes made by TSTF-51, but the analysis value for the required time has not been determined. When the analysis is completed, the required time will be substituted for the phrase, "a time frame established by analysis. The term recently is defined as all irradiated fuel assemblies, until analysis is performed to determine a specific time frame."
7. This is an editorial change for clarity, for consistency with the Improved Technical Specifications Writer's Guide, or for consistency with similar statements in the other ITS Bases.
8. Not used
9. The ISTS LCO Bases state, "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 second sentence, "This sequence must be accomplished within [10] seconds." is not adopted in the North Anna ITS Bases. The 10 second start criteria assumes EDG start from a Safety Injection signal. In the Applicability of LCO 3.8.2, SI is not required to be OPERABLE. The Surveillances referenced in SR 3.8.2.1 contain the appropriate requirements for the applicable MODES. Therefore, the sentence is not needed.

RAI
3.8.2-
69
R3

RAI
3.8.2-05
R16

A.1

ITS 3.8.2
08-26-98

ITS
3.8
3.8.2

ELECTRICAL POWER SYSTEMS

SHUTDOWN AC-SOURCES

LIMITING CONDITION FOR OPERATION

LCO
3.8.2

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 2), and
 3. A fuel transfer system.

(see ITS 3.8.3)

SR 3.8.2.1

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.

L.6

L.5

A.2

L.11

L.4

ACTION:

INSERT PROPOSED NOTE

INSERT PROPOSED REQUIRED ACTION A.1

- 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.

INSERT PROPOSED ITS REQUIRED ACTIONS A.2.3 and B.3

L.5

M.1

recently

L.6

- 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.

SEE ITS 3.8.3

ACTIONS
A & B

SURVEILLANCE REQUIREMENTS

INSERT PROPOSED NOTE

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 3.8.3) (with the exception of 4.8.1.1.1.b, 4.8.1.1.2.d.4, 4.8.1.1.2.d.5, and 4.8.1.1.2.e) (see ITS 3.8.5)

L.2

L.3

PAI
3.8.2-05
Rib

SR
3.8.2.1

NORTH ANNA - UNIT 1

3/4 8-5

Amendment No. 11, 83, 128, 156, 203, 214

page 1 of 1

Rev. 16

A.1

ITS
3.8 ELECTRICAL POWER SYSTEMS

3.8.2 SHUTDOWN Ac Sources

LIMITING CONDITION FOR OPERATION

LCO
3.8.2

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:

SR 3.8.2.1

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.

see ITS 3.8.3

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.

L16

L15

A.2

L11

ACTION:

~~INSERT PROPOSED NOTE ACTION A~~

- 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.~~

INSERT PROPOSED ITS Required Actions A.2.3 and B.3

L14

L15

recently

L16

M.1

- 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.

see ITS 3.8.3

SURVEILLANCE REQUIREMENTS

~~INSERT PROPOSED NOTE~~
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 3.8.3

L12

~~With the exception of 4.8.1.1.1, 4.8.1.1.2, 4.8.1.1.3, 4.8.1.1.4, 4.8.1.1.5, and 4.8.1.1.6~~ see ITS 3.8.5

L13

NORTH ANNA - UNIT 2

3/4 8-10 Amendment No. 48, 70, 112, 138, 184, 195

page 10 of 1

RAI
3.8.2-05
R16

SR
3.8.2.1

Rev 16

DISCUSSION OF CHANGES
ITS 3.8.2 - AC SOURCES - SHUTDOWN

REMOVED DETAIL CHANGES

None

LESS RESTRICTIVE CHANGES

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

This change is acceptable because the Required Actions are used to establish remedial measures that must be taken in response to the degraded conditions in order to minimize risk associated with continued operation while providing time to repair inoperable features. The Required Actions are consistent with safe operation under the specified Condition, considering the OPERABLE status of the redundant systems or features. This includes the capacity and capability of remaining systems or features, a reasonable time for repairs or replacement, and the low probability of a DBA occurring during the repair period. The Required Actions of the affected features will provide appropriate compensatory measures to ensure the required safety functions can be performed. This change is designated as less restrictive because less stringent Required Actions are being applied in the ITS than were applied in the CTS.

- L.2 (*Category 6 – Relaxation Of Surveillance Requirement Acceptance Criteria*) CTS surveillance requirement 4.8.1.2 states, "The above required A.C. electrical power sources shall be demonstrated OPERABLE by the performance of each of the Surveillance Requirements of 4.8.1.1.1, 4.8.1.1.2, 4.8.1.1.3, and 4.8.1.1.4." ITS SR 3.8.2.1 states the required SRs but adds a Note which states, "The following SRs are not required to be performed: SR 3.8.1.3, SR 3.8.1.6, SR 3.8.1.9, SR 3.8.1.10, SR 3.8.1.12, SR 3.8.1.13, SR 3.8.1.14, SR 3.8.1.15 and SR 3.8.1.16." This changes the CTS to allow specific surveillance requirements to not be performed on the required equipment during the time that only one offsite source and one EDG are required to be OPERABLE.

This change is acceptable because it has been determined that performance of the listed Surveillance Requirements is not beneficial to plant safety. The intent of the required testing for AC sources in the applicable MODES when only one offsite

RAI
3.8.2-05
R16

DISCUSSION OF CHANGES
ITS 3.8.2 - AC SOURCES - SHUTDOWN

source and one EDG are required to be OPERABLE is to ensure those sources remain OPERABLE. The Note precludes the performance of the SRs that would parallel the EDG with an offsite source. These are SRs 3.8.1.3, 3.8.1.9, 3.8.1.10, 3.8.1.12, 3.8.1.13, 3.8.1.15, and 3.8.1.16. SR 3.8.1.14 is only performed on the EDG within 5 minutes of shutdown after it has been fully loaded. If the EDG is not loaded in the SRs above, then SR 3.8.1.14 should also be excluded because it has not been loaded. SR 3.8.1.6 is not required to be performed because the EDG day tank level would be required to be lowered below the minimum requirement of 450 gallons. This change is designated as less restrictive because less stringent Surveillance Requirements are being applied in the ITS than were applied in the CTS.

RAI
3.8.2-
05
R16

- L.3 *(Category 5 – Deletion of Surveillance Requirement)* CTS Surveillance Requirement 4.8.1.2 states, “The above required A.C. electrical power sources shall be demonstrated OPERABLE by the performance of each of the Surveillance Requirements of 4.8.1.1.1, 4.8.1.1.2, 4.8.1.1.3, and 4.8.1.1.4.” ITS SR 3.8.2.1 states that the listed SRs are applicable. The list is composed of SRs 3.8.1.1, 3.8.1.2, 3.8.1.3, 3.8.1.4, 3.8.1.5, 3.8.1.6, 3.8.1.7, 3.8.1.9, 3.8.1.10, 3.8.1.12, 3.8.1.13, 3.8.1.14, 3.8.1.15, and 3.8.1.16. This changes the CTS by not requiring Surveillances 4.8.1.1.1.b, 4.8.1.1.2.d.4, 4.8.1.1.2.d.5, and 4.8.1.1.2.e to be performed on the AC circuit and EDG that are OPERABLE.

RAI
3.8.2-
05
R16

This change is acceptable because the deleted Surveillance Requirement is not necessary to verify that the equipment used to meet the LCO can perform its required functions. Thus, appropriate equipment continues to be tested in a manner and at a frequency necessary to give confidence that the equipment can perform its assumed safety function. The EDG requirements in 4.8.1.1.2.d.4 and 4.8.1.1.2.d.5 (ITS SRs 3.8.1.11 and 3.8.1.17) require instrumentation signals from ESF to actuate the start of the EDG or to energize the emergency train’s sequencing timing relays for loading. In MODE 5 or 6 the instrumentation that provides these signals is not required to be OPERABLE. Therefore, these SRs are not required for EDG OPERABILITY. CTS requirement 4.8.1.1.2.e (ITS SR 3.8.1.18) requires that both EDGs be started simultaneously. Since only one EDG is required to be OPERABLE, this SR is not applicable. The offsite circuit requirement in CTS 4.8.1.1.1.b (ITS SR 3.8.1.8) requires the transfer from the normal to the alternate circuit. Since only one circuit is required to be OPERABLE, the transfer is not required to be performed. This change is designated as less restrictive because Surveillances which are required in the CTS will not be required in the ITS.

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

3.3 INSTRUMENTATION

3.3.5 Loss of Power (LOP) Emergency Diesel Generator (EDG) Start Instrumentation

LCO 3.3.5 Three channels per bus of the loss of voltage Function and three channels per bus of the degraded voltage Function for the following 4160 VAC buses shall be OPERABLE:

RAI
3.3.5-01
R6

- a. The Train H and Train J buses; and
- b. One bus on the other unit for each required shared component.

APPLICABILITY: MODES 1, 2, 3, and 4,
When associated EDG is required to be OPERABLE by LCO 3.8.2,
"AC Sources-Shutdown."

RAI
3.8.2-5
R16

ACTIONS

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

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One or more Functions with one channel per bus inoperable.	A.1 -----NOTE----- The inoperable channel may be bypassed for up to 12 hours for surveillance testing of other channels. ----- Place channel in trip.	72 hours
B. One or more Functions with two or more channels per bus inoperable.	B.1 Restore all but one channel to OPERABLE status.	1 hour

BASES

APPLICABLE
SAFETY ANALYSES
(continued)

The required channels of LOP EDG start instrumentation, in conjunction with the ESF systems powered from the EDGs, provide unit protection in the event of any of the analyzed accidents discussed in Reference 5, in which a loss of offsite power is assumed.

RAI
3.3.5-05
R6

The delay times assumed in the safety analysis for the ESF equipment include the 10 second EDG start delay, and the appropriate sequencing delay, if applicable. The response times for ESFAS actuated equipment in LCO 3.3.2, "Engineered Safety Feature Actuation System (ESFAS) Instrumentation," include the appropriate EDG loading and sequencing delay if applicable.

RAI
3.3.5-01
R6

The LOP EDG start instrumentation channels satisfy Criterion 3 of 10 CFR 50.36(c)(2)(ii).

LCO

The LCO for LOP EDG start instrumentation requires that three channels per bus of both the loss of voltage and degraded voltage Functions shall be OPERABLE in MODES 1, 2, 3, and 4 when the LOP EDG start instrumentation supports safety systems associated with the ESFAS. This is associated with the requirement of LCO 3.3.5.a for this unit's H and J buses. LCO 3.3.5.b specifies that for a required H and/or J bus on the other unit that is needed to support a required shared component for this unit, the LOP EDG start instrumentation for the required bus must be OPERABLE. The other unit's required H and/or J bus are required to be OPERABLE to support the SW, MCR/ESGR EVS, and Auxiliary Building Central Exhaust functions needed for this unit. These Functions share components, pumps, or fans, which are electrically powered from both units. A channel is OPERABLE with a trip setpoint value outside its calibration tolerance band provided the trip setpoint "as-found" value does not exceed its associated Allowable Value and provided the trip setpoint "as-left" value is adjusted to a value within the "as-left" calibration tolerance band of the trip setpoint. A trip setpoint may be set more conservative than the trip setpoint specified in the TRM (Ref. 2) as necessary in response to unit conditions. In MODES 5 or 6, the three channels must be OPERABLE whenever the associated EDG is required to be OPERABLE to ensure that the automatic start of the EDG is available when needed. Loss of the LOP EDG Start Instrumentation Function could result in the delay of safety systems initiation when required. This could lead to unacceptable consequences during accidents. During the loss

RAI
3.3.5-01
R6

RAI
3.3.5-01
R6

RAI
3.3.5-01
R16

RAI
3.8.2-5
R16

(continued)

BASES

LCO
(continued) of offsite power the EDG powers the motor driven auxiliary feedwater pumps. Failure of these pumps to start would leave only one turbine driven pump, as well as an increased potential for a loss of decay heat removal through the secondary system.

APPLICABILITY The LOP EDG Start Instrumentation Functions are required in MODES 1, 2, 3, and 4 because ESF Functions are designed to provide protection in these MODES. Actuation in MODE 5 or 6 is required whenever the required EDG must be OPERABLE so that it can perform its function on a LOP or degraded power to the emergency bus.

RAI
3.8.2-5
R16

ACTIONS In the event a channel's trip setpoint is found nonconservative with respect to the Allowable Value, or the channel is found inoperable, then the function that channel provides must be declared inoperable and the LCO Condition entered for the particular protection function affected.

Because the required channels are specified on a per bus basis, the Condition may be entered separately for each bus as appropriate.

A Note has been added in the ACTIONS to clarify the application of Completion Time rules. The Conditions of this Specification may be entered independently for each Function listed in the LCO and for each emergency bus. The Completion Time(s) of the inoperable channel(s) of a Function will be tracked separately for each Function starting from the time the Condition was entered for that Function for the associated emergency bus.

A.1

Condition A applies to the LOP EDG start Function with one loss of voltage or degraded voltage channel per bus inoperable.

If one channel is inoperable, Required Action A.1 requires that channel to be placed in trip within 72 hours. This is justified by Reference 4. With a channel in trip, the LOP EDG start instrumentation channels are configured to provide a one-out-of-two logic to initiate a trip of the incoming offsite power.

(continued)

BASES

ACTIONS

A.1 (continued)

A Note is added to allow bypassing an inoperable channel for up to 12 hours for surveillance testing of other channels. This is justified by Reference 4. This allowance is made where bypassing the channel does not cause an actuation and where normally, excluding required testing, two other channels are monitoring that parameter.

The specified Completion Time and time allowed for bypassing one channel are reasonable considering the Function remains fully OPERABLE on every bus and the low probability of an event occurring during these intervals.

B.1

Condition B applies when more than one loss of voltage or more than one degraded voltage channel on an emergency bus is inoperable.

Required Action B.1 requires restoring all but one channel to OPERABLE status. The 1 hour Completion Time should allow ample time to repair most failures and takes into account the low probability of an event requiring an LOP start occurring during this interval.

C.1

Condition C applies to each of the LOP EDG start Functions when the Required Action and associated Completion Time for Condition A or B are not met.

In these circumstances the Conditions specified in LCO 3.8.1, "AC Sources-Operating," or LCO 3.8.2, "AC Sources-Shutdown," for the EDG made inoperable by failure of the LOP EDG start instrumentation are required to be entered immediately. The actions of those LCOs provide for adequate compensatory actions to assure unit safety.

RAI
3.8.2-5
R16

RAI
3.8.2-5
R16

SURVEILLANCE
REQUIREMENTS

SR 3.3.5.1

SR 3.3.5.1 is the performance of a TADOT for channels required by LCO 3.3.5.a and LCO 3.3.5.b. A successful test of the required contact(s) of a channel relay may be performed by the verification of the change of state of a single contact of the relay. This clarifies what is an

(continued)

RAI
3.3.5-01
R6

CTS

3.3 INSTRUMENTATION

3.74.3.2

③
3.3.5 Loss of Power (LOP) Diesel Generator (DG) Start Instrumentation ①

-CO3.3.2.1

LCO 3.3.5 ~~Three~~ channels per bus of the loss of voltage Function and ~~three~~ channels per bus of the degraded voltage Function shall be OPERABLE ② for the following 4160 AC buses

- a. The H and J Train buses; and
- b. One bus on the other UNIT for each required shared component.

APPLICABILITY: MODES 1, 2, 3, and 4, when associated DG is required to be OPERABLE by LCO 3.8.2. ①
③ "AC Sources - Shutdown"

②
⑨
RAI 3.8.2-5 R16

ACTIONS

NEW

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

RAI 3.3.5-1 R6

CONDITION	REQUIRED ACTION	COMPLETION TIME
Action 19 A. One or more Functions with one channel per bus inoperable.	A.1 -----NOTE----- The inoperable channel may be bypassed for up to ② hours for surveillance testing of other channels. ----- Place channel in trip.	③ ⑦ hours
NEW B. One or more Functions with two or more channels per bus inoperable.	B.1 Restore all but one channel to OPERABLE status.	1 hour

(continued)

JUSTIFICATION FOR DEVIATIONS
ITS 3.3.5, LOP EDG START INSTRUMENTATION

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 brackets are removed and the proper plant specific information/value is provided.
3. ITS Action A is modified to reflect the CTS Completion Time requirements. The Completion Times listed in the ISTS are modified because WCAP-10271 and WCAP-14333 have been implemented at North Anna and these documents support a longer Completion Time. This change is acceptable because the ITS requirements are consistent with the CTS requirements.
4. This bracketed requirement is deleted because it is not applicable to North Anna. The following requirements are renumbered, where applicable, to reflect this deletion.
5. Not used.
6. Not used.
7. ISTS SRs for the Loss of Power (LOP) Emergency Diesel Generator (EDG) start instrumentation does not include a requirement for ESF RESPONSE TIME testing of the start signals. ITS SR 3.3.5.3 is added to the ISTS SRs to require ESF RESPONSE TIME testing for the EDG start instrumentation. This change is acceptable because the CTS currently requires this testing to ensure the start circuitry responds consistently and within specific limits.
8. ISTS SR 3.3.5.3 lists the requirement to perform a CHANNEL CALIBRATION every 18 months on the degraded voltage Allowable Value with a single time delay. ITS SR 3.3.5.2 requires a CHANNEL CALIBRATION to be performed on the degraded voltage and the Allowable Value to be verified with two time delays. One time delay applies without a Safety Injection signal and one with the SI signal. This change is acceptable because the degraded voltage start of the EDG has two separate time delays for the EDG start requirement.
9. ISTS LCO 3.3.5 states, "[Three] channels per bus of the loss of voltage Function and [three] channels per bus of the degraded voltage Function shall be OPERABLE." ISTS SR 3.3.5.2 requires a TADOT to be performed and SR 3.3.5.3 states that a CHANNEL CALIBRATION shall be performed with ALLOWABLE VALUES listed. ITS LCO 3.3.5 requires three channels per bus of the loss of voltage Function and three channels per bus of the degraded voltage Function for the following 4160 VAC buses to be OPERABLE:
 - a. The H and J Train buses; and
 - b. One bus on the other unit for each required shared component. In addition, ITS SRs are modified to reflect the appropriate testing. SR 3.3.5.1 requires the TADOT for both LCO 3.3.5.a and LCO 3.3.5.b Functions. SR 3.3.5.2.a requires a CHANNEL CALIBRATION for both LCO 3.3.5.a and LCO 3.3.5.b Functions on loss of voltage. SR 3.3.5.2.b.1 requires a CHANNEL CALIBRATION for

RAI
382-5
R16

RAI
3.3.5.1
R6

①

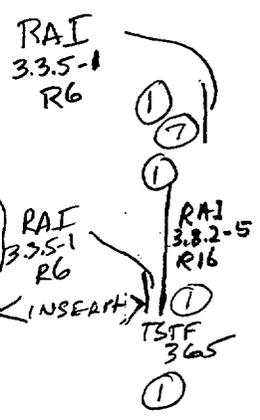
BASES

APPLICABLE SAFETY ANALYSES (continued)

⑤ The LOP/DG start instrumentation channels satisfy Criterion 3 of ~~The NRC Policy Statement~~.
⑤ DCFR 50.36 (c)(2)(L)

LCO

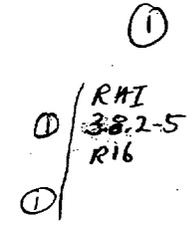
⑤ The LCO for LOP/DG start instrumentation requires that ~~three~~ channels per bus of both the loss of voltage and degraded voltage Functions shall be OPERABLE in MODES 1, 2, ⑤ 3, and 4 when the LOP/DG start instrumentation supports safety systems associated with the ESFAS. In MODES 5 and 6, the ~~three~~ channels must be OPERABLE whenever the associated DG is required to be OPERABLE to ensure that the automatic start of the DG is available when needed. Loss of the LOP/DG Start Instrumentation Function could result in the delay of safety systems initiation when required. This could lead to unacceptable consequences during accidents. During the loss of offsite power the DG powers the motor driven auxiliary feedwater pumps. Failure of these pumps to start would leave only one turbine driven pump, as well as an increased potential for a loss of decay heat removal through the secondary system.



APPLICABILITY

⑤ The LOP/DG Start Instrumentation Functions are required in MODES 1, 2, 3, and 4 because ESF Functions are designed to provide protection in these MODES. Actuation in MODE 5 or 6 is required whenever the required DG must be OPERABLE so that it can perform its function on an LOP or degraded power to the vital bus. ⑤

Emergency



ACTIONS

In the event a channel's ~~trip~~ setpoint is found nonconservative with respect to the Allowable Value, or the channel is found inoperable, then the function that channel provides must be declared inoperable and the LCO Condition entered for the particular protection function affected.

Because the required channels are specified on a per bus basis, the Condition may be entered separately for each bus as appropriate.

A Note has been added in the ACTIONS to clarify the application of Completion Time rules. The Conditions of

TSTF 365

(continued)

Rev. 16

ITS 3.3.5, LOP EDG START INSTRUMENTATION

INSERT

This is associated with the requirement of LCO 3.3.5.a for this unit's H and J buses. LCO 3.3.5.b specifies that for a required H and/or J bus on the other unit that is needed to support a required shared component for this unit, the LOP EDG start instrumentation for the required bus must be OPERABLE. The other unit's required H and/or J bus are required to be OPERABLE to support the SW, MCR/ESGR EVS, and Auxiliary Building central exhaust functions needed for this unit. These Functions share components, pumps or fans, which are electrically powered from both units.

A channel is OPERABLE with a trip setpoint value outside its calibration tolerance band provided the trip setpoint "as-found" value does not exceed its associated Allowable Value and provided the trip setpoint "as-left" value is adjusted to a value within the "as-left" calibration tolerance band of the trip setpoint. A trip setpoint may be set more conservative than the trip setpoint specified in the TRM (Ref. 2) as necessary in response to unit conditions.

RAI
3.8.2-5
R16

RAI
3.3.5-1
R6

RAI
3.3.5-1
R16

RAI
3.8.2-5
R16

(1)

BASES

ACTIONS
(continued)

C.1

(E) Condition C applies to each of the LOP/DG start Functions when the Required Action and associated Completion Time for Condition A or B are not met.

(1)

In these circumstances the Conditions specified in LCO 3.8.1, "AC Sources—Operating," or LCO 3.8.2, "AC Sources—Shutdown," for the DG made inoperable by failure of the LOP/DG start instrumentation are required to be entered immediately. The actions of those LCOs provide for adequate compensatory actions to assure unit safety.

(E)

RAI 3.8.2-5
R16
(1)

SURVEILLANCE
REQUIREMENTS

SR 3.3.5.1

Performance of the CHANNEL CHECK once every 12 hours ensures that a gross failure of instrumentation has not occurred. A CHANNEL CHECK is normally a comparison of the parameter indicated on one channel to a similar parameter on other channels. It is based on the assumption that instrument channels monitoring the same parameter should read approximately the same value. Significant deviations between the two instrument channels could be an indication of excessive instrument drift in one of the channels or of something even more serious. A CHANNEL CHECK will detect gross channel failure; thus, it is key to verifying that the instrumentation continues to operate properly between each CHANNEL CALIBRATION.

(5)

Agreement criteria are determined by the unit staff, based on a combination of the channel instrument uncertainties, including indication and readability. If a channel is outside the criteria it may be an indication that the sensor or the signal processing equipment has drifted outside its limit.

The Frequency is based on operating experience that demonstrates channel failure is rare. The CHANNEL CHECK supplements less formal, but more frequent, checks of channels during normal operational use of the displays associated with the LCO required channels.

(continued)

Rev. 16

A.1

TABLE 3.3-3 (Continued)

ENGINEERED SAFETY FEATURE ACTUATION SYSTEM INSTRUMENTATION

NORTH ANNA - UNIT 1

ITS

FUNCTIONAL UNIT	TOTAL NO. OF CHANNELS	CHANNELS TO TRIP	MINIMUM CHANNELS OPERABLE	APPLICABLE MODES	ACTION
7. LOSS OF POWER					
LCO 3.3.5 a. 4.16 Kv Emergency Bus Undervoltage (Loss of Voltage)	3/Bus	2/Bus	2/Bus	1, 2, 3, 4 ←	19* INSERT PROPOSED ACTION A A.1
LCO 3.3.5 b. 4.16 Kv Emergency Bus Undervoltage (Grid Degraded Voltage)	3/Bus	2/Bus	2/Bus	1, 2, 3, 4 ←	19* A.1

LA.5

L.1

RAI 3.3.5-3 R6

RAI 3.3.3 5 R16

When associated EOG is required to be OPERABLE by LCO 3.8.2, "AC Sources - Shutdown."

8. ENGINEERED SAFETY FEATURE ACTUATION SYSTEM INTERLOCKS

a. Pressurizer Pressure, P-11	3	2	2	1, 2, 3	22*
b. Low-Low T _{avg} , P-12	3	2	2	1, 2, 3	22*
c. Reactor Trip, P-4	2	1	2	1, 2, 3	21

M.5

see ITS 3.3.2

3/4 3-20a
page 2 of 6

Amendment No. 16, 221

Rev 16

ITS 3.3.5

A.1

TABLE 4.3-2 (Continued)
ENGINEERED SAFETY FEATURE ACTUATION SYSTEM INSTRUMENTATION
SURVEILLANCE REQUIREMENTS

NORTH ANNA - UNIT 1

ITS

FUNCTIONAL UNIT

CHANNEL CHECK CHANNEL CALIBRATION CHANNEL FUNCTIONAL TEST SLAVE RELAY TEST MODES IN WHICH SURVEILLANCE REQUIRED

7. LOSS OF POWER
4.16 KV Emergency Bus

SRS
3.3.5.1
3.3.5.2

- a. Loss of Voltage
- b. Degraded Voltage

N.A.	3.3.5.2 (M.4)	3.3.5.1 (M.4)	N.A.	1, 2, 3, 4 ←
N.A.	3.3.5.2 (M.4)	3.3.5.1 (M.4)	N.A.	1, 2, 3, 4 ←

RAI 3.3.5-1
RG
RAI 3.3.2-5
R16

8. ENGINEERED SAFETY FEATURE ACTUATION SYSTEM INTERLOCKS

- a. Pressurizer Pressure, P-11
- b. Low - Low T_{avg}, P-12
- c. Reactor Trip, P-4

N.A.	R	R	N.A.	1, 2, 3
N.A.	R	R	N.A.	1, 2, 3
N.A.	N.A.	R	N.A.	1, 2, 3

When associated EDL is required to be OPERABLE by LCO 3.8.2, "AC Sources - Shutdown"

M.5

< See ITS 3.3.2 >

3/4 3-33a
Page 4 of 6

New SR Note

INSERT proposed Note to SR 3.3.5.1

A.5 | R6

Rec'd

Amendment No. 221

ITS 3.3.5
03-09-00

A.1

TABLE 3.3-3 (Continued)

ENGINEERED SAFETY FEATURE ACTUATION SYSTEM INSTRUMENTATION

NORTH ANNA - UNIT 2

ITS

FUNCTIONAL UNIT

TOTAL NO. OF CHANNELS

CHANNELS TO TRIP

MINIMUM CHANNELS OPERABLE

APPLICABLE MODES

ACTION

7. LOSS OF POWER

LCO 3.3.5

a. 4.16 Kv Emergency Bus Undervoltage (Loss of Voltage)

3/Bus

2/Bus

2/Bus

1, 2, 3, 4

19*

INSERT PROPOSED ACTION A

RAI 3.3.5-3 RG

LCO 3.3.5b

b. 4.16 Kv Emergency Bus Under Voltage (Grid Degraded Voltage)

3/Bus

2/Bus

2/Bus

1, 2, 3, 4

19*

RAI 3.8.2-5 R16

When associated EDG's required to be OPERABLE by LCO 3.8.2, "AC Sources - shutdown."

M.5

8. ENGINEERED SAFETY FEATURE ACTUATION SYSTEM INTERLOCKS

a. Pressurizer Pressure, P-11

3

2

2

1, 2, 3

22*

b. Low-Low T_{avg}, P-12

3

2

2

1, 2, 3

22*

c. Reactor Trip, P-4

2

1

2

1, 2, 3

21

See ITS 3.3.2

Page 2 of 6

3/4 3-21

Rev. 1b

Amendment No. 202

03-09-00

ITS 3.3.5

A.1

TABLE 4.3-2 (CONTINUED)

ENGINEERED SAFETY FEATURE ACTUATION SYSTEM INSTRUMENTATION SURVEILLANCE REQUIREMENTS

NORTH ANNA - UNIT 2

ITS

FUNCTIONAL UNIT

CHANNEL CHECK CHANNEL CALIBRATION CHANNEL FUNCTIONAL TEST SLAVE RELAY TEST MODES IN WHICH SURVEILLANCE REQUIRED

7. LOSS OF POWER 4.16 KV Emergency Bus

SRs 3.3.5.1 3.3.5.2

a. Loss of Voltage b. Degraded Voltage

N.A.	3.3.5.2	3.3.5.1	N.A.	1, 2, 3, 4
N.A.	3.3.5.2	3.3.5.1	N.A.	1, 2, 3, 4

M.4

LA.3

RAI 3.3.5-1 R6 RAI 3.3.5 R16

When associated EDG is required to be OPERABLE by LCO 3.8.2, "AL Sources - Shutdown."

M.5

8. ENGINEERED SAFETY FEATURE ACTUATION SYSTEM INTERLOCKS

a. Pressurizer Pressure, P-11	N.A.	R	R	N.A.	1, 2, 3
b. Low-Low T _{avg} , P-12	N.A.	R	R	N.A.	1, 2, 3
c. Reactor Trip, P-4	N.A.	N.A.	R	N.A.	1, 2, 3

See ITS 3.3.2

page 4 of 6 3/4 3-36

NEW SR Note INSERT Proposed Note to SR 3.3.5.1

A.5 R6

Amendment No. 107, 202

Rev. 6

ITS 3.3.5 03-09-00

DISCUSSION OF CHANGES
ITS 3.3.5, LOP EDG START INSTRUMENTATION

- M.4 CTS Surveillance Requirements 4.3.2.1.1 and 4.3.2.1.2 require the periodic testing of Loss of Voltage and Degraded Voltage Functions for the Loss of Power on the 4160 kV emergency bus. ITS SRs 3.3.5.1, 3.3.5.2, and 3.3.5.3 require the testing of the LOP EDG start instruments for this unit and the other unit that supplies shared electrical power to shared components. These requirements are specified as LCO 3.3.5.a and LCO 3.3.5.b Functions. This changes the CTS by requiring the other unit loss of voltage and degraded voltage Functions to be tested for this unit if they support shared components.

RAI
3.3.5-1
R6

The purpose of this change is to ensure that if a shared component is electrically powered from the other unit, the LOP EDG start instrumentation of the other unit is required to be OPERABLE by this unit's Technical Specifications. This change is acceptable because shared components provide safety functions for this unit while being electrically powered from the other unit. For this unit to rely on components electrically powered from the other unit, this unit must require the OPERABILITY of the other unit LOP EDG start instrumentation to ensure the shared component(s) may fulfill the unit's safety functions. This change is more restrictive because the ITS provides additional requirements that are not specified in the CTS.

- M.5 CTS Table 3.3-3, Functional Unit 7, "LOSS OF POWER," and Table 4.3-2, Functional Unit 7, "LOSS OF POWER," state that the applicable MODES are 1, 2, 3, and 4. ITS 3.3.5 requires Loss of Power EDG Start Instrumentation to be OPERABLE in MODES 1, 2, 3, and 4 and when the associated EDG is required to be OPERABLE by LCO 3.8.2, "AC Sources - Shutdown." This changes the CTS by expanding the conditions under which the Loss of Power instrumentation must be OPERABLE.

RAI
3.8.2-5
R6

This change is acceptable because requiring the Loss of Power EDG start instrumentation to be OPERABLE when LCO 3.8.2 requires an EDG to be OPERABLE ensures that the automatic start of the EDG is available when needed. This change is designated as more restrictive because the ITS expands MODES in which equipment is required to be OPERABLE.

REMOVED DETAIL CHANGES

- LA.1 (Type 3 – Removing Procedural Details for Meeting TS Requirements and Related Reporting Problems) CTS 3.3.2.1 Action a requires that with an ESFAS instrumentation channel trip setpoint found less conservative than the value shown in the Allowable Values column of Table 3.3-4, the channel be declared inoperable and Action a be entered. ITS 3.3.5 LCO requires three channels per function to be OPERABLE and Action A requires an inoperable channel to be placed in trip within 72 hours. This changes the CTS by moving the discussion of the relationship between the Allowable Value and OPERABILITY from the Technical Specification to the Bases.

R6

North Anna ITS RAIs
ITS Section 3.3, "Instrumentation," Section 3.8, "Electrical Power Systems," and
Beyond Scope Issue MB 1433 and MB 1427

3.3.2 –1 ITS SR 3.3.2.5
STS SR 3.3.2.5
CTS Table 4.3 – 2
DOC N/A

RAI 3.3.2-1, CTS Table 4.3-2, Slave Relay Test Note (4) CTS Table 4.3-2, Note (4) is added to the STS Slave Relay testing (ITS SR 3.3.2.5) requirements. This note eliminates TS requirements to perform quarterly testing on ESFAS Slave Relays if testing could place the ESFAS instrumentation in a condition that would cause an inadvertent RPS or ESFAS actuation, adversely affect one ESF system or components in two or more ESF systems or create a reactivity, thermal or hydraulic transient.

Comment: The staff position is that NUREG-1431 requirements include all the Note 4 to SR 3.3.2.5 remedial allowances for delaying testing of slave relays by establishing appropriate remedial measures and allowed outage times for inoperable equipment (TS 3.3.2), allowances for surveillance test extensions (TS 3.0) and appropriate checks when multiple equipment inoperabilities exist (TS 5.5.15). Thus, the proposed allowance in the Note to SR 3.3.2.5 is not justified. Provide additional information to justify the proposed Note to ITS SR 3.3.2.5 is needed to maintain safety or reduce burden, or is needed due to a unique North Anna instrumentation design.

Response: The Company agrees with the Comment and provides additional information to justify the proposed Note. The Note is an allowance in the CTS requirements that reduces the regulatory burden and ensures unnecessary testing does not compromise nuclear safety.

The NRC, in the SER (TAC Numbers 73236 and 73237) for TS amendments 125 for Unit 1 and 109 for Unit 2 dated February 2, 1990, stated that the licensee has evaluated the frequency of testing and the criteria for on/off line testing. Relays have been tested during on-line quarterly and refueling frequencies. The refueling testing requirements existed previously. The requirements for the system functional testing have remained unchanged. Three criteria justify off-line only testing:

- 1.) A single failure in the Safeguards Test Cabinet circuitry would cause an inadvertent RPS or ESF actuation,
- 2.) The test will adversely affect two or more components in one ESF system or two or more ESF systems, and
- 3.) The test will create a transient (reactivity, thermal or hydraulic) condition on the RCS.

North Anna ITS RAIs
ITS Section 3.3, "Instrumentation," Section 3.8, "Electrical Power Systems," and
Beyond Scope Issue MB 1433 and MB 1427

A relay-by-relay basis for off-line testing was justified by describing the design function, equipment actuated, operational impact and safety significance of testing. Several of the descriptions of the safety significance of testing state that there is no safety significance if the test circuit performs properly. The described impact on safety assumes a worst case scenario of the safeguards test cabinet, a failure of the blocking circuit to actually block actuation of the final equipment.

The staff concludes that the relay and subsequent testing evaluations appear to be complete and that the assignment of the slave relays to the three criteria is adequately justified. The proposed change states that only slave relays which do not satisfy the three criteria will be functionally tested on-line. In this analysis the licensee notes that since construction, modifications have been made which added equipment that would be actuated during testing, therefore an adequate design for testing all of the slave relays on-line does not exist.

The analysis confirms that the testing will still include coil continuity tests of the slave relays on a quarterly basis and full testing at refueling. To date, there has not been a failure of a slave relay to perform its safety function. To determine a potential failure rate, the licensee used overall failure rates for slave and auxiliary relays and divided them by the number of ESF slave relays only. The staff agrees with the licensee's conclusion that this appears to be a conservative estimate of ESF slave relay failure rates.

The licensee concluded that:

- 1) The probability of inadvertent RPS or ESF actuation,
- 2) The length of time to perform the test which disables one channel, and
- 3) Performing tests with test equipment, which may be unreliable and abnormal operation modes present a greater risk to overall plant safety than not testing ESF slave relays on-line.

The reliability of the ESF slave relays has been shown to remain high. The staff agrees with the licensee's conclusion.

The staff has concluded that, based on the reasons described above, the TS changes which allow certain ESF slave relays to be exempt from quarterly testing are acceptable. Also, the revised TS definition of the ESF slave relay test is acceptable. Finally, the licensee should continue to improve the test equipment and consider design modifications, which would allow complete testing of all ESF slave relay coils and contacts without undue risk to plant safety.

The Company wishes to maintain the allowance provided by the Note in the CTS that has been converted to the Note in ITS SR 3.3.2.5.

North Anna ITS RAIs
ITS Section 3.3, "Instrumentation," Section 3.8, "Electrical Power Systems," and
Beyond Scope Issue MB 1433 and MB 1427

Additional Response:

In verbal comments, the Staff pointed out that Note 4 to CTS Table 4.3-2 was not added by amendments 125 (Unit 1) and 109 (Unit 2) and questioned whether the quoted material was relevant. In an amendment request dated July 12, 1989, the Company requested a license amendment to address testing of ESF slave relays. That request was approved in two separate amendments. Amendment 123 (Unit 1) and 107 (Unit 2) added Note 4 to CTS Table 4.3-2. That Note states that ESF slave relay testing will not be performed for slave relays which meet any of the three criteria described above. The Company also requested, and was granted, enforcement discretion from the testing in order to allow time to develop the necessary testing procedures and to determine any relays that cannot be tested on-line without excessive risk. Subsequently, the Company provided changes to the Technical Specifications and safety analyses which described those ESF slave relays which cannot be tested on-line without excessive risk. Those changes were approved in amendments 125 (Unit 1) and 109 (Unit 2). Therefore, amendments 125 (Unit 1) and 109 (Unit 2) are the appropriate basis for determining which ESF slave relays should be tested on-line and the information provided in the previous response is relevant to the question.

North Anna ITS RAIs
ITS Section 3.3, "Instrumentation," Section 3.8, "Electrical Power Systems," and
Beyond Scope Issue MB 1433 and MB 1427

3.3.2 –3 ITS Function 5 a. & b.
STS Function 5 a. & b.
CTS Table 3.3 – 3
DOC N/A

RAI 3.3.2-3, CTS Table 3.3-3, function 5.a & b, Turbine Trip and Feedwater Isolation CTS Applicable mode requirements are Modes 1, 2 and Mode 3 ###. Note ### states "Except when all MFIVs [main feedwater isolation valves], MFRVs [main feedwater regulation valves], and associated bypass valves are closed and de-activated or isolated by a closed manual valve." Note ### becomes ITS Table 3.3.2-1, Note (d). ITS functions 5.a and 5.b apply Note (d) to Mode 2. The CTS change documentation does not justify this change.

Comment: Provide a justification for the proposed addition of Note (e) to Mode 2.

Response: The Company agrees with the Comment. DOC A.17 has been constructed to address the CTS change.

Additional Response: Based on verbal comments from the NRC, the Company has revised the earlier response. DOC A.17 is eliminated and the change is described by a less restrictive change, DOC L.7.

DISCUSSION OF CHANGES
ITS 3.3.2, ESFAS

A.17 Not used.

RAZ
3.3.2-3
R6, R16

A.18 CTS Table 3.3-3 allows one channel of certain functional units to be bypassed for up to 4 hours to perform surveillance testing. A Note for ITS 3.3.2 Required Action C states, "One train may be bypassed for up to 4 hours for surveillance testing provided the other train is OPERABLE." This changes the CTS by specifically stating that surveillance testing can only be performed when the remaining train is OPERABLE.

RAZ
3.3.2-4
R6

The purpose of the ITS Note phrase, "provided the other train is OPERABLE," is to remind the SR performer that there are only two trains of Automatic Actuation Logic and Actuation Relays for SI, Containment Spray, and Containment Isolation. With one train inoperable, testing the other train would disable the safety function. This change is acceptable because it restates the CTS requirements in more clearly defined terms. The CTS requirements are maintained in ITS format. The change is designated as an administrative change because it does not result in technical change to the CTS requirements.

DISCUSSION OF CHANGES
ITS 3.3.2, ESFAS

- L.7 (Category 2 – Relaxation of Applicability) CTS Table 3.3-3 for Functional Units 5.a and 5.b, Turbine Trip and Feedwater Isolation on Steam Generator (SG) Water Level – High-High and Automatic Actuation Logic and Actuation Relays, requires for each an applicability of MODES 1, 2, and 3^{###}. Notation ^{###} states, “Except when all MFIVs, MFRVs, and associated bypass valves are closed and de-activated or isolated by a closed manual valve.” ITS Table 3.3.2 – 1 for Function 5, Turbine Trip and Feedwater Isolation, requires that Functions 5.a and 5.b, Automatic Actuation Logic and Actuation Relays and SG Water Level – High High, be OPERABLE in MODES 1, 2^(e), and 3^(e). Note ^(e) states, “Except when all Main Feedwater pump discharge valves or all MFIVs, MFRVs, and associated bypass valves are closed and de-activated or isolated by a closed manual valve.” The Main Feedwater pump discharge valves addition is addressed by DOC L.6. This changes the CTS by stating the Functions 5.a and 5.b are not applicable in MODE 2 when appropriate valves are closed and provide the required safety function.

RAT
3.3.2-3
R16

The purpose of the CTS and ITS Notes are to provide an exception to the instrumentation requirements for the Feedwater Isolation function. This change is acceptable because the requirements continue to ensure that the structures, systems, and components are maintained in the MODES and other specified conditions assumed in the safety analyses and licensing basis. In MODE 2 with all MFIVs, MFRVs, and associated bypass valves closed and de-activated, or with feedwater flow isolated by a manual valve, Turbine Trip and Feedwater Isolation is not required as all feedwater is already isolated. This change is designated as less restrictive because the LCO requirements are applicable in fewer operating conditions than in the CTS.

North Anna ITS RAIs
ITS Section 3.3, "Instrumentation," Section 3.8, "Electrical Power Systems," and
Beyond Scope Issue MB 1433 and MB 1427

3.3.2 –6 ITS Function 8.c
STS Function 8.c
CTS Table 4.3 – 2
DOC A.3

RAI 3.3.2-6: CTS Table 4.3-2, function 8.c, Reactor Trip (P-4) includes a requirement to perform a refueling frequency Channel Functional Test. This requirement is proposed to perform a Trip Actuating Device Operational Test “once per reactor trip breaker cycle” in the ITS. The proposed ITS test and test frequency for P-4 are a change to the CTS that is not evaluated.

Comment: Provide a justification for the proposed CTS changes.

Response: The Company agrees with the Comment. DOC M.8 has been constructed that justifies the change to the CTS requirement.

Additional Response: Based on verbal comments from the NRC, the Company has modified DOC M.8 to provide additional information. DOC M.8 now states that the ITS TADOT, as required by SR 3.3.2.10, requires equivalent testing to the CTS CHANNEL FUNCTIONAL TEST. In addition, the DOC is clarified to state that the change in Frequency from once per refueling interval to each time the interlock is required to perform its required function will result in more frequent testing.

DISCUSSION OF CHANGES
ITS 3.3.2, ESFAS

“Verification of relay setpoints not required.” This changes the CTS by requiring the TADOT to be performed every 92 days.

This change is acceptable because the verification that the signal from the Loss of Offsite Power will start the AFW pumps should be periodically tested to ensure OPERABILITY. A testing frequency of 92 days is adequate based on industry operating experience, considering the instrument reliability and operating history. This change is designated as more restrictive because the testing requirements have been increased from the CTS requirements.

- M.7 CTS requirements in Table 3.3-3 list the Allowable Values for ESFAS Functions and Interlocks. The Allowable Values for the following function are stated as: Safety Injection (SI) on Containment Pressure High ≤ 18.5 psia, SI on Pressurizer Pressure Low-Low ≥ 1755 psig, SI on Steam Flow in Two Steam Lines Coincident with T_{ave} Low-Low or Steam Line Pressure Low \leq a ΔP corresponding to 44% of full steam flow increasing to 111.5% at full load, Containment Spray on Containment Pressure High-High ≤ 29.25 psia, Steam Line Isolation on Containment Pressure Intermediate High-High ≤ 19.3 psia, and Steam Line Isolation on Steam Flow in Two Steam Lines Coincident with T_{ave} Low-Low or Steam Line Pressure Low \leq a ΔP corresponding to 44% of full steam flow increasing to 111.5% at full load. ITS requirements in Table 3.3.2-1 lists the Allowable Values for the ESFAS Functions and Interlock as the following: SI on Containment Pressure High ≤ 17.7 psia, SI on Pressurizer Pressure Low-Low ≥ 1770 psig, SI on Steam Flow in Two Steam Lines Coincident with T_{ave} Low-Low or Steam Line Pressure Low \leq a ΔP corresponding to 44% of full steam flow increasing to 111% at full load, Containment Spray on Containment Pressure High-High ≤ 28.45 psia, Steam Line Isolation on Containment Pressure Intermediate High-High ≤ 18.5 psia, and Steam Line Isolation on Steam Flow in Two Steam Lines Coincident with T_{ave} Low-Low or Steam Line Pressure Low \leq a ΔP corresponding to 42 % of full steam flow increasing to 111% at full load. This changes the CTS Allowable Values for these functions to more restrictive values in the ITS Allowable Values.

The purpose of these changes for the listed functions are to align the ITS Allowable Values by using a consistent setpoint methodology. These changes are acceptable because the ITS Allowable Values are consistent with the methodology used for all ESFAS Functions. These changes are designated as more restrictive because the ITS Allowable Values are more restrictive than the CTS Allowable Values.

- M.8 CTS Table 4.3 – 2 for Functional Unit 8.c, Engineered Safety Feature Actuation System Interlock Reactor Trip (P – 4), requires the performance of a CHANNEL FUNCTIONAL TEST every refueling (R). ITS Function 8.a, ESFAS Interlock, Reactor Trip (P – 4), requires the performance of SR 3.3.2.10. This SR requires the performance of a TADOT at a frequency of once per reactor trip breaker (RTB) cycle. The SR is modified by a Note that states, “Verification of setpoint not required.” The ITS TADOT and CTS CHANNEL FUNCTIONAL TEST requirements are

R6

R6

R6

RAI
3.3.6-6
R6,
R16

DISCUSSION OF CHANGES
ITS 3.3.2, ESFAS

equivalent. This changes the CTS by increasing the testing Frequency from once per refueling cycle to each time the reactor trip breaker is cycled.

The purpose of the ITS SR 3.3.2.10 is to ensure the verification of the P-4 interlock on each cycle of the RTBs. The CTS CHANNEL FUNCTIONAL TEST is equivalent to the TADOT as stated in SR 3.3.2.10. This change is acceptable because verifying the OPERABILITY of the P-4 interlock more frequently the proper operation of the Reactor Trip System. Each time the interlock is required to perform its required function, it will be tested. This change is designated as more restrictive because the testing frequency has been increased from the CTS requirements.

RAI
3.3.2-6
R6,
R16

REMOVED DETAIL CHANGES

LA.1 (Type 3 – Removing Procedural Details for Meeting TS Requirements and Related Reporting) CTS LCO 3.3.2.1 and Action a contain information about the ESFAS channels and interlocks setpoint requirements. The LCO states the setpoint will be set consistent with the Trip Setpoints listed in Table 3.3-4. Action a requires the setpoint to be set more conservatively than the value listed in the Allowable Value column of the same table in order for the function to be considered OPERABLE. ITS 3.3.2 does not contain this information. DOC LA.8 describes the relocation of the setpoint values to the Technical Requirements Manual (TRM). This changes the CTS by moving the information from the Specification to the TRM.

RAI
3.3.2-4
R6,
R16

The removal of these details for performing actions from the Technical Specifications is acceptable because this type of information is not necessary to be included in the Technical Specifications to provide adequate protection of public health and safety. The Allowable Value is the value assumed in the safety analyses. The trip setpoint is used to ensure that the Allowable Value is met, but is not used in the safety analyses. Therefore, relocating the trip setpoint to the TRM and retaining the Allowable Value in the Technical Specifications is acceptable. The ITS still retains the LCO and Actions requirements, and Allowable Values to ensure the functions remain OPERABLE. Also, this change is acceptable because the removed information will be adequately controlled in the TRM. 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.

LA.2 (Type 1 – Removing Details of System Design and System Description, Including Design Limits) CTS Table 4.3-2 specifies a requirement to perform a CHANNEL FUNCTIONAL TEST for the automatic actuation logic on various ESF functions on a monthly basis. The frequency (M) is modified by notation (2) which states, "Each train or logic channel shall be functionally tested at least every other 31 days up to and including input coil continuity testing to the ESF slave relays." ITS SRs 3.3.2.2 and 3.3.2.3 require the performance of the ACTUATION LOGIC TEST and the

North Anna ITS RAIs
ITS Section 3.3, "Instrumentation," Section 3.8, "Electrical Power Systems," and
Beyond Scope Issue MB 1433 and MB 1427

3.3.2-11 ITS N/A
STS N/A
CTS SR 4.3.1.2
DOC A.16

RAI 3.3.2-11: Comment: Discuss changes to CTS requirements for not requiring Interlock functions to be response time tested as required by CTS 4.3.1.2.

Response: The Company agrees with the Comment. DOC A.16 has been modified to address the administrative change to the CTS.

Additional Response: Based on verbal comments from the NRC, the Company has modified DOC A.16 to clarify that the DOC does not describe the deletion of any CTS requirements.

DISCUSSION OF CHANGES
ITS 3.3.2, ESFAS

Isolation Phase B manual requirements and referring the function to the Containment Spray Manual Initiation for the specific requirements.

This change is acceptable because there are no separate switches to initiate the Phase B Containment Isolation function. The Containment Spray manual switches are the only switches that initiate the Phase B Containment Isolation signal. The change is designated as administrative change because it does not result in technical change to the CTS requirements.

- A.15 CTS requirements in Table 3.3-3 for ESFAS Function 3.b.3, Containment Isolation Phase B Containment Pressure High-High state that 4 channels are required. The function is required to be OPERABLE in MODES 1,2,3, and 4 with Action 16* to be entered for an inoperable channel. CTS requirements in Table 3.3-3 for ESFAS Function 2.c, Containment Spray on Containment Pressure High-High state that 4 channels are required. The function is required to be OPERABLE in MODES 1,2,3, and 4 with Action 16* to be entered for an inoperable channel. ITS in Table 3.3.2-1 Function 3.b.3, Containment Isolation Phase B on Containment Pressure High High, states, "Refer to Function 2.c (Containment Spray – Containment Pressure High High) for all functions and requirements." This change the CTS by deleting the specific requirements for the Containment Isolation Phase B on Containment Pressure High High requirements and referring the function to the Containment Spray Containment Pressure High High for the specific requirements.

This change is acceptable because there are no separate signal from Containment Pressure channels to initiate the Phase B Containment Isolation function. The Containment Spray Containment Pressure High High signal is the same signal that initiates the Phase B Containment Isolation signal. The change is designated as administrative change because it does not result in technical change to the CTS requirements.

- A.16 CTS Surveillance Requirement 4.3.2.1.2 states that the Engineered Safety Feature Response Time of each ESFAS function shall be demonstrated to be within the limit at least once per 18 months. Under the CTS, it is recognized that a Response Time Test is not required for the manual initiation and automatic actuation logic portions of the ESFAS functions. These portions of the function are tested by other Surveillances. ITS 3.3.2 replaces the general statement in CTS 4.3.2.1.2 with specific testing requirements for each function. For those portions of the ESFAS functions that a Response Time Test is appropriate, ITS SR 3.3.2.9 is required. This changes the CTS by explicitly recognizing those portions of ESFAS functions for which a Response Time Test is not required.

This change is acceptable because it explicitly states the portions of ESFAS functions for which a Response Time Test is required. The ITS and CTS Response Time Testing requirements are the same. The change is designated as administrative because it does not result in technical change to the CTS requirements.

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3.3.2-11
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R16

North Anna ITS RAIs
ITS Section 3.3, "Instrumentation," Section 3.8, "Electrical Power Systems," and
Beyond Scope Issue MB 1433 and MB 1427

3.3.2-14 ITS N/A

STS N/A

CTS SR 4.3.1.2

DOC LA.1

RAI 3.3.2-14: Comment: The discussion above states in the second paragraph that the proposed relocations are related to system design. Explain how the setpoint requirements items moved out of TS are related to system design.

Response: The Company agrees with the Comment. DOC LA.1 has been modified and classifies the changes as Type 3 – Removing Procedural Details for Meeting TS Requirements.

Additional Response: Based on verbal comments from the NRC, the Company has modified DOC LA.1. The revised DOC justifies the relocation of the LCO and action references to trip setpoints to the Technical Requirements Manual (TRM) instead of the Bases. This change is consistent with DOC LA.8, which justifies the relocation of the trip setpoints to the TRM.

DISCUSSION OF CHANGES
ITS 3.3.2, ESFAS

equivalent. This changes the CTS by increasing the testing Frequency from once per refueling cycle to each time the reactor trip breaker is cycled.

The purpose of the ITS SR 3.3.2.10 is to ensure the verification of the P-4 interlock on each cycle of the RTBs. The CTS CHANNEL FUNCTIONAL TEST is equivalent to the TADOT as stated in SR 3.3.2.10. This change is acceptable because verifying the OPERABILITY of the P-4 interlock more frequently the proper operation of the Reactor Trip System. Each time the interlock is required to perform its required function, it will be tested. This change is designated as more restrictive because the testing frequency has been increased from the CTS requirements.

RAI
3.3.2-6
R6,
R16

REMOVED DETAIL CHANGES

LA.1 (Type 3 – Removing Procedural Details for Meeting TS Requirements and Related Reporting) CTS LCO 3.3.2.1 and Action a contain information about the ESFAS channels and interlocks setpoint requirements. The LCO states the setpoint will be set consistent with the Trip Setpoints listed in Table 3.3-4. Action a requires the setpoint to be set more conservatively than the value listed in the Allowable Value column of the same table in order for the function to be considered OPERABLE. ITS 3.3.2 does not contain this information. DOC LA.8 describes the relocation of the setpoint values to the Technical Requirements Manual (TRM). This changes the CTS by moving the information from the Specification to the TRM.

RAI
3.3.2-4
R6,
R16

The removal of these details for performing actions from the Technical Specifications is acceptable because this type of information is not necessary to be included in the Technical Specifications to provide adequate protection of public health and safety. The Allowable Value is the value assumed in the safety analyses. The trip setpoint is used to ensure that the Allowable Value is met, but is not used in the safety analyses. Therefore, relocating the trip setpoint to the TRM and retaining the Allowable Value in the Technical Specifications is acceptable. The ITS still retains the LCO and Actions requirements, and Allowable Values to ensure the functions remain OPERABLE. Also, this change is acceptable because the removed information will be adequately controlled in the TRM. 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.

LA.2 (Type 1 – Removing Details of System Design and System Description, Including Design Limits) CTS Table 4.3-2 specifies a requirement to perform a CHANNEL FUNCTIONAL TEST for the automatic actuation logic on various ESF functions on a monthly basis. The frequency (M) is modified by notation (2) which states, "Each train or logic channel shall be functionally tested at least every other 31 days up to and including input coil continuity testing to the ESF slave relays." ITS SRs 3.3.2.2 and 3.3.2.3 require the performance of the ACTUATION LOGIC TEST and the

North Anna ITS RAIs
ITS Section 3.3, "Instrumentation," Section 3.8, "Electrical Power Systems," and
Beyond Scope Issue MB 1433 and MB 1427

3.3.3-1 ITS N/A
STS N/A
CTS 3.6.4.1
DOC N/A

RAI 3.3.3-1; No DOC reference CTS 3.6.4.1, Combustible Gas Control and CTS 3.3.3.6, Accident Monitoring Instrumentation propose inserting ITS Action B.

Comment: Provide a discussion of change evaluation for the proposed CTS changes.

Response: The Company agrees with the Comment. Less restrictive change DOC L.1 does address the ITS Action B requirements to the CTS, but it has been modified to clarify this issue.

Additional Response: Based on verbal comments from the NRC, the Company has modified DOC L.1 to provide additional information. The revised DOC describes the purpose of the report required by the ITS.

DISCUSSION OF CHANGES
ITS 3.3.3, PAM INSTRUMENTATION

LESS RESTRICTIVE CHANGES

- L.1 (Category 3 – Relaxation of Completion Time) CTS 3.3.3.6 Action a requires the restoration of PAM instrumentation channels within seven days whenever one required channel is inoperable or the unit to be shutdown within the next 12 hours. CTS 3.6.4.1 Action a requires the restoration of an inoperable hydrogen analyzer within thirty days with one analyzer inoperable. ITS 3.3.3 Conditions A and B require the restoration of post accident instrumentation channels within thirty days or the initiation of a special report. This changes the CTS by deleting the requirements for the unit to be in HOT SHUTDOWN within the next 12 hours with one inoperable channel for a Function that has two required channels, allowing an additional restoration time, and instead requiring a report to be made in accordance with Specification 5.6.6.

RAI
3.3.3-1
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RAI
3.3.3-1
R16

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 of required features, the capacity and capability of remaining features, a reasonable time for repairs or replacement of required features, and the low probability of a DBA occurring during the allowed Completion Time. The allowance to extend the Completion Time from 7 to 30 days is acceptable because of the instrumentation redundancy provided by other functions, which monitor similar parameters. The deletion of requiring the unit to be placed in HOT SHUTDOWN is acceptable because a required PAM channel for a function continues to be OPERABLE and provides the required information. The addition of a report is acceptable because it advises the NRC of the cause of the inoperability and the plans and schedule for restoring the instrumentation channel to OPERABLE status. 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.

RAI
3.3.3-1
RL
RAI
3.3.3-1
R16

- L.2 (Category 3 – Relaxation of Completion Time) CTS 3.3.3.6 Action b requires the restoration of inoperable PAM instrumentation channels within forty-eight hours whenever both required channels for a Function are inoperable. CTS 3.6.4.1 Action b. allows 7 days to restore one hydrogen analyzer to OPERABLE status when both are inoperable. ITS 3.3.3 Condition C requires the restoration of inoperable PAM instrumentation channels within seven days. This changes the CTS by allowing an additional five days for restoration of an inoperable instrumentation channel for a Function that has two inoperable channels.

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 of required features, the capacity and capability of remaining features, a reasonable time for repairs or replacement of required features, and the low probability of a DBA occurring during the allowed Completion Time. This change is acceptable based on the low probability of an event requiring an inoperable PAM instrument during the interval and the alternative means available for the operator to

North Anna ITS RAIs
ITS Section 3.3, "Instrumentation," Section 3.8, "Electrical Power Systems," and
Beyond Scope Issue MB 1433 and MB 1427

3.3.3-4 ITS N/A
STS N/A
CTS N/A
DOC LA.2

RAI 3.3.3-4; DOC LA.2 The removal of detail changes described as Type 3 – Removing Procedural Details for Meeting TS Requirements and Related Reporting Problems, states that the details removed are related to details for performing Surveillances from the Technical Specifications which are not necessary to be included in TS to provide adequate protection of public health and safety.

Comment: Revise DOC LA.2 to provide additional discussion explaining why sample gas requirements are not needed to establish TS operability requirements.

Response: The Company agrees with the Comment. DOC LA.2 has been revised and provides additional discussion.

Additional Response: Based on verbal comments from the NRC, the Company has modified DOC LA.2. The revised DOC describes the controls contained in the Bases Control Program and how those controls are applied to the relocated testing information.

DISCUSSION OF CHANGES
ITS 3.3.3, PAM INSTRUMENTATION

REMOVED DETAIL CHANGES

LA.1 *(Type 1 – Removing Details of System Design and System Description, Including Design Limits)* CTS LCO 3.6.4.1 states two independent containment hydrogen analyzers (shared with the other unit) shall be OPERABLE. Notes to CTS 3.6.4.1 Actions and Surveillance Requirement 4.6 4.1 requires the OPERABILITY of the hydrogen analyzers to include the OPERABILITY of the associated heat tracing system. ITS 3.3.3 PAM Instrumentation requires two channels of hydrogen analyzers to be OPERABLE. This change moves CTS information regarding the hydrogen analyzer heat tracing system from the Specifications to the Technical Requirements Manual.

The removal of these details, which are related to system design, from the Technical Specifications is acceptable because this type of information is not necessary to be included in the Technical Specifications to provide adequate protection of public health and safety. The ITS still retains the requirement for the Hydrogen Analyzers to be OPERABLE in the required MODES. The OPERABILITY of the Hydrogen Analyzers would be evaluated for any inoperable support system, including the heat trace system. Support systems that are required for the OPERABILITY of safety functions are addressed under the defined term "OPERABLE – OPERABILITY." Generic Letter 91-18 would also require an evaluation to determine the OPERABILITY of a safety function for an inoperable support system. Also, this change is acceptable because the removal of information 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 information relating to system design is being removed from the Technical Specifications.

RAI
3.33-3
R6

LA.2 *(Type 3 – Removing Procedural Details for Meeting TS Requirements)* CTS SR 4.6.4.1 states each hydrogen analyzer shall be demonstrated OPERABLE by performing a CHANNEL CALIBRATION using a sample gas containing a specified gas concentration for hydrogen mixed with nitrogen. ITS SR 3.3.3.2 requires the hydrogen analyzers have a CHANNEL CALIBRATION. This change moves the CTS sample gas requirements to the ITS Bases.

The removal of these details for performing Surveillances from the Technical Specifications is acceptable because this type of information is not necessary to be included in the Technical Specifications to provide adequate protection of public health and safety. The ITS still retains the requirement for the Hydrogen Analyzers to be OPERABLE in the required MODES. The details of composition of the calibrating gas used to perform the CHANNEL CALIBRATION is not required to be in the specification, because regardless of the gas composition, the hydrogen analyzer is required to be OPERABLE (i.e., capable of performing its safety function). 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

RAI
3.33-4
R6, R16

DISCUSSION OF CHANGES
ITS 3.3.3, PAM INSTRUMENTATION

Specification Bases Control Program in Chapter 5. The Bases Control Program requires prior NRC approval of any change which requires a change to the Technical Specifications or which requires NRC approval pursuant to 10 CFR 50.59. This will ensure that any change made to the test gas composition in the future will obtain appropriate review and approval. 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
3.3.3-4
R6
R16

- LA.3 *(Type 1 – Removing Details of System Design and System Description, Including Design Limits)* CTS LCO 3.6.4.1 states two independent containment hydrogen analyzers (shared with the other unit) shall be OPERABLE. ITS 3.3.3 PAM Instrumentation requires two channels of hydrogen analyzers to be OPERABLE. This change moves CTS information regarding the hydrogen analyzer being shared between units from the Specifications to the ITS Bases.

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

R6

- LA.4 *(Type 1 – Removing Details of System Design and System Description, Including Design Limits)* CTS Table 3.3-6 Radiation Monitoring Instrumentation lists the alarm/trip setpoint and measurement range for the High Range Area Monitors. ITS 3.3.3 PAM Instrumentation requires two channels of High Range Area monitors but does not state the measuring range or alarm/trip setpoint. This change moves the measurement range and alarm/trip setpoint from the Specifications to the Technical Requirements Manual (TRM).

The removal of these details, which are related to system design, from the Technical Specifications is acceptable because this type of information is not necessary to be included in the Technical Specifications to provide adequate protection of public health and safety. The ITS still retains the requirement for 2 channels of the High Range Containment High Range Area monitor to be OPERABLE in MODES 1, 2, and 3. Also, this change is acceptable because the removed information 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 information relating to system design is being removed from the Technical Specifications.

RAI
3.3.3-6
R6

North Anna ITS RAIs
ITS Section 3.3, "Instrumentation," Section 3.8, "Electrical Power Systems," and
Beyond Scope Issue MB 1433 and MB 1427

3.3.3-5 ITS N/A
STS N/A
CTS N/A
DOC L.3

RAI 3.3.3-5; DOC L.3 The less restrictive TS change described as Category 5 – Deletion of Surveillance Requirement, allows an additional 92 days between calibrations of hydrogen analyzer channels.

Comment: Revise DOC L.3 to provide additional justification for the surveillance test interval extension. Use operational data to support conclusions that testing at the less frequent interval will not affect channel availability.

Response: The Company agrees with the Comment. DOC L.3 classification has been revised to Category 7 Relaxation Of Surveillance Frequency to address the elimination of STAGGERED TEST BASIS requirement. Deleting the 6-month frequency and retaining the CTS SR frequency of 92 days for the CHANNEL CALIBRATION has modified DOC L.3, the Specification and Bases.

Additional Response: Based on verbal comments from the NRC, the Company has modified DOC L.3. The revised DOC provides a clearer explanation of the change.

DISCUSSION OF CHANGES
ITS 3.3.3, PAM INSTRUMENTATION

obtain the required information. This change is designated as less restrictive because additional time is allowed to restore parameters to within the LCO limits than was allowed in the CTS.

- L.3 *(Category 7 – Relaxation Of Surveillance Frequency)* CTS SR 4.6.4.1 states, in part, “Each hydrogen analyzer shall be demonstrated OPERABLE at least once per 92 days on a STAGGERED TEST BASIS by performing a CHANNEL CALIBRATION.” Under the CTS definition of STAGGERED TEST BASIS, both hydrogen analyzer channels must be tested every 92 days in equal subintervals. ITS SR 3.3.3.2 states a CHANNEL CALIBRATION must be performed at a frequency of every 92 days. This changes the CTS for the hydrogen analyzer by eliminating the STAGGERED TEST BASIS (STB) requirement that the hydrogen analyzers be tested in equal subintervals of the Frequency.

RAI
3.3.3.5
R6,
R16

The purpose of ITS SR 3.3.3.2 is to ensure the hydrogen analyzers are tested on an acceptable frequency. This change is acceptable because the new Surveillance Frequency has been evaluated to ensure that it provides an acceptable level of equipment reliability. The hydrogen analyzers will continue to be tested every 92 days. However, under the ITS, the testing of each channel will not have to be performed at equal subintervals. The specification of a STAGGERED TEST BASIS is not necessary as there are adequate administrative controls to ensure that both hydrogen analyzers are not removed from service for testing simultaneously. The change does not affect the hydrogen analyzer methods of testing or the capability of the instruments to perform their safety function, but simply eliminates the STB requirement. The Hydrogen Analyzers will receive a CHANNEL CALIBRATION on each channel every 92 days. This change is designated as less restrictive because a restriction on the Surveillance Frequency has been removed from the CTS.

- L.4 Not used.

R2

- L.5 *(Category 1 – Relaxation of LCO Requirements)* CTS 3.3.3.6 in Table 3.3-10 requires the following functions to be OPERABLE: 8) Refueling Water Storage Tank, 9) Boric Acid Tank Solution Level, 10) Auxiliary Feedwater Flow Rate, 12) PORV Position Indicator, 13) PORV Block Valve Position Indication, 14) Safety Valve Position Indication, and 16) Containment Water Level. ITS 3.3.3 does not require these functions to be OPERABLE. This changes the CTS by deleting these functions from the post accident monitoring functions.

This change is acceptable because the LCO requirements continue to ensure that the process variables are maintained consistent with the safety analyses and licensing basis. The ITS LCO requirements ensure that the process variables are maintained consistent with the safety analyses and Regulatory Guide 1.97. An evaluation has been performed under the required guidelines which found that these variables are not required to be included in this table. This change is designated as less restrictive

Attachment

**Proposed Improved Technical Specifications
Change Not Associated with RAIs**

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

North Anna Power Station Units 1 and 2

Changes to ITS Submittal Not Associated With RAIs
ITS Section 3.3, "Instrumentation" and Section 3.8, "Electrical Power Systems"
Beyond Scope Issue MB 1433 and MB 1427

1. The Reference section of the Bases for Specifications 3.3.2 references RTS/ESFAS Setpoint Methodology Study, Technical Reports EE-0101 and EE-0116. The Reference section of the Bases for Specifications 3.3.5 references RTS/ESFAS Setpoint Methodology Study, Technical Report EE-0101. In both cases, the References have been corrected to only list RTS/ESFAS Setpoint Methodology Study, Technical Report EE-0116. This is consistent with a change made to Specification 3.3.1 in Supplement 12.

BASES

SURVEILLANCE
REQUIREMENTS
(continued)

SR 3.3.2.10

SR 3.3.2.10 is the performance of a TADOT as described in SR 3.3.2.7, except that it is performed for the P-4 Reactor Trip Interlock, and the Frequency is once per RTB train cycle (RTB and associated bypass breaker must be opened at the same time). A successful test of the required contact(s) of a channel relay may be performed by the verification of the change of state of a single contact of the relay. This clarifies what is an acceptable TADOT of a relay. This is acceptable because all of the other required contacts of the relay are verified by other Technical Specifications and non-Technical Specifications tests at least one per refueling interval with applicable extensions.

This Frequency is based on operating experience demonstrating that undetected failure of the P-4 interlock sometimes occurs when the RTB is cycled.

The SR is modified by a Note that excludes verification of setpoints during the TADOT. The Function tested has no associated setpoint.

REFERENCES

1. UFSAR, Chapter 6.
2. UFSAR, Chapter 7.
3. UFSAR, Chapter 15.
4. IEEE-279-1971.
5. 10 CFR 50.49.
6. RTS/ESFAS Setpoint Methodology Study (Technical Report EE-0116).
7. NUREG-1218, April 1988.
8. WCAP-10271-P-A, Supplement 2, Rev. 1, June 1990 and WCAP-14333-P-A, Rev. 1, October 1998.
9. Technical Requirements Manual.

R6, R16

BASES

REFERENCES

1. UFSAR, Section 8.3.
2. Technical Requirements Manual.
3. RTS/ESFAS Setpoint Methodology Study (Technical Report EE-0116).
4. Plant-specific risk assessment consistent with WCAP 14333-P-A.
5. UFSAR, Chapter 15.

R16

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3.3.5-06
R6

RA1
3.3.5-05
R6

BASES

SURVEILLANCE
REQUIREMENTS

SR 3.3.2.10 (continued)

Trip Interlock, and the Frequency is once per RTB cycle. This Frequency is based on operating experience demonstrating that undetected failure of the P-4 interlock sometimes occurs when the RTB is cycled.

The SR is modified by a Note that excludes verification of setpoints during the TADOT. The Function tested has no associated setpoint.

train < INSERT 1 > 4

< INSERT 2 > TSTF 205

REFERENCES

1. FSAR, Chapter 166.
2. FSAR, Chapter 170.
3. FSAR, Chapter 150.
4. IEEE-279-1971.
5. 10 CFR 50.49.
6. RTS/ESFAS Setpoint Methodology Study. (Technical Report EE0116)
7. NUREG-1218, April 1988.
8. WCAP-10271-P-A, Supplement 2, Rev. 1, June 1990. and WCAP-14333-P-A, Rev. 1, October 1998
9. Technical Requirements Manual, Section 15, "Response Times."

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3.3.5-1
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BASES

SURVEILLANCE
REQUIREMENTS
(continued)

SR 3.3.5.1

SR 3.3.5.1 is the performance of a TADOT. This test is performed every (3) days. The test checks trip devices that provide actuation signals directly, bypassing the analog process control equipment. For these tests, the relay trip setpoints are verified and adjusted as necessary. The Frequency is based on the known reliability of the relays and controls and the multichannel redundancy available, and has been shown to be acceptable through operating experience.

for channels required by LCO 3.3.5.2 and LCO 3.3.5.6

(5)
(1) <INSERT 1>
TSTF 205 (5)
(7)

SR 3.3.5.2

SR 3.3.5.2 is the performance of a CHANNEL CALIBRATION. The setpoints, as well as the response to a loss of voltage and a degraded voltage test, shall include a single point verification that the trip occurs within the required time delay, as shown in Reference 1.

for channels required by LCO 3.3.5.4 and LCO 3.3.5.6

(5) RB TSTF 365
(3) RAI 3.3.5-7 RB
(5) <INSERT 2>
RAI 3.3.5-1 RB

A CHANNEL CALIBRATION is performed every (180) months, or approximately at every refueling. CHANNEL CALIBRATION is a complete check of the instrument loop, including the sensor. The test verifies that the channel responds to a measured parameter within the necessary range and accuracy.

RAI 3.3.5-7 RB
RAI 3.3.5-1 RB
(7) <INSERT 3>

The Frequency of (180) months is based on operating experience and consistency with the typical industry refueling cycle and is justified by the assumption of an (180) month calibration interval in the determination of the magnitude of equipment drift in the setpoint analysis.

(3)
(7) RAI 3.3.5-1 RB
(7)
(5) <INSERT 4>

SR 3.3.5.3

REFERENCES

1. UFSAR, Section 8.3.3
2. FSAR, Chapter 15, Technical Requirements Manual
3. Unit Specific RTS/ESFAS Setpoint Methodology Study (Technical Report EE-0116)
4. PLANT SPECIFIC Risk Assessment Consistent with WCAP 14322-P-A
5. UFSAR, chapter 15.

(1) (7)
(1)
(1) RB
(6)
(1)

RAI 3.3.5-5 RB
RAI 3.3.5-6 RB

Rev 1.6

Changes to ITS Submittal Not Associated With RAIs
ITS Section 3.3, "Instrumentation" and Section 3.8, "Electrical Power Systems"
Beyond Scope Issue MB 1433 and MB 1427

LCO 3.3.5

26. The ISTS SR 3.3.5.2 requires a TADOT to be performed every [31 days]. The Bases for the SR states that the setpoint for the relays are verified and adjusted if necessary as a part of the surveillance requirement. ITS SR 3.3.5.1 requires a TADOT to be performed every 92 days. The SR is modified by a Note that states "Verification of setpoint is not required." The ITS Bases state, "The SR is modified by a Note that excludes verification of setpoints from the TADOT. Since the SR applies to the loss of voltage and degraded voltage relays for the 4160 VAC emergency buses, setpoint verification requires elaborate bench calibration and is accomplished during the CHANNEL CALIBRATION.

Additional Response: Based on verbal comments from the NRC, the Company has modified JFD 10. The revised JFD provides additional justification on why the Note excluding setpoint verification from the TADOT is required by the North Anna design.

JUSTIFICATION FOR DEVIATIONS
ITS 3.3.5, LOP EDG START INSTRUMENTATION

LCO 3.3.5.a degraded voltage Function with a SI signal. SR 3.3.5.2.b.2 requires a CHANNEL CALIBRATION for both LCO 3.3.5.a and LCO 3.3.5.b degraded voltage Function without a SI signal. These changes are appropriate because these requirements specify the unit's LOP EDG start instrumentation requirements from its and the other unit's instrumentation channels when the other unit is needed to support this unit's safety function. An example of the other unit LOP EDG start instrumentation being required for this unit is as follows: Four Service Water (SW) pumps are required to be OPERABLE for this unit. Two of the SW pumps are electrically powered from this unit and two from the other unit. If a SI signal on this unit occurs with a loss of all offsite electrical power to both units, the two SW pumps receive a start signal from this unit and are electrically supplied from this unit's emergency electrical buses. The required SW pumps on the other unit must be electrically powered from that unit's EDGs. The other unit's EDGs receive a start signal from its LOP EDG start instrumentation channels on a loss or degraded voltage condition on its emergency buses to support the two SW pumps needed by this unit.

RAI
3.3.5-1
R6

10. ISTS SR 3.3.5.2 requires the performance of a TADOT every [31 days]. ITS SR 3.3.5.1 states that a TADOT shall be performed every 92 days. The 92 day Frequency is consistent with the CTS testing Frequency shown in table 4.3-2, Function 7.a and 7.b. The SR is modified by a Note that states, "Verification of setpoint is not required." The inclusion of the Note for the SR is acceptable because the setpoints cannot be verified during power operation. Under the North Anna design, setpoint verification requires removal of the emergency bus loss of voltage and degraded voltage relays and in order to perform an elaborate bench calibration. This is accomplished during the CHANNEL CALIBRATION every 18 months. This addition of the Note makes the required testing under the ITS consistent with the Channel Functional Test of these devices which is required by the CTS.

R6,
R16