VIRGINIA ELECTRIC AND POWER COMPANY
RICHMOND, VIRGINIA 23261

November 8, 2001

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

Serial No.: 01- 612
CM/RAB R0
Docket Nos.: 50-338
50-339
License Nos.: NPF-4
NPF-7

Gentlemen:

VIRGINIA ELECTRIC AND POWER COMPANY (DOMINION)
NORTH ANNA POWER STATION UNITS 1 AND 2
PROPOSED IMPROVED TECHNICAL SPECIFICATIONS
REQUEST FOR ADDITIONAL INFORMATION
ITS SURVEILLANCE REQUIREMENT 3.3.1.6
BEYOND SCOPE ISSUE (TAC Nos. MB 1433 and MB 1427)

This letter transmits our response to the NRC's request for additional information (RAI) regarding the North Anna Power Station (NAPS) Units 1 and 2 proposed Improved Technical Specifications (ITS). The North Anna ITS license amendment request was submitted to the NRC in a December 11, 2000 letter (Serial No. 00-606). The NRC requested additional information regarding Surveillance Requirement (SR) 3.3.1.6. 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 dated September 18, 2001 (TAC Nos. MB1433 and MB1427).

Attached is the NRC's RAI and our response to the RAI.

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

A001

cc: U.S. Nuclear Regulatory Commission
Region II
Sam Nunn Atlanta Federal Center
61 Forsyth Street, SW
Suite 23T85
Atlanta, Georgia 30303-8931

Mr. Tommy Le
U.S. Nuclear Regulatory Commission
One White Flint North
11555 Rockville Pike
Mail Stop 12 H4
Rockville, MD 20852-2738

Mr. M. J. Morgan
NRC Senior Resident Inspector
North Anna Power Station

Commissioner (w/o attachments)
Bureau of Radiological Health
1500 East Main Street
Suite 240
Richmond, VA 23218

Mr. J. E. Reasor, Jr. (w/o attachments)
Old Dominion Electric Cooperative
Innsbrook Corporate Center
4201 Dominion Blvd.
Suite 300
Glen Allen, Virginia 23060

SN: 01-612
Docket Nos.: 50-338/339
Subject: Proposed ITS RAI
ITS Surv. Reqmt 3.3.1.6

COMMONWEALTH OF VIRGINIA)
)
COUNTY OF HENRICO)

The foregoing document was acknowledged before me, in and for the County and Commonwealth aforesaid, today by Leslie N. Hartz, who is Vice President - Nuclear Engineering, of Virginia Electric and Power Company. She has affirmed before me that she is duly authorized to execute and file the foregoing document in behalf of that Company, and that the statements in the document are true to the best of her knowledge and belief.

Acknowledged before me this 8TH day of November, 2001.

My Commission Expires: 3-31-04.

Maggie McClure
Notary Public

(SEAL)

Attachment

Proposed Improved Technical Specifications
Response to Request for Additional Information
ITS Surveillance Requirement 3.3.1.6

Virginia Electric and Power Company
(Dominion)

North Anna Power Station Units 1 and 2

North Anna ITS RAI
LCO 3.3.1 – RTS Instrumentation
Beyond Scope Issue (TAC Nos. MB1433 and MB1427)
Revised Response to ITS RAI 3.3.1-39

RAI (TAC Nos. MB1433 and MB1427):

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 ≥ 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 ≥ 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 ≥ 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 ≥ 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 ≥ 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 ≥ 50%, and why the wording of STS 3.3.1.6 is not being adopted.

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.

North Anna ITS RAI
LCO 3.3.1 – RTS Instrumentation
Beyond Scope Issue (TAC Nos. MB1433 and MB 1427)
Revised Response to ITS RAI 3.3.1-39

Response:

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 ≥ 15 % RTP to 7 days after THERMAL POWER ≥ 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."

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 ≥ 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.

North Anna ITS RAI
LCO 3.3.1 – RTS Instrumentation
Beyond Scope Issue (TAC Nos. MB1433 and MB 1427)
Revised Response to ITS RAI 3.3.1-39

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.

SURVEILLANCE REQUIREMENTS

	SURVEILLANCE	FREQUENCY
SR 3.3.1.3	----------NOTES---------- 1. Adjust NIS channel if absolute difference is ≥ 3%. 2. Not required to be performed until 7 days after THERMAL POWER is ≥ 50% RTP. 3. Performance of SR 3.3.1.9 satisfies this SR. ---------- Compare results of the incore detector measurements to NIS AFD.	31 effective full power days (EFPD)
SR 3.3.1.4	----------NOTE---------- This Surveillance must be performed on the reactor trip bypass breaker immediately after placing the bypass breaker in service. ---------- Perform TADOT.	31 days on a STAGGERED TEST BASIS
SR 3.3.1.5	Perform ACTUATION LOGIC TEST.	31 days on a STAGGERED TEST BASIS
SR 3.3.1.6	----------NOTE---------- Verification of setpoint is not required. ---------- Perform TADOT.	92 days

RAIs MB 1433 MB 1427 R8 3.3.1-39 R5

RAIs MB 1433 MB 1427 R8 3.3.1-39 R5

SURVEILLANCE REQUIREMENTS

	SURVEILLANCE	FREQUENCY	
SR 3.3.1.9	----------NOTES---------- 1. Neutron detectors are excluded from CHANNEL CALIBRATION. 2. Not required to be performed until 7 days after THERMAL POWER is ≥ 50% RTP. ---------- Calibrate excore channels to agree with incore detector measurements.	18 months	RAIs MB 1433 MB 1427 R8 3.3.1-39 R5
SR 3.3.1.10	----------NOTE---------- This Surveillance shall include verification that the time constants are adjusted to the prescribed values. ---------- Perform CHANNEL CALIBRATION.	18 months	
SR 3.3.1.11	----------NOTES---------- 1. Neutron detectors are excluded from CHANNEL CALIBRATION. 2. This Surveillance shall include verification that the time constants are adjusted to the prescribed values. ---------- Perform CHANNEL CALIBRATION.	18 months	RAIs MB 1433 MB 1427 R8 3.3.1-39 R5 RAIs MB 1433 MB 1427 R8 3.3.1-39 R5
SR 3.3.1.12	----------NOTE---------- Neutron detectors are excluded from CHANNEL CALIBRATION. ---------- Perform CHANNEL CALIBRATION.	18 months	RAIs MB 1433 MB 1427 R8 3.3.1-39 R5
SR 3.3.1.13	Perform COT.	18 months	

Table 3.3.1-1 (page 2 of 5)
Reactor Trip System Instrumentation

FUNCTION	APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS	REQUIRED CHANNELS	CONDITIONS	SURVEILLANCE REQUIREMENTS	ALLOWABLE VALUE	
6. Overtemperature ΔT	1, 2	3	E	SR 3.3.1.1 SR 3.3.1.3 SR 3.3.1.7 SR 3.3.1.9 SR 3.3.1.12 SR 3.3.1.16	Refer to Note 1 (Page 3.3.1-16)	|RAIs MB 1433 MB 1427 R8 3.3.1-39 R5
7. Overpower ΔT	1, 2	3	E	SR 3.3.1.1 SR 3.3.1.7 SR 3.3.1.12	Refer to Note 2 (Page 3.3.1-17)	
8. Pressurizer Pressure						
a. Low	1[(f)]	3	L	SR 3.3.1.1 SR 3.3.1.7 SR 3.3.1.10 SR 3.3.1.16	≥ 1860 psig	
b. High	1, 2	3	E	SR 3.3.1.1 SR 3.3.1.7 SR 3.3.1.10 SR 3.3.1.16	≤ 2370 psig	|R5
9. Pressurizer Water Level–High	1[(f)]	3	L	SR 3.3.1.1 SR 3.3.1.7 SR 3.3.1.10 SR 3.3.1.16	≤ 93%	
10. Reactor Coolant Flow–Low	1[(f)]	3 per loop	L	SR 3.3.1.1 SR 3.3.1.7 SR 3.3.1.10 SR 3.3.1.16	≥ 89%	
11. Reactor Coolant Pump (RCP) Breaker Position	1[(f)]	1 per RCP	M	SR 3.3.1.14	NA	
12. Undervoltage RCPs	1[(f)]	1 per bus	L	SR 3.3.1.6 SR 3.3.1.10 SR 3.3.1.16	≥ 2870 V	|RAIs MB 1433 MB 1427 R8 3.3.1-39 R5 R6
13. Underfrequency RCPs	1[(f)]	1 per bus	L	SR 3.3.1.6[(g)] SR 3.3.1.10 SR 3.3.1.16	≥ 56 Hz	
14. Steam Generator (SG) Water Level–Low Low	1, 2	3 per SG	E	SR 3.3.1.1 SR 3.3.1.7 SR 3.3.1.10 SR 3.3.1.16	≥ 17%	

(f) Above the P-7 (Low Power Reactor Trips Block) interlock.

(g) Required to be performed for Unit 2 only. |R6

BASES

SURVEILLANCE REQUIREMENTS

SR 3.3.1.1 (continued)

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.

SR 3.3.1.2

SR 3.3.1.2 compares the calorimetric heat balance calculation to the NIS channel output every 24 hours. If the calorimetric exceeds the NIS channel output by > 2% RTP, the NIS is not declared inoperable, but must be adjusted. If the NIS channel output cannot be properly adjusted, the channel is declared inoperable.

Two Notes modify SR 3.3.1.2. The first Note indicates that the NIS channel output shall be adjusted consistent with the calorimetric results if the NIS channel output is more than 2% below the calorimetric indicated power. The second Note clarifies that this Surveillance is required only if reactor power is ≥ 15% RTP and that 12 hour is allowed for performing the first Surveillance after reaching 15% RTP. At lower power levels, calorimetric data are inaccurate.

The Frequency of every 24 hours is adequate. It is based on unit operating experience, considering instrument reliability and operating history data for instrument drift. Together these factors demonstrate the change in the absolute difference between NIS and heat balance calculated powers rarely exceeds 2% in any 24 hour period.

In addition, control room operators periodically monitor redundant indications and alarms to detect deviations in channel outputs.

SR 3.3.1.3

SR 3.3.1.3 compares the incore system to the NIS channel output every 31 EFPD. If the absolute difference is ≥ 3%, the NIS channel is still OPERABLE, but it must be adjusted. The adjustment is a recalibration of the upper and lower Power Range detectors to incorporate the results of the flux map. When the channel is outside the 3% allowance assumed in

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RAIs MB 1433 MB 1427 R8 3.3.1-39 R5

BASES

SURVEILLANCE REQUIREMENTS

SR 3.3.1.3 (continued)

the setpoint uncertainty calculation, the channel must be adjusted (i.e., normalized) based on incore surveillance data.

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If the NIS channel cannot be properly adjusted, the channel is declared inoperable. This Surveillance is performed periodically to verify the f(ΔI) input to the overtemperature ΔT Function.

RAIs MB 1433 MB 1427 R8 3.3.1-39 R5

Two Notes modify SR 3.3.1.3. Note 1 indicates that the excore NIS channel shall be adjusted if the absolute difference between the incore and excore AFD is ≥ 3%. Note 2 clarifies that the Surveillance is required only if reactor power is ≥ 50% RTP and that 7 days are allowed for performing the Surveillance and channel adjustment, if necessary, after reaching 50% RTP. A power level of ≥ 50% RTP is consistent with the requirements of SR 3.3.1.9. Performance of SR 3.3.1.9 may be used in lieu of SR 3.3.1.3 since SR 3.3.1.9 calibrates (i.e., requires channel adjustment) the excore channels to the incore channels and therefore envelopes the performance of SR 3.3.1.3.

RAIs MB 1433 MB 1427 R8 3.3.1-39 R5

For each operating cycle, the initial channel normalization is performed under SR 3.3.1.9. Subsequent verification at a frequency of every 31 EFPD is adequate. It is based on unit operating experience, considering instrument reliability, and the slow changes in neutron flux during the fuel cycle, which can be detected during this interval.

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. 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 once per refueling interval with applicable extensions.

(continued)

BASES

SURVEILLANCE REQUIREMENTS

SR 3.3.1.4 (continued)

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 is a local shunt trip. A Note has been added to indicate that this test must be performed on the bypass breaker. The local manual shunt trip of the RTB bypass shall be conducted immediately after placing the bypass breaker into service. This test must be conducted prior to the start of testing of the RTS or RTB maintenance. This checks the mechanical operation of the bypass breaker. R5 R5

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 including operation of the P-7 permissive which is a logic function only. 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 3.3.1.6

SR 3.3.1.6 is the performance of a TADOT and is performed every 92 days, as justified in Reference 7. 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 (continued)

RAIs MB 1433 MB 1427 R8 3.3.1-39 R5 R5

BASES

SURVEILLANCE REQUIREMENTS

SR 3.3.1.6 (continued)

RAIs MB 1433 MB 1427 R8 3.3.1-39 R5

other Technical Specifications and non-Technical Specifications tests at least once per refueling interval with applicable extensions.

The SR is modified by a Note that excludes verification of setpoints from the TADOT. Since this SR applies to RCP undervoltage and underfrequency relays, setpoint verification requires elaborate bench calibration and is accomplished during the CHANNEL CALIBRATION.

SR 3.3.1.7

SR 3.3.1.7 is the performance of a COT every 92 days.

A COT is performed on each required channel to ensure the entire channel will perform the intended Function. 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 CHANNEL OPERATIONAL TEST 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 once per refueling interval with applicable extensions.

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. 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 92 days is justified in Reference 7.

BASES

SURVEILLANCE REQUIREMENTS

SR 3.3.1.8 (continued)

periods > 12 and 4 hours, respectively. Verification of the surveillance is accomplished by observing the permissive annunciator windows on the Main Control board. R5

SR 3.3.1.9

RAIs MB 1433 MB 1427 R8 3.3.1-39 R5

SR 3.3.1.9 is a comparison of the excore channels to the incore channels based on analysis of a range of core flux distributions. If the measurements do not agree, the excore channels are not declared inoperable but must be adjusted (i.e., normalized) to agree with the incore detector measurements. If the excore channels cannot be adjusted, the channels are declared inoperable. This Surveillance is performed at BOL to normalize the excore f(ΔI) input to the overtemperature ΔT Function for a given operating cycle. The Surveillance also normalizes the excore ΔI indicators.

Two Notes modify SR 3.3.1.9. Note 1 states that neutron detectors are excluded from the CHANNEL CALIBRATION. Note 2 states that this Surveillance is required only if reactor power is $\geq$ 50% RTP and that 7 days are allowed for performing the surveillance after reaching 50% RTP. Based on operating experience, a time allowance of 7 days for test performance, data analysis, and channel adjustments is sufficient. A power level of $\geq$ 50% RTP corresponds to the power level for the AFD Surveillance (SR 3.2.3.1), which requires calibrated excore ΔI indications.

The Frequency of 18 months is adequate. It is based on industry operating experience, considering instrument reliability, and has proven sufficient to establish the cycle-specific calibration of the excore ΔI indications and f(ΔI).

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.

(continued)

BASES

SURVEILLANCE REQUIREMENTS

SR 3.3.1.10 (continued)

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 two Notes. Note 1 states that neutron detectors are excluded from the CHANNEL CALIBRATION. The CHANNEL CALIBRATION for the power range neutron detector outputs consists of a normalization of the detector outputs based on an incore/excore cross-calibration (SR 3.3.1.9). In addition, the CHANNEL CALIBRATION for the power range neutron detector outputs includes normalization of the channel output based on a power calorimetric (SR 3.3.1.2) performed above 15% RTP. The CHANNEL CALIBRATION for the intermediate range neutron detector outputs includes normalization of the high flux bistable based on a power calorimetric and control rod position. The CHANNEL CALIBRATION for the source range neutron detectors consists of obtaining new detector plateau and preamp discriminator curves after a detector is replaced. This Surveillance is not required for the NIS power range detectors for entry into MODE 2 or 1, and is not required for the NIS intermediate range detectors for entry into MODE 2, because the unit must be in at least MODE 2 to perform the test for the intermediate range detectors and MODE 1 for the power range detectors. Note 2 states that this test shall include verification that the time constants are adjusted to the prescribed values where applicable. The power range neutron flux rate functions contain required time constants. The 18 month Frequency is based on the need to perform this Surveillance under the conditions that apply during a unit outage and the potential for an unplanned transient if the

RAIs MB 1433 MB 1427 R8 3.3.1-39 R5

RAIs MB 1433 MB 1427 R8 3.3.1-39 R5

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SURVEILLANCE REQUIREMENTS

SR 3.3.1.11 (continued)

Surveillance were performed with the reactor at power. Operating experience has shown these components usually pass the Surveillance when performed on the 18 month Frequency.

SR 3.3.1.12

SR 3.3.1.12 is the performance of a CHANNEL CALIBRATION, as described in SR 3.3.1.10, every 18 months. The SR is modified by a Note stating that neutron detectors are excluded from the CHANNEL CALIBRATION. Whenever a sensing element is replaced, the next required CHANNEL CALIBRATION of the resistance temperature detector (RTD) sensors is accomplished by an inplace cross calibration that compares the other sensing elements with the recently installed sensing element.

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This test will verify the dynamic compensation for flow from the core to the RTDs. R5

The Frequency is justified by the assumption of an 18 month calibration interval in the determination of the magnitude of equipment drift in the setpoint analysis.

SR 3.3.1.13

SR 3.3.1.13 is the performance of a COT of RTS interlocks every 18 months. 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 CHANNEL OPERATIONAL TEST 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 once per refueling interval with applicable extensions.

The Frequency is based on the known reliability of the interlocks and the multichannel redundancy available, and has been shown to be acceptable through operating experience.

CTS

SURVEILLANCE REQUIREMENTS

----------NOTE----------
Refer to Table 3.3.1-1 to determine which SRs apply for each RTS Function.

	SURVEILLANCE	FREQUENCY
Channel Check	SR 3.3.1.1 Perform CHANNEL CHECK.	12 hours
Channel Calibration	SR 3.3.1.2 ----------NOTES---------- 1. Adjust NIS channel if absolute difference is > 2%. Calorimetric exceeds NIS by (4) 2. Not required to be performed until 12 hours after THERMAL POWER is ≥ 15% RTP. (7) --- Compare results of calorimetric heat balance calculation to Nuclear Instrumentation System (NIS) channel output.	24 hours
Channel Calibration	SR 3.3.1.3 ----------NOTES---------- 1. Adjust NIS channel if absolute difference is ≥ 3%. 2. Not required to be performed until 7 days [24 hours] after THERMAL POWER is ≥ [15]% RTP. 50 --- Compare results of the incore detector measurements to NIS AFD.	<INSERT> 31 effective full power days (EFPD) Proposed TSTF

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RAI MB 1433 MB 1427 R8 3.8.1-39 R5

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3. Performance of SR 3.3.1.9 satisfies this SR.

Proposed TSTF

RAIs
MB 1433
MB 1427
R8

3.3.1-39
R5

CTS

SURVEILLANCE REQUIREMENTS (continued)

	SURVEILLANCE		FREQUENCY
Channel Functional Test	SR 3.3.1.4	----------NOTE---------- This Surveillance must be performed on the reactor trip bypass breaker prior to placing the bypass breaker in service. ---------- Perform TADOT.	Immediately after (5) 31 days on a STAGGERED TEST BASIS
Channel Functional Test	SR 3.3.1.5	Perform ACTUATION LOGIC TEST.	31 days on a STAGGERED TEST BASIS
NEW Move to 3.3.1.9	SR 3.3.1.6 (9) (2)	----------NOTE---------- Not required to be performed until [24 hours] after THERMAL POWER is ≥ 50% RTP. (7 days) ---------- Calibrate excore channels to agree with incore detector measurements.	<INSERT> Proposed TSTF 18 months [92] EFPD
Channel Functional Test	SR 3.3.1.7	----------NOTE---------- 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.	[92] days (7)

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RAIs
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1. Neutron detectors are excluded from CHANNEL CALIBRATIONS.

Proposed TSTF

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MB 1427
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RS

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CTS

SURVEILLANCE REQUIREMENTS (continued)

	SURVEILLANCE	FREQUENCY
Channel Functional Test (Move to 3.3.6) SR 3.3.1.6	----------NOTE---------- Verification of setpoint is not required. ---------- Perform TADOT.	Proposed TSTF (8) 92 days (7)
Channel Calibration SR 3.3.1.10	----------NOTE---------- This Surveillance shall include verification that the time constants are adjusted to the prescribed values. ---------- Perform CHANNEL CALIBRATION.	18 months (7)
Channel Calibration SR 3.3.1.11	----------NOTE---------- (1) Neutron detectors are excluded from CHANNEL CALIBRATION. ---------- <INSERT 1> Perform CHANNEL CALIBRATION.	PROPOSED TSTF 18 months (7)
Channel Calibration SR 3.3.1.12	----------NOTE---------- <INSERT 2> This Surveillance shall include verification of Reactor Coolant System resistance temperature detector bypass loop flow rate. ---------- Perform CHANNEL CALIBRATION.	Proposed TSTF (9) 18 months (7)
Channel Functional Test SR 3.3.1.13	Perform COT.	18 months

(continued)

RAI MB 1433 MB 1427 R8 & 3.3.1-39 R5

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INSERT 1

2. This surveillance shall include verification that the time constants are adjusted to the prescribed values.

INSERT 2

Neutron detectors are excluded from CHANNEL CALIBRATIONS.

Proposed TSTF
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Proposed TSTF RAI MB 1433 MB 1427
R8 3.3.1-39 RAI 3.3.1-6 Rev 5

CTS TABLE 3.3-1

Table 3.3.1-1 (page 4 of 8)
Reactor Trip System Instrumentation

	FUNCTION	APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS	REQUIRED CHANNELS	CONDITIONS	SURVEILLANCE REQUIREMENTS	ALLOWABLE VALUE	TRIP SETPOINT(a)	
20	11. Reactor Coolant Pump (RCP) Breaker Position	1(f)	1 per RCP	M	SR 3.3.1.14	NA		1
	a. Single Loop	1(h)	1 per RCP	O	SR 3.3.1.14	NA	NA	1
	b. Two Loops	1(i)	1 per RCP	M	SR 3.3.1.14	NA	NA	
16	12. Undervoltage RCPs	1(f)	1 per bus	L	SR 3.3.1.9 (6) SR 3.3.1.10 SR 3.3.1.16	≥ 2870 (4760) V	≥ [4830] V	7
17	13. Underfrequency RCPs	1(f)	1 per bus	L	SR 3.3.1.9 (6)(g) SR 3.3.1.10 SR 3.3.1.16	≥ 56 (57.1) Hz	≥ [57.5] Hz	7 8
14	14. Steam Generator (SG) Water Level – Low Low	1,2	3 per SG	E	SR 3.3.1.1 SR 3.3.1.7 SR 3.3.1.10 SR 3.3.1.16	≥ 17 (30.4)%	≥ [32.3]%	7
15	15. SG Water Level – Low	1,2	2 per SG	E	SR 3.3.1.1 SR 3.3.1.7 SR 3.3.1.10 SR 3.3.1.16	≥ 24 (30.4)%	≥ [32.3]%	RG 7
	Coincident with Steam Flow/ Feedwater Flow Mismatch	1,2	2 per SG	E	SR 3.3.1.1 SR 3.3.1.7 SR 3.3.1.10 SR 3.3.1.16	≤ 42.5 (6)% full steam flow at RTP	≤ [40]% full steam flow at RTP	11 7 11

(continued)

(a) Reviewer's Note: Unit specific implementations may contain only Allowable Value depending on Setpoint Study methodology used by the unit. 6

(f) (g) Above the P-7 (Low Power Reactor Trips Block) interlock. 6

(h) Above the P-8 (Power Range Neutron Flux) interlock. 1

(i) Above the P-7 (Low Power Reactor Trips Block) interlock and below the P-8 (Power Range Neutron Flux) interlock. TSTF 169 8

(g) Required to be performed for UNIT 2 only

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CTS TABLE 3.3-1

Proposed TSTF RAI MB 1433 MB 1427 RB 3.3.1-39 RAI 3.3.1-6 Revs

Table 3.3.1-1 (page 4 of 8)
Reactor Trip System Instrumentation

	FUNCTION	APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS	REQUIRED CHANNELS	CONDITIONS	SURVEILLANCE REQUIREMENTS	ALLOWABLE VALUE	TRIP SETPOINT(a)	
20	11. Reactor Coolant Pump (RCP) Breaker Position	1(f)	1 per RCP	M	SR 3.3.1.14	NA		1
	a. Single Loop	1(h)	1 per RCP	O	SR 3.3.1.14	NA	NA	1
	b. Two Loops	1(i)	1 per RCP	M	SR 3.3.1.14	NA	NA	
16	12. Undervoltage RCPs	1(g)(f)	1 per bus	L	SR 3.3.1.9 (6) SR 3.3.1.10 SR 3.3.1.16	2870 ≥ [4760] V	≥ [4830] V	7
17	13. Underfrequency RCPs	1(g)(f)	1 per bus	L	SR 3.3.1.9 (6) SR 3.3.1.10 SR 3.3.1.16	56 (unit 2 only) ≥ [57.1] Hz	≥ [57.5] Hz	7 8
14	14. Steam Generator (SG) Water Level – Low Low	1,2	3 per SG	E	SR 3.3.1.1 SR 3.3.1.7 SR 3.3.1.10 SR 3.3.1.16	17 ≥ [30.4]%	≥ [32.3]%	7
15	15. SG Water Level – Low	1,2	2 per SG	E	SR 3.3.1.1 SR 3.3.1.7 SR 3.3.1.10 SR 3.3.1.16	24 ≥ [30.4]%	≥ [32.3]%	7
	Coincident with Steam Flow/ Feedwater Flow Mismatch	1,2	2 per SG	E	SR 3.3.1.1 SR 3.3.1.7 SR 3.3.1.10 SR 3.3.1.16	≤ 42.5% full steam flow at RTP	≤ [40]% full steam flow at RTP	11 7 11

(continued)

(a) Reviewer's Note: Unit specific implementations may contain only Allowable Value depending on Setpoint Study methodology used by the unit. 6

(f)(g) Above the P-7 (Low Power Reactor Trips Block) interlock. 6

(h) Above the P-8 (Power Range Neutron Flux) interlock. 1

(i) Above the P-7 (Low Power Reactor Trips Block) interlock and below the P-8 (Power Range Neutron Flux) interlock. TSTF 169

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6. ISTS Table 3.3.1-1 contains a reviewer's Note [a]. This Note is not applicable to the NAPS ITS and is eliminated. The subsequent notes are re-lettered. The methodology used for the Allowable Values generally provides for a Trip Setpoint at a constant value below the Allowable Value. Therefore, the Trip Setpoint is a constant offset and not required to be listed in the Technical Specification and the column is eliminated. The values for all Trip Setpoints will be retained in a licensee-controlled Technical Requirement Manual (TRM), which is subject to the controls of the 10 CFR 50.59 process for changes. This change incorporates the intent of approved traveler TSTF–355.

7. The brackets are removed and the proper plant specific information/value is provided.

8. ITS SR 3.3.1.6 for underfrequency TADOT of the RCP buses is required for Unit 2 only. ITS SR 3.3.1.6 in Table 3.3.1 –1 is modified by footnote [j] and current footnotes [j] and [h] are re-lettered to footnotes [h] and [i]. This requirement is not added to the Unit 1 requirements because physical modifications would be required. Operating experience for performing this SR on Unit 2 has shown that these functions normally satisfy this surveillance requirement. Therefore, the SR is not added to Unit 1.

RAIs MB1453 MB1427 R8 3.3.1-37 R5 R6

9. The Note to ISTS 3.3.1.12 is not applicable for the North Anna design and deleted for the ITS. This change is acceptable because the North Anna RCS temperature detection does not utilize RTDs on the bypass loops but uses RTDs directly in the RCS flow path.

10. TSTF-135 deletes the requirement for Function 5, Source Range Neutron Flux requirements, to be OPERABLE in MODES 3, 4, and 5 when the Rod Control System is incapable of moving the shutdown or control rods. Function 5 requires one Source Range channel to be OPERABLE. Condition L requires when the required channel becomes inoperable that operations involving positive reactivity addition be immediately suspended and the SDM verified within 1 hour and every 12 hours thereafter. The justification given in TSTF-135 for deleting these requirements is that they are moved to ISTS LCO 3.3.9, Boron Dilution Protection System (BDPS). North Anna does not utilize a BDPS for protection against a boron dilution accident. North Anna in ITS LCO requirements 3.1.8 and 3.9.2 require the manual isolation of the boron dilution valves to prevent possible boron dilution events. The current requirements for maintaining one OPERABLE Source Range channel with an associated ITS Action K requiring the verification of SDM within an hour and every 12 hours is translated into ITS 3.3.1 requirements.

RAI 3.3.1-38 R5

11. ITS SR 3.3.1.16 requirement to perform RESPONSE TIME testing on the Overpower ΔT and Steam Generator Level Low coincident with Steam Flow Feedwater Flow Mismatch functions are deleted from the ITS. This is acceptable because neither function is credited by the safety analyses. Pressurizer Water Level – High, ITS function 9, is credited by the safety analyses. This change is acceptable because RESPONSE TIME testing ensures safety analysis assumptions are met.

12. Not used

13. References to RTS interlock P-9 are deleted. The North Anna design does not utilize this function, but uses the P-8 function to perform the same requirements. Function e. and f. have been re-lettered.

14. The Overtemperature ΔT and Overpower ΔT formulas of the ISTS Table 3.3.1-1 in Notes 1 and 2 have been modified to reflect the North Anna CTS requirements. These changes are acceptable because they reflect the CTS formulas in the ITS requirements for these functions. Values for the notes, such as τ_4, τ_5, τ_6, and τ_7 that are not needed, are deleted. RAI 3.3.1-39 R5

15. Not used.

16. The CHANNEL OPERATIONAL TEST (COT) and the CHANNEL CALIBRATION apply to the P–10 and P–13 inputs, not the P–7 logic function. Logic functions are tested under SR 3.3.1.5. This change is an administrative clarification to address the relationship between these interlocks. This change is consistent with proposed change TSTF–347. RAI MB1433 MB1427 R8 RAI 3.3.1-05 R5

17. ISTS Table 3.3.1-1 Function 2.A, Power Range Neutron Flux High, does not specify a monthly CHANNEL CALIBRATION to be performed. ITS SR 3.3.1.3 is added to the Power Range Neutron Flux High requirements. This requires a comparison of incore to excore indication of AFD every 31 EFPD. An adjustment of the NIS channels is required if absolute difference is ≥ 3%. The SR is not required to be performed until 7 days after THERMAL POWER exceeds 50 % RTP. The power level and the allowed time for delaying the performance of the SR are consistent with SRs 3.2.3.1 and 3.3.1.9. This change is acceptable because all PRNF channels provide inputs for determining QPTR that require accurate AFD indications. RAIs MB1433 MB1427 R8 3.3.1-32 R5

BASES

SURVEILLANCE REQUIREMENTS

SR 3.3.1.2 (continued)

allowed for performing the first Surveillance after reaching 15% RTP. At lower power levels, calorimetric data are inaccurate.

The Frequency of every 24 hours is adequate. It is based on unit operating experience, considering instrument reliability and operating history data for instrument drift. Together these factors demonstrate the change in the absolute difference between NIS and heat balance calculated powers rarely exceeds 2% in any 24 hour period.

In addition, control room operators periodically monitor redundant indications and alarms to detect deviations in channel outputs.

RAI MB1433 MB1427 R8 — 3.3.1-39 R5 — Proposed TSTF — INSERT 2 — INSERT 3

SR 3.3.1.3

SR 3.3.1.3 compares the incore system to the NIS channel output every 31 EFPD. If the absolute difference is ≥ 3%, the NIS channel is still OPERABLE, but must be readjusted.

If the NIS channel cannot be properly readjusted, the channel is declared inoperable. This Surveillance is performed periodically to verify the f(ΔI) input to the overtemperature ΔT Function.

Two Notes modify SR 3.3.1.3. Note 1 indicates that the excore NIS channel shall be adjusted if the absolute difference between the incore and excore AFD is ≥ 3%. Note 2 clarifies that the Surveillance is required only if reactor power is ≥ 50% RTP and that 24 hours is allowed for performing the first Surveillance after reaching 50% RTP. 7 days are allowed for performing the first Surveillance after reaching 15% RTP. The Frequency of every 31 EFPD is adequate. It is based on unit operating experience, considering instrument reliability and operating history data for instrument drift. Also, the slow changes in neutron flux during the fuel cycle can be detected during this interval. — Proposed TSTF — INSERT 3 — and channel adjustments if necessary — which — INSERT 4

(continued)

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INSERT 1

The adjustment is a recalibration of the upper and lower Power Range detectors to incorporate the results of the flux map.

INSERT 2

When the channel is outside the 3% allowance assumed in the setpoint uncertainty calculation, the channel must be adjusted (i.e., normalized) based on incore surveillance data.

INSERT 3

A power level of ≥ 50% RTP is consistent with the requirements of SR 3.3.1.9. Performance of SR 3.3.1.9 may be used in lieu of SR 3.3.1.3 since SR 3.3.1.9 calibrates (i.e., requires channel adjustment) the excore channels to the incore channels and therefore envelopes the performance of SR 3.3.1.3.

INSERT 4

For each operating cycle, the initial channel normalization is performed under SR 3.3.1.9. Subsequent verification at a frequency

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R5

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. <INSERT 2>

(5) (15) (9) RS

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 3.3.1.6 (9) <INSERT 4>

SR 3.3.1.6 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 ΔT Function. <INSERT 5>

Proposed TSTF

adjusted (i.e., normalized)

at BOL

Normalize the excore

more to SR 3.3.1.9

(continued)

RAIs MB1433 MB1427 R8
3.3.1-39 R5

Rev 8

INSERT 1

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 once per refueling interval with applicable extensions.

INSERT 2

The local manual shunt trip of the RTB bypass shall be conducted immediately after placing the bypass breaker into service. This test must be conducted prior to the start of testing of the RTS or RTB maintenance. | R5

INSERT 3

, including operation of the P-7 permissive which is a logic function only.

INSERT 4

based on analysis of a range of core flux distributions.

INSERT 5

for a given operating cycle. The surveillance also normalizes the excore ΔI indicators.

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R5

RAI 3.3.1-39 R5
RAI MB 1453 MB 1427 R8

BASES

SURVEILLANCE REQUIREMENTS

SR 3.3.1.6 (continued)

Two Notes modifies SR 3.3.1.6. A The Note states that this Surveillance is required only if reactor power is ≥ 50% RTP and that 24 hours is allowed for performing the first surveillance after reaching 50% RTP. 7 days are

<INSERT 1>

Proposed TSTF

<INSert 2>

18 months

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

Proposed TSTF

<INSert 3>

move to SR 3.3.1.9

SR 3.3.1.7

SR 3.3.1.7 is the performance of a COT every 92 days.

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

<INSERT 4> TSTF 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.

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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 92 days is justified in Reference 7.

(continued)

INSERT 1

Note 1 states that neutron detectors are excluded from the CHANNEL CALIBRATION.

INSERT 2

Based on operating experience, a time allowance of 7 days for test performance, data analysis, and channel adjustments is sufficient. A power level of ≥ 50% RTP corresponds to the power level for the AFD surveillance (SR 3.2.3.1), which requires calibrated excore ΔI indications.

INSERT 3

, and has proven sufficient to establish the cycle-specific calibration of the excore ΔI indications and f (ΔI).

INSERT 4

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 CHANNEL OPERATIONAL TEST 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 once per refueling interval with applicable extensions.

PROPOSED TSTF

RAIs MB 1433 MB 1427 R8

3.3.1-39 R5

BASES

SURVEILLANCE REQUIREMENTS (continued)

SR 3.3.1.8

SR 3.3.1.8 is the performance of a COT as described in SR 3.3.1.7, except it is modified by a Note that this test shall include verification that the P-6 and P-10 interlocks are in their required state for the existing unit condition. <INSERT 1> The Frequency is modified by a Note that allows this surveillance to be satisfied if it has been performed within 92 days of the Frequencies prior to reactor startup and four hours after reducing power below P-10 and P-6. The Frequency of "prior to startup" ensures this surveillance is performed prior to critical operations and applies to the source, intermediate and power range low instrument channels. The Frequency of "4 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 plant remains in the MODE of Applicability after the initial performances of prior to reactor startup and four hours after reducing power below P-10 or P-6. 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 or < P-6 for more than 4 hours, then the testing required by this surveillance must be performed prior to the expiration of the 4 hour limit. Four hours is a reasonable time 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 >4 hours.

<INSERT 2>

SR 3.3.1.6

Proposed TSTF RAI MB1433 MB1427 R8 # 3.3.1-39 R5

SR 3.3.1.6 is the performance of a TADOT and is performed every 92 days, as justified in Reference 7.

<INSERT 3>

move to SR 3.3.1.6

(continued)

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SURVEILLANCE REQUIREMENTS

SR 3.3.1.9 (continued)

The SR is modified by a Note that excludes verification of setpoints from the TADOT. Since this SR applies to RCP undervoltage and underfrequency relays, setpoint verification requires elaborate bench calibration and is accomplished during the CHANNEL CALIBRATION.

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 new

(continued)

INSERT 1

an incore/excore cross-calibration (SR 3.3.1.9). In addition, the CHANNEL CALIBRATION for the power range neutron detector outputs includes normalization of the channel output based on power calorimetric (SR 3.3.1.2)

INSERT 2

The CHANNEL CALIBRATION for the intermediate range neutron detector outputs includes normalization of the high flux bistable based on a power calorimetric and control rod position.

(18)

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R5

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BASES

SURVEILLANCE REQUIREMENTS

SR 3.3.1.11 (continued)

and plateau(s) preamp discriminator curves, evaluating those curves, and comparing the curves to the manufacturer's data after a detector is replaced. This Surveillance is not required for the NIS power range detectors for entry into MODE 2 or 1, and is not required for the NIS intermediate range detectors for entry into MODE 2, because the unit must be in at least MODE 2 to perform the test for the intermediate range detectors and MODE 1 for the power range detectors. The [18] month Frequency is based on the need to perform this Surveillance under the conditions that apply during a plant outage and the potential for an unplanned transient if the Surveillance were performed with the reactor at power. Operating experience has shown these components usually pass the Surveillance when performed on the [18] month Frequency.

proposed TSTF

<INSERT 1>

unit

(1) (2) (1)

SR 3.3.1.12

<INSERT 2>

TSTF 19

SR 3.3.1.12 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 this test shall include verification of the RCS resistance temperature detector (RTD) bypass loop flow rate.

<INSERT 3>

(1) Proposed TSTF (6) (3) RS

dynamic

This test will verify the rate lag compensation for flow from the core to the RTDs.

The Frequency is justified by the assumption of an 18 month calibration interval in the determination of the magnitude of equipment drift in the setpoint analysis.

SR 3.3.1.13

SR 3.3.1.13 is the performance of a COT of RTS interlocks every [18] months.

TSTF 205 (1)

<INSERT 4>

The Frequency is based on the known reliability of the interlocks and the multichannel redundancy available, and has been shown to be acceptable through operating experience.

(continued)

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INSERT 1

Note 2 states that this test shall include verification that the time constants are adjusted to the prescribed values where applicable. The power range neutron flux rate functions contain required time constants.

INSERT 2

Whenever a sensing element is replaced, the next required CHANNEL CALIBRATION of the resistance temperature detector (RTD) sensors is accomplished by an inplace cross calibration that compares the other sensing elements with the recently installed sensing element.

INSERT 3

neutron detectors are excluded from the CHANNEL CALIBRATION.

INSERT 4

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 CHANNEL OPERATIONAL TEST 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 once per refueling interval with applicable extensions.

Proposed TSTF RAI MB1433 MB1427 R8

3.3.1-39 R5

17. TSTF – 135 provides an insert for the Source Range Neutron Flux function in the Applicable Safety Analyses, LCO, and Applicability section of the Bases. This insert states, "are addressed in LCO 3.3.9, 'Boron Dilution Protection System (BDPS),'for MODES 3, 4, or 5 and LCO 3.9.3, 'Nuclear Instrumentation,' for MODE 6." The plant does not utilize BDPS instrumentation channels for boron dilution event protection, but relies on the isolation of unborated water sources that could dilute the RCS inventory. Therefore, the reference to LCO 3.3.9 is not appropriate and is deleted.

18. The proposed TSTF modifies the Bases for ISTS SR 3.3.1.11. The intermediate range CHANNEL CALIBRATION states that the "The CHANNEL CALIBRATION for the intermediate rang neutron detector outputs includes normalization of the high flux bistable based on power calorimetric." This is changed to read, "The CHANNEL CALIBRATION for the intermediate rang neutron detector outputs includes normalization of the high flux bistable based on power calorimetric and control rod position." Control rod position is also considered for North Anna's setting of the bistable because "rod shadowing" can affect the setting of the intermediate range trip setpoint after a refueling outage.

RAIs MB1433 MB1427 R8

19. The ISTS Bases for SR 3.3.1.7 includes a paragraph that describes the recording and reviewing of the "as-found" and "as-left" values of SR to ensure consistency with Reference 7. The reference cites WCAP-10271. ITS SR 3.3.1.7 does not include this Bases paragraph. This is acceptable based on CTS Amendment 228 (Unit 1) and 202 (Unit 2) which adopted WCAP-10271. In the license amendment request for this CTS change, the following condition for adopting WCAP-10271 was listed: A review of the 'as found' and 'as left' data over a twelve-month period should provide sufficient information to address the adequacy of the existing setpoints and allowable values." The response to the requirement stated, "The licensee evaluated the 'as found' and 'as left' plant data. In every case the drift with 95 percent confidence level was well below one percent per quarter. Permissive drifts were less than one percent over any 18 month period and the drifts of the control parameters were within acceptable limits of the plant control systems." There was no commitment to perform an on-going evaluation of "as-found" and "as-left" data because the instrumentation is stable. From this response provided by the licensee, the NRC concluded that the CTS change was acceptable. Therefore, the Bases paragraph requiring the recording and reviewing of 'as found' and 'as left' data is not required and is deleted. If the SR is not met, the ITS Actions will be followed.

R6

A.1

TABLE 4.3-1

REACTOR TRIP SYSTEM INSTRUMENTATION SURVEILLANCE REQUIREMENTS

ITS	FUNCTIONAL UNIT	CHANNEL CHECK	CHANNEL CALIBRATION	CHANNEL FUNCTIONAL TEST	MODES IN WHICH SURVEILLANCE REQUIRED
1	1. Manual Reactor Trip	N.A.	N.A.	R(8) LA.4	1, 2 and *
2	2. Power Range, Neutron Flux			3.3.1.14 A.11	
2a	A. High Setpoint	A.1 3.3.1.1 8	L.15 3.3.1.2 D(2)(6), M(2)(6) and R(6) A.1 3.3.1.11	A.28 Q 3.3.1.7 A.11	1, 2
2b	B. Low Setpoint	A.1 3.3.1.1 8	R(6) 3.3.1.11 A.1	S/U(1) L.6 3.3.1.8	1***, 2
3a	3. Power Range, Neutron Flux, High Positive Rate	N.A.	R(6) 3.3.1.11 A.1	Q 3.3.1.7 A.11	1, 2
3b	4. Power Range, Neutron Flux, High Negative Rate	N.A.	R(6) 3.3.1.11	RAI MB1433 MB1427 R8 Q 3.3.1.7 A.11	1, 2
4	5. Intermediate Range, Neutron Flux	A.1 3.3.1.1 a. 8 b. Q(12) A.10	M.8 LA.13 R(6) 3.3.1.11	L.6 S/U(1) Q(12) 3.3.1.8	1***, 2
5	6. Source Range, Neutron Flux	A.1 3.3.1.1 8 A.5	N.A. A.1 R(6) 3.3.1.11	N.A. L.17 3.3.1.7 3.3.1.8 S/U(1) Q(12) L.10	3*, 4*, 5* 2, 3, 4, 5
6	7. Overtemperature ΔT	A.1 3.3.1.1 8	A.1 R(6) 3.3.1.12	M.1(2) 3.3.1.9 A.28 Q 3.3.1.7 A.11 3.3.1.3 L.9 L.16	1, 2
7	8. Overpower ΔT	A.1 3.3.1.1 8	A.1 R(6) 3.3.1.12	Q 3.3.1.7 A.11	1, 2
8a	9. Pressurizer Pressure – Low	A.1 3.3.1.1 8	A.1 R 3.3.1.10	Q 3.3.1.7 A.11	1, 2
8b	10. Pressurizer Pressure – High	A.1 3.3.1.1 8	A.1 R 3.3.1.10	Q 3.3.1.7 A.11	1, 2
9	11. Pressurizer Water Level – High	A.1 3.3.1.1 8	A.1 R 3.3.1.10	Q 3.3.1.7 A.11	1, 2
10	12. Loss of Flow	A.1 3.3.1.1 8	A.1 R 3.3.1.10	Q 3.3.1.7 A.11	1

Response Time Test
N/A L.20
3.3.1.16 RAI 3.3.1-32 R5
3.3.1.16
N/A L.20
3.3.1.16
N/A L.20
3.3.1.16 RAI 3.3.1-35 R5
3.3.1.16
N/A L.20 RAI 3.3.1-39 R5
3.3.1.16
3.3.1.16
3.3.1.16
3.3.1.16
3.3.1.16

A.5 A.7 A.11 A.1

RAI 3.3.1-32

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A.1

TABLE 4.3-1 (Continued)

REACTOR TRIP SYSTEM INSTRUMENTATION SURVEILLANCE REQUIREMENTS

ITS	FUNCTIONAL UNIT	CHANNEL CHECK	CHANNEL CALIBRATION	CHANNEL FUNCTIONAL TEST (A.11: COT / TADOT)	MODES IN WHICH SURVEILLANCE REQUIRED	Response Time Test (A.5)
	13. Deleted					—
14	14. Steam Generator Water Level – Low-Low	S (A.1) 3.3.1.1	R (A.1) 3.3.1.10	Q (A.11) 3.3.1.7	1, 2	3.3.1.16 (A.7)
15	15. Steam/Feedwater Flow Mismatch and Low Steam Generator Water Level	S (A.1) 3.3.1.1	R (A.1) 3.3.1.10	Q (A.11) 3.3.1.7	1, 2	N/A (L.20)
12	16. Undervoltage – Reactor Coolant Pump Busses	N.A.	R (A.1) 3.3.1.10	N.A. (M.1) 3.3.1.6	1	3.3.1.16
13	17. Underfrequency – Reactor Coolant Pump Busses	N.A.	R (A.1) 3.3.1.10	N.A.	1	3.3.1.16 (RAI 3.3.1-1 R5)
16	18. Turbine Trip					(L.22)
16a	A. Low Auto Stop Oil Pressure	N.A.	N.A. (M.7) 3.3.1.10	S/U(1) (A.25) 3.3.1.15	1, 2	N/A
16b	B. Turbine Stop Valve Closure	N.A.	N.A. (M.7) 3.3.1.10	S/U(1) (A.25) 3.3.1.15	1, 2	N/A (L.20)
17	19. Safety Injection Input from ESF	N.A.	N.A.	M(4) & R (A.23) A.14 3.3.1.14	1, 2	N/A
11	20. Reactor Coolant Pump Breaker Position Trip	N.A.	N.A.	R (A.11) 3.3.1.14	N.A.	N/A (M.9) (RAI 3.3.1-1 R5)
19	21. A. Reactor Trip Breaker	N.A.	N.A.	M(5) & R (A.11) 3.3.1.4 (A.23) (A.18)	1, 2, & *	N/A (L.25)
	B. Reactor Trip Bypass Breaker	N.A.	N.A.	M(5) & R (A.11) 3.3.1.4 (A.23) (A.18)	1, 2, & *	N/A (A.18)
20	RTB Undervoltage and Shunt Trip Mech	N/A	N/A	3.3.1.4 (M.11)	1, 2, & *	N/A (M.11)
21	22. Automatic Trip Logic	N.A.	N.A.	M (A.11) 3.3.1.5 (A.23)	1, 2, & *	N/A (RAI 3.3.1-13 R5)

RAI MB 1433 MB 1427 R8 & 3.3.1-39 R5

RAI 3.3.1-14 R5

ITS 3.3.1 U-07-NC

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TABLE 4.3-1 (Continued)

NOTATION

* – With the reactor trip system breakers closed and the control rod drive system capable of rod withdrawal. (A.5)

*** – Below the P-10 (Low Setpoint Power Range Neutron Flux Interlock) setpoint (A.5) | RAI 3.3.1-33 R5

(1) – If not performed in previous 31 days. (A.25)

(2) – Heat balance only, above 15% of RATED THERMAL POWER. (L.15)
<INSERT PROPOSED NOTE>

(3) – Compare incore to excore axial offset above 50% of RATED THERMAL POWER. (L.9) RAI MB1433 MB1427 R8
Adjust channel if absolute difference ≥ 3 percent. <INSERT PROPOSED NOTE3>

(4) – Manual ESF functional input check every 18 months. (A.14) 3.3.1-34 R5

(5) – Each train or logic channel shall be tested at least every 31 days on a STAGGERED TEST BASIS. (A.23)

(6) – Neutron detectors may be excluded from CHANNEL CALIBRATION.

(7) – Below the P-6 (Intermediate Range Neutron Flux Interlock) setpoint (A.5)

(8) – The CHANNEL FUNCTIONAL TEST shall independently verify the OPERABILITY of the undervoltage and shunt trip circuits for the Manual Reactor Trip Function. The test shall also verify the OPERABILITY of the Bypass Breaker trip circuit(s). (A.11) (LA.4)

(9) – Local manual shunt trip the reactor trip bypass breaker immediately after placing the bypass breaker into service, but prior to commencing reactor trip system testing or reactor trip breaker maintenance. (LA.12)

(10) – Automatic undervoltage trip (LA.4) (A.11)

(11) – The CHANNEL FUNCTIONAL TEST shall independently verify the OPERABILITY of the undervoltage and shunt trip attachments of the Reactor Trip Breakers. (LA.4) RAI 3.3.1-31 R5

(12) – Quarterly Surveillance in Modes 3*, 4* and 5* shall also include verification that Permissives P-6 and P-10 are in their required state for existing plant conditions by observation of the permissive annunciator window. (L.10) (A.29) (LA.6)

(13) – Detector plateau curves shall be obtained and evaluated. The provisions of Specification 4.0.4 are not applicable for entry into Mode 2 or 1. (LA.13) (M.8)

(L.24) RAI 3.3.1-10 R5

<INSERT proposed Note>

<insert proposed Note>

(M.8) RAI MB1433 MB1427 R8 3.3.1-39 R5

Note SR 3.3.1.8 SR 3.3.1.15 Note SR 3.3.1.2 Notes 1&2 SR 3.3.1.3

Note SR 3.3.1.14

FREQUENCY SR 3.3.1.4 SR 3.3.1.5 Note SR 3.3.1.11

TADOT

TADOT

SR 3.3.1.8 Note SR 3.3.1.8

SR 3.3.1.7 Note

SR 3.3.1.11 Note 2

A.1

TABLE 4.3-1

REACTOR TRIP SYSTEM INSTRUMENTATION SURVEILLANCE REQUIREMENTS

ITS	FUNCTIONAL UNIT	CHANNEL CHECK	CHANNEL CALIBRATION	CHANNEL FUNCTIONAL TEST	MODES IN WHICH SURVEILLANCE REQUIRED
1	1. Manual Reactor Trip	N.A.	N.A.	R(8) LA.1 / 3.3.1.14 A.11	1, 2 and *
2	2. Power Range, Neutron Flux				
2a	A. High Setpoint	A.1 / 3.3.1.1 (8)	3.3.1.3 / L.15 L.7 L.9 A28 / D(6) M(3)(6) L.16 and R(10) 3.3.1.11 A.1	A.11 / Q 3.3.1.7	1, 2
2b	B. Low Setpoint	A.1 / 3.3.1.1 (8)	R(10) 3.3.1.11 A.1	L.6 / S/U(1) 3.3.1.8	1***, 2
3a	3. Power Range, Neutron Flux, High Positive Rate	N.A.	R(10) 3.3.1.11 A.1	A.11 / Q 3.3.1.7	1, 2
3b	4. Power Range, Neutron Flux, High Negative Rate	N.A.	R(10) A.1 3.3.1.11 RAI MB1V33 MB1V27 R8	A.11 / Q 3.3.1.7	1, 2
4	5. Intermediate Range, Neutron Flux	3.3.7.1 A.1 (5) a. / b. Q(7) A.10	M.8 LA.13 R(10)(12) 3.3.1.11 N.A.	L.6 / S/U(1) Q(12) 3.3.1.8 / N.A. L.15 3.3.1.7 3.3.1.8 S/U(1) Q(12) L.10	1***, 2 3*, 4*, 5*
5	6. Source Range, Neutron Flux	A.1 / 3.3.1.1 (8) (7) A.5	R(10) A.1 3.3.1.11	M.13	2, 3, 4, 5
6	7. Overtemperature ΔT	A.1 / 3.3.1.1 (8)	R(10) A.1 3.3.1.12	3.3.1.9 / 3.3.1.7 A.11 / A.28 3.3.1.3 L.16 L.9	1, 2
7	8. Overpower ΔT	A.1 / 3.3.1.1 (8)	R(10) A.1 3.3.1.12	3.3.1.7 A.11	1, 2
8a	9. Pressurizer Pressure – Low	A.1 / 3.3.1.1 (8)	R A.1 3.3.1.10	Q 3.3.1.7 A.11	1, 2
8b	10 Pressurizer Pressure – High	A.1 / 3.3.1.1 (8)	R A.1 3.3.1.10	Q 3.3.1.7 A.11	1, 2
9	11. Pressurizer Water Level – High	A.1 / 3.3.1.1 (8)	R A.1 3.3.1.10	Q 3.3.1.7 A.11	1, 2
10	12. Loss of Flow	A.1 / 3.3.1.1 (8)	R A.1 3.3.1.10	Q 3.3.1.7 A.11	1

RAI 3.3.1-32

A.5 A.7

MODES IN WHICH SURVEILLANCE REQUIRED	Response Time Test
1, 2 and *	N/A — L.20
1, 2	3.3.1.16 (RAI 3.3.1-32 RS)
1***, 2	3.3.1.16
1, 2	N/A — L.20
1, 2	3.3.1.16
1***, 2 3*, 4*, 5*	N/A — L.20
2, 3, 4, 5	3.3.1.16 (RAI 3.3.1-35 RS)
1, 2	3.3.1.16 (RAI 3.3.1-39 RS)
1, 2	N/A — L.20
1, 2	3.3.1.16
1, 2	3.3.1.16
1, 2	3.3.1.16
1	3.3.1.16

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TABLE 4.3-1 (CONTINUED)

REACTOR TRIP SYSTEM INSTRUMENTATION SURVEILLANCE REQUIREMENTS

ITS	FUNCTIONAL UNIT	CHANNEL CHECK	CHANNEL CALIBRATION	CHANNEL FUNCTIONAL TEST	MODES IN WHICH SURVEILLANCE REQUIRED	Response Time Test
	13. Deleted	—	—	—	—	—
14	14. Steam Generator Water Level – Low-Low	S A.1 3.3.1.1	R A.1 3.3.1.10	S A.11 3.3.1.7	1, 2	3.3.1.16
15	15. Steam/Feedwater Flow Mismatch and Low Steam Generator Water Level	S A.1 3.3.1.1	R A.1 3.3.1.10	S A.11 3.3.1.7	1, 2	NA L.20
12	16. Undervoltage – Reactor Coolant Pump Busses	N.A.	R A.1 3.3.1.10	R A.11 3.3.1.6	1	3.3.1.16
13	17. Underfrequency – Reactor Coolant Pump Busses	N.A.	R A.1 3.3.1.10	R A.11 3.3.1.6	1	3.3.1.16
16	18. Turbine Trip		M.7 3.3.1.10	A.25 3.3.1.15		
16a	A. Low Auto Stop Oil Pressure	N.A.	NA 3.3.1.10	SA(1) 3.3.1.15	N.A.	N/A L.20
16b	B. Turbine Stop Valve Closure	N.A.	NA M.7	SA(1) A.25	N.A.	N/A
17	19. Safety Injection Input from ESF	N.A.	N.A.	M(4) & S A.23 A.14 3.3.1.14	1, 2	N/A
11	20. Reactor Coolant Pump Breaker Position Trip	N.A.	N.A.	R A.11 3.3.1.14	1	N/A
19	21. A. Reactor Trip Breaker	N.A.	N.A.	A.11 A.23 A.11 3.3.1.4 M S (9) & (11) L.25	1, 2, & *	N/A
	B. Reactor Trip Bypass Breaker	N.A.	N.A.	M(5) (9) & R A.18	1, 2, & *	N/A
20	RTB undervoltage and shunt Trip Mech.	N/A	N/A	3.3.1.4 M.11		
21	22. Automatic Trip Logic	N.A.	N.A.	A.11 M S A.23 3.3.1.5	1, 2, & *	N/A

RAI MB1433 MB1427 R8 3.3.1-39 R5

RAI 3.3.1-14 R5

RAI 3.3.1-13 R5

RAI 3.3.1-1 R5

TABLE 4.3-1 (CONTINUED)

ITS

NOTATION

* – With the reactor trip system breakers closed and the control rod drive system capable of rod withdrawal. A.5

*** – Below the P-10 (Low Setpoint Power Range Neutron Flux Interlock) setpoint. A.5

Note SR 3.3.1.8 SR 3.3.1.15 Note SR 3.3.1.2

(1) – If not performed in previous 31 days. RAI 3.3.1-33 R5 A.25

(2) – Heat balance only, above 15% of RATED THERMAL POWER. Adjust channel if absolute difference ≥2 percent. <INSERT PROPOSED NOTE> L.7 L.15

Note 1 & 2 SR 3.3.1.3

(3) – Compare incore to excore axial offset above 50% of RATED THERMAL POWER. Recalibrate if absolute difference ≥ 3 percent. <INSERT PROPOSED Note3> L.9

Note SR 3.3.1.14

(4) – Manual ESF functional input check every 18 months. RAIs MB3433 R8 MB1427 3.3.1-29 R5 A.14

FREQUENCY SR 3.3.1.4 SR 3.3.1.5 NOTE SR 3.3.1.11

(5) – Each train or logic channel shall be tested at least every 62 31 days on a STAGGERED TEST BASIS. A.23

(6) – Neutron detectors may be excluded from CHANNEL CALIBRATION.

(7) – Below the P-6 (Intermediate Range Neutron Flux Interlock) setpoint. A.5

TADOT

(8) – The CHANNEL FUNCTIONAL TEST shall independently verify the OPERABILITY of the undervoltage and shunt trip circuits for the Manual Reactor Trip Function. The test shall also verify the OPERABILITY of the Bypass Breaker trip circuit(s). A.11 LA.4

(9) – Local manual shunt trip the reactor trip bypass breaker immediately after placing the bypass breaker into service, but prior to commencing reactor trip system testing or reactor trip breaker maintenance. LA.12

(10) – Automatic undervoltage trip. LA.4

TADOT

(11) – The CHANNEL FUNCTIONAL TEST shall independently verify the OPERABILITY of the undervoltage and shunt trip attachments of the Reactor Trip Breakers. A.11 LA.4

RAI 3.3.1-31 R5

SR 3.3.1.8 Note SR 3.3.1.8

(12) – Quarterly Surveillance in Modes 3*, 4* and 5* shall also include verification that Permissives P-6 and P-10 are in their required state for existing plant conditions by observation of the permissive annunciator window. L.10 A.29 LA.6

(13) – Detector plateau curves shall be obtained and evaluated. The provisions of Specification 4.0.4 are not applicable for entry into Mode 2 or 1. LA.13 M.8

SR 3.3.1.7 Note SR 3.3.1.11

<INSERT Proposed Note> L.24

<INSERT Proposed Note> M.8

RAI 3.3.1-10 R5

RAI MB3433 MB1427 R8

Rev 8 3.3.1-3 R5

automatic trip logic, provided the other channel is OPERABLE. This changes the CTS by placing the allowance of concurrent surveillance testing into a Note in the ITS format.

This change is acceptable because the allowance of the CTS is maintained in the ITS format. Four hours of concurrent surveillance testing of the RTB and automatic trip logic are allowed in the CTS requirements. The CTS allowance is justified by WCAP-14333 P-A. This change is designated as administrative because it does not result in a technical change to the CTS.

RAIs 3.3.1-2 3.3.1-18 R5

A.27 CTS Table 3.3-1 Function 20 RCP Breaker Position provides for a reactor trip. The total number of channels is one per (RCP) breaker and for an inoperable channel Action 8 must to be entered and requires the inoperable channel to be placed into trip within 72 hours or the unit is required to be placed below P-7 interlock within 78 hours. ITS 3.3.1 for RCP Breaker Position specifies the required channels is one per RCP (breaker) and requires Condition M for an inoperable channel. The Condition provides for an inoperable channel that the channel must be placed in trip within 72 hours or power must be reduced below P-7 setpoint within 78 hours. This changes the CTS by stating the channel requirement for RCP breaker position as one per RCP.

RAI 3.3.1-8 R5

The purpose of this change is to provide consistent requirements for the functions as assumed in the safety analyses assumptions. This change is acceptable because the required Reactor Trip function is specified to be OPERABLE in the applicable MODE with consistent required actions. The Condition is consistent with appropriate Required Action to place the unit out of the MODE of applicability within Completion Times consistent with other measures that shutdown the unit. This change is designated as administrative because it does not result in technical changes to the CTS.

A.28 CTS Table 4.3-1 lists the surveillance requirements for the Power Range Neutron Flux CHANNEL CALIBRATION as M (3)(6). Note (3) states, "Compare incore to excore axial offset above 15 % RATED THERMAL POWER (RTP). Adjust channel if absolute difference ≥ 3 percent." The CTS does not specify a CHANNEL CALIBRATION for the Overtemperature (OT)ΔT function. ITS Table 3.3.1–1 specifies SR 3.3.1.3 for PRNF and OTΔT functions. SR 3.3.1.3 states, " Compare results of the incore detector measurements to NIS AFD," every 31 effective full power days (EFPD). Three Notes modify the SR. Note 1 states, "Adjust NIS channel if absolute difference is ≥ 3 %." Note 2 states, "Not required to be performed until 7 days after THERMAL POWER is ≥ 50 % RTP." The addition of Note 2 is addressed by DOC L.9. The change from monthly to every 31 EFPD is addressed by DOC L.16. Note 3 states that SR 3.3.1.9 satisfies this SR. This changes the CTS by applying the requirement of a monthly comparison of axial offset of the NIS channel to both the PRNF and OTΔT functions.

RAIs MB1433 MB1427 R8 3.3.1-39 R5 3.3.1-32 R5

The purpose of CTS monthly CHANNEL CALIBRATION for the PRNF channels is to ensure the indicated ΔI signal from the Power Range channels for the OTΔT channels are within 3% of the actual ΔI. This change is acceptable because the technical requirements of the CTS are translated into the appropriate ITS requirements. The monthly calibration of the PRNF channels is to ensure the PRNF properly reflect AFD indications and OTΔT channels receive appropriate adjustments to change their setpoints for changing plant conditions of ΔI. This change is designated as administrative because it does not result in technical changes to the CTS.

RAI 3.3.1-32 R5

A.29 CTS Table 4.3-1 lists for the Power Range Low Setpoint and Intermediate Range channels a quarterly test to be performed (Q [12]). Note [12] states, "Quarterly Surveillance in MODE 3*, 4*, and 5* shall also include verification that Permissives P-6 and P-10 are in their required state for existing plant conditions by observation of the permissive annunciator window." ITS SR 3.3.1.8 for the Source, Intermediate, and Power Range Neutron Flux Low Setpoint channels require a CHANNEL OPERATIONAL TEST (COT) to be performed every 92 days. A Note modifies the SR that states, "This Surveillance shall include verification that interlocks P-6 and P-10 are in their required state for existing unit conditions." The movement of the phrase, "by observation of the permissive annunciator window," is addressed by DOC LA.6. The deletion of quarterly surveillance in MODES 3*, 4*, and 5* is addressed by DOC L.10. This changes the CTS by reformatting the requirement to the ITS SR 3.3.1.8 Note.

RAI 3.3.1-31 R5

The purpose of ITS SR 3.3.1.8 Note is to ensure the interlocks P-6 and P-10 are in the proper state for the indicated power level from the appropriate NIS channels. This change is acceptable because the technical requirements of the CTS are maintained in ITS format. The CTS and ITS require the verification of P-6 and P-10 interlocks are in the required state for existing plant conditions. This change is designated as administrative because it does not result in technical changes to the CTS.

MORE RESTRICTIVE CHANGES

M.1 Unit 1 CTS Table 4.3-1 Function 16 RCP Undervoltage does not contain a Surveillance Requirement for a CHANNEL FUNCTIONAL TEST to be performed. Unit 2 CTS Table 4.3-1 Function 16 requires a CHANNEL FUNCTIONAL TEST to be performed at a Q (Quarterly) Frequency. ITS Table 3.3.1–1 Function 12 RCP undervoltage requires ITS SR 3.3.1.6 to be performed for both units undervoltage functions. A Note that states, "Verification of setpoint is not required," modifies the SR. This changes the Unit 1 CTS Surveillance Requirements for RCP undervoltage by specifying a TADOT be performed every 92 days and adds a Note to the SR.

RAI 3.3.1-19 R5
RAIs MB1433 MB1427 R8 3.3.1-39 R5

The purpose of the ITS SR 3.3.1.6 is to ensure that an undervoltage to the RCP bus will generate a reactor trip signal and the frequency is adequate to detect failures of

the circuits. This change is acceptable because the RCP undervoltage provides a reactor trip function and has the capability of being tested with the unit in MODE 1 with a minimum of risk. Testing of the Unit 2 RCP Undervoltage function will continue to be tested every 92 days and will continue to be required in the ITS requirements. The inclusion of the Note is acceptable because the functions are tested to ensure they are capable of performing the intended function. The verification of setpoint would require testing that is only required when the function is not required to be OPERABLE. This is done in conjunction with the CHANNEL CALIBRATION performed every 18 months. This change is designated as more restrictive because the ITS requirements specify a SR to be performed that the CTS does not require for Unit 1.

RAI 3.3.1-19 RS

M.2 CTS 3.3.1.1 Action 2 requires an inoperable Power Range channel to be placed in trip within 72 hours, for either the neutron flux levels or positive and negative rate trips functions being inoperable. If this cannot be accomplished, the unit is required to enter LCO 3.0.3 and one hour is allowed to initiate action and 6 additional hours for the unit to be placed in HOT STANDBY. CTS LCO 3.0.3 provides the requirements when a LCO is not met and within one hour Action shall be initiated to place the unit in a MODE in which the Specification does not apply. ITS LCO 3.0.3 is required to be entered if more than one Power Range channel becomes inoperable for either of the required functions of flux level or rate trips. ITS 3.3.1 Required Actions D for an inoperable Power Range Neutron Flux channel requires the inoperable channel to be placed into trip within 72 hours with additional compensatory measures, or place the unit in MODE 3 within the next 6 hours. ITS 3.3.1 Required Action E for an inoperable Power Range channel for positive or negative rate trips, requires the inoperable channel to be placed into trip within 72 hour or the unit is required to be in MODE 3 within the next 6 hours. This changes the CTS requirements by decreasing the time allowed to be in MODE 3 from 7 hours in the CTS to 6 hours for the ITS.

This change is acceptable because the CTS requirements are modified to provide the necessary Required Actions and appropriate Completion Times. The Completion Time of six hours to reach MODE 3 from 100% RTP, in a safe manner without challenging plant systems, is consistent with other CTS and ITS requirements. This change is designated as more restrictive because the Completion Time for the unit to be placed in MODE 3 has been decreased by one hour.

M.3 CTS 3.3.1.1 Action 3.b requires for an inoperable Intermediate Range channel, when power is below P-10 and above the Intermediate Range interlock P-6, that the channel be restored to OPERABLE status prior to increasing power above the P-10 limit. ITS Required Actions F.1 and F.2 only allow operation between P-6 and P-10 power levels for a maximum time of 24 hours. After that, power level is required to either be increased above P-10 or decreased below P-6. The allowance for increasing power above P-10 is addressed by DOC L.4.. Limiting the time with an inoperable Intermediate Range channel to 24 hours changes the CTS requirements, which currently allows operation for an indefinite period of time.

the verification that time constants are adjusted to prescribed values. This changes the CTS by adding a CHANNEL CALIBRATION requirement for the Turbine Trip functions.

The purpose of ITS SR 3.3.1.10 is to ensure the channels are aligned to provide an accurate representation of the monitored function including any required time constants. This change is acceptable because the periodic verification of the Allowable Values is necessary to ensure the turbine will trip at the specified values. This change is designated as more restrictive because the current requirement for the Turbine Trip does not require periodic CHANNEL CALIBRATION verification.

RAI 3.3.1-24 R5

M.8 CTS Table 4.3-1 contains a Surveillance Requirement for the Intermediate Range channels. A CHANNEL CALIBRATION is required and modified by a footnote. Note 13 states, "The provisions of Specification 4.0.4 are not applicable for entry in MODE 2 or 1." ITS SR 3.3.1.11 for the Intermediate Ranges requires a CHANNEL CALIBRATION every 18 months. Two Notes modify the SR. Note 1 states, "Neutron detectors are excluded from CHANNEL CALIBRATION." Note 2 requires, "This surveillance shall include verification that the time constants are adjusted to the prescribed values." This changes the CTS by deleting a portion of the Note allowing the Specification 4.0.4 allowance and adding Note 2 to ensure time constants are adjusted to prescribed values.

R5

RAIs MB1433 MB1427 R8

3.3.1-39 R5

This change is acceptable because the Specification 4.0.4 exception is not necessary because the Surveillance Requirement may be performed and evaluated without affecting the OPERABILITY of the instruments. The change that adds Note 2 is acceptable because safety functions with time constants require verification that they are accurate on a periodic basis. The inclusion of the verification of the time constant setting ensures the safety functions perform as required. This change is designated as more restrictive because an allowance of the CTS has been deleted in the ITS requirements, and because a new requirement has been added to the SR.

M.9 Unit 1 CTS Table 4.3-1 Function 20, RCP Breaker Position Trip, lists N/A under the column labeled "MODES IN WHICH SURVEILLANCE REQUIRED." Function 20 requires a CHANNEL FUNCTIONAL TEST to be performed on an R (Refueling) frequency. Unit 2 CTS Table 4.3-1 Function 18, Turbine Trip on Low Auto Stop Oil Pressure and Turbine Stop Valve Closure, lists N/A under the "MODES IN WHICH SURVEILLANCE REQUIRED," column. Function 18 requires a CHANNEL FUNCTIONAL TEST to be performed for each portion of the function at a frequency of S/U [(1)]. S/U requires the surveillance to be performed prior to each reactor start up. Note [(1)] states, "If not performed within the previous 31 days." The applicable MODES or other specified conditions for ITS Table 3.3.1-1 Function 11, RCP Breaker Position Trip is MODE 1[(f)], with SR 3.3.1.14 as a required Surveillance. Note [(f)] states, "Above the P-7 (Low Power Reactor Trips Block) interlock." The applicable MODES or other specified conditions for ITS Table 3.3.1-1 Function 16, Turbine Trip on Low Auto Stop Oil Pressure or Turbine Stop Valve Closure, is

RAI 3.3.1-01 R5

Control System in a condition where rods cannot be withdrawn. This is required within one hour. This changes the CTS by requiring the diverse trip functions to be OPERABLE in MODES 3(a), 4(a), and 5(a), and adding of ITS Condition C requirements.

RAI 3.3.1-14 R5

The purpose of the additional ITS requirements in applicability and Condition C is to provide appropriate requirements for the RTB when the Rod Control System is capable of rod withdrawal. This change is acceptable because the RTB must be capable of tripping the rods any time the rods are withdrawn or capable of being withdrawn. This requirement ensures the Reactor Trip System can provide its safety function. This change is designated as more restrictive because additional requirements are provided in the ITS.

M.12 CTS Table 3.3-1 Function 21A Reactor Trip Breakers lists Action 1 to be entered for an inoperable channel in MODES 1 and 2. CTS Action 14 is applicable for the RTBs for the diverse trip function and it states, "With one of the diverse trip features (undervoltage or shunt trip device) inoperable, restore it to OPERABLE status within 48 hours or declare the breaker inoperable and apply Action 1. The breaker shall not be bypassed while one of the diverse trip features is inoperable except for the time required for performing maintenance to restore the breaker to OPERABLE status." ITS Table 3.3.1–1 Function 19 RTB requires 2 trains to be OPERABLE in MODES 1 and 2 and Condition P to be entered if one RTB train is inoperable. Condition P states that with one train inoperable, it must be restored to OPERABLE status in one hour or be in MODE 3 within 7 hours. Three Notes modify the Condition. Note 2 states, "One RTB may be bypassed for up to 2 hours for maintenance on undervoltage or shunt trip mechanisms, provided the other train is OPERABLE." This changes the CTS requirements for the RTBs by limiting to 2 hours any maintenance on the undervoltage or shunt trip mechanism before declaring the RTB train inoperable.

RAIs 3.3.1-02 3.3.1-18 R5

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.

M.13 CTS Table 4.3–1 Surveillance Requirements do not require a test on the OTΔT Functions to ensure an accurate input for the f (ΔI) 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, "Calibrate excore channels to agree with incore detector measurements." This SR must be performed every 18 months. Two Notes modify the requirement. Note 1 states, " Neutron detectors are excluded from CHANNEL CALIBRATION." Note 2 states, "Not required to be performed until 7 days after

RAI 3.3.1-39 R5

RAI MB1433 MB1427 R8

THERMAL POWER is ≥ 50%." This changes the CTS by requiring an additional Surveillance Requirement for the OTΔT Function.

RAI MB1433 MB1427 R8

The purpose of ITS SR 3.3.1.9 is to ensure accurate inputs of f (ΔI) from NIS channels for the OTΔT Function. This change is acceptable because the OTΔT Functions receive inputs for the f (ΔI) 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 (ΔI) can be determined for the OTΔT Function. The change is classified as more restrictive because an additional Surveillance Requirement is added to the current requirements.

RAI 3.3.1-39 R5

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 R5

The removal of these details for performing surveillance requirements from the Technical Specifications is acceptable because this type of information is not necessary to be included in the Technical Specifications to provide adequate protection of public health and safety. The ITS still retains the requirement to perform RESPONSE TIME TESTING. Also, this change is acceptable because these types of procedural details will be adequately controlled in the ITS Bases. Changes to the Bases are controlled by the Technical Specification Bases Control Program in Chapter 5. This program provides for the evaluation of changes to ensure the Bases are properly controlled. This change is designated as a less restrictive removal of detail change because procedural details for meeting Technical Specification requirements are being removed from the Technical Specifications.

LA.2 *(Type 1 – Removing Details of System Design and System Description, Including Design Limits)* CTS 3.3.1.1 requires two Source Range channels be OPERABLE in MODE 2 ##. The note ## states that the high voltage to detector may be de-energized above P-6. ITS requirement for the Source Range channel state that two channels must be OPERABLE in MODE 2(d). Note (d) specifies, "Below the P-6 (Intermediate Range Neutron Flux) interlock" and maintains the intent of the CTS requirement. This changes the CTS by moving the allowance that the high voltage detector may be de-energized above P-6 from the Specifications to the ITS Bases.

L.9 *(Category 7 – Relaxation of Surveillance Frequency)* CTS Table 4.3-1 lists the surveillance requirements for the Power Range Neutron Flux CHANNEL CALIBRATION as M [(3)(6)]. Note [(3)] states, "Compare incore to excore axial offset above 15 % RATED THERMAL POWER (RTP). Adjust channel if absolute difference ≥ 3 percent." ITS Table 3.3.1–1 specifies SR 3.3.1.3 for the Overtemperature ΔT function. SR 3.3.1.3 states, " Compare results of the incore detector measurements to NIS AFD." Three Notes modify the SR. Note 1 states, "Adjust NIS channel if absolute difference is ≥ 3 %." Note 2 states, "Not required to be performed until 7 days after THERMAL POWER is ≥ 50 % RTP." Note 3 states that the performance of SR 3.3.1.9 satisfies this requirement. This changes the CTS by specifically stating that 7 days delay is allowed before requiring the performance of a CHANNEL CALIBRATION after THERMAL POWER ≥ 50 % RTP and allows the performance of SR 3.3.1.9 to satisfy this requirement.

RAI 3.3.1-32 R5

The purpose of ITS SR 3.3.1.3 Note 2 is to state that the SR is only applicable above the 50 % RTP and 7 days provides a reasonable period of time to perform the SR after exceeding the required power level. This SR is consistent with SRs 3.2.3.1 and 3.3.1.9 that provide for a surveillance of AFD and ΔI requirements with the same time and power level allowances. This change is acceptable because the new Surveillance Frequency has been evaluated to ensure that it provides an acceptable level of equipment reliability. The allowance of 7 days after exceeding 50 % RTP is a reasonable period of time to perform the flux mapping and compare the result with the indicated AFD of the NIS channels and making any required adjustments. The incore to excore indication of ΔI below 50 % of RTP does not provide for accurate comparisons, therefore a limit of 50 % is placed on the applicability of the SR. The performance of SR 3.3.1.9 requires a calibration of the excore channels so that they agree with the incore measurements. The performance of SR 3.3.1.9 more than satisfies SR 3.3.1.3 because SR 3.3.1.3 only requires a comparison of the incore and excore channels while SR 3.3.1.9 requires a calibration to be performed. This change is designated as less restrictive because Surveillances can be performed less frequently under the ITS than under the CTS.

RAI MB 1433 MB 1427 R8 3.3.1-39 R5

L.10 *(Category 7 – Relaxation Of Surveillance Frequency)* CTS Table 4.3-1 list for the Power Range (Low Setpoint), Intermediate Range, and the Source Range channels S/U [(1)] requirements for a CHANNEL FUNCTIONAL TEST (CFT). This also requires the CFT be performed prior to a reactor start up if not completed within the previous 31 days (Note [(1)]). The Source and Intermediate Ranges additionally require Q [(12)] requirement. Note [(12)] states, "Quarterly Surveillance in Modes 3*, 4*, and 5* shall also include verification that Permissive P-6 and P-10 are in their required state for existing plant conditions by observation of the permissive annunciator window." ITS SR 3.3.1.8 for the Source, Intermediate and Power Range Neutron Flux channels requires a COT be performed every 92 days. In addition, ITS SR 3.3.1.8 allows the COT to be performed within 12 hours after reducing power below P-10 for the Power

Attachment

Proposed Improved Technical Specifications
Response to Request for Additional Information
Proposed TSTF

Virginia Electric and Power Company
(Dominion)

North Anna Power Station Units 1 and 2

1) **Originating Plant:** Farley Nuclear Plant

2) **Originating Owners Group (Circle One):** B&WOG (WOG) CEOG BWROG

3) **Applicable to ITS NUREGs (Circle all that apply):** B&W Westinghouse CE BWR/4 BWR/6

4) **Person to Contact:** Michael Eidson **Telephone Number:** (205) 992-5978

5) **Date Change Needed by:** _____

6) **Short Title:** NIS Detector Calibration and Incore/Excore Cross-Calibration Surveillance Changes

7) **Description of Change:**
Reactor Trip System (RTS) Instrumentation Surveillance Requirements (SRs) for the Nuclear Instrumentation System (NIS) detectors and the incore/excore cross-calibration require the following changes. SR 3.3.1.3 Note 2 should allow 7 days (versus 24 hours) and should specify 50% RTP (versus 15% RTP) for periodic comparison of the incore/excore calibration data. Add Note 3 to SR 3.3.1.3 to indicate that SR 3.3.1.6 satisfies the SR 3.3.1.3 requirements. Add new Note 1 to SR 3.3.1.6 that excludes NIS detectors from the SR 3.3.1.6 requirements. Change the existing SR 3.3.1.6 Note to Note 2 and revise the time for incore/excore cross-calibration performance from 24 hours to 7 days and the frequency from 92 EFPD to 18 months. Add new Note 2 to the SR 3.3.1.11 so that the NIS channel calibration requires verification of the setpoint time constants. Revise the associated Bases for each of these surveillances.

8) **Justification of Change:**
See attached justification.

9) **Affected Technical Specifications**

Type	Number	Bases?	Title
All	LCO 3.2.3A		AFD (CAOC Methodology)—Applicability
All	LCO 3.2.3A	Yes	AFD (CAOC Methodology—Applicability
All	Table 3.3.1-1...		RTS Instrumentation
All	SR 3.3.1.3		RTS Instrumentation—Surveillance Requirements
All	SR 3.3.1.3	Yes	RTS Instrumentation—Surveillance Requirements
All	SR 3.3.1.6		RTS Instrumentation—Surveillance Requirements
All	SR 3.3.1.6	Yes	RTS Instrumentation—Surveillance Requirements
All	SR 3.3.1.9		RTS Instrumentation—Surveillance Requirements
All	SR 3.3.1.9	Yes	RTS Instrumentation—Surveillance Requirements
All	SR 3.3.1.11		RTS Instrumentation—Surveillance Requirements
All	SR 3.3.1.11	Yes	RTS Instrumentation—Surveillance Requirements

10) **Purpose of the Change:** Correct Specifications X Consistency/Standardization _____
Improve Specifications _____ Change Bases X Plant Variation _____

DO NOT WRITE IN THIS SPACE

DATE RECEIVED: _____

OWNERS GROUP NUMBER ASSIGNED: _____

TRAVELER DESCRIPTION AND JUSTIFICATION

DESCRIPTION

The proposed change to the Improved Standard Technical Specifications (ISTS) will accomplish the following: Reactor Trip System (RTS) Instrumentation Surveillance Requirements (SRs) for the Nuclear Instrumentation System (NIS) detectors and the incore/excore cross-calibration require the following changes. SR 3.3.1.3 Note 2 should allow 7 days (versus 24 hours) and should specify 50% RTP (versus 15% RTP) for periodic comparison of the incore/excore calibration data. Change the existing SR 3.3.1.6 Note to Note 2 and revise the time for incore/excore cross-calibration performance from 24 hours to 7 days and the frequency from 92 EFPD to 18 months. Renumber SR 3.3.1.6 to SR 3.3.1. and renumber SR 3.3.1.9 to SR 3.3.1.6 to organize SRs based on new frequencies. Add Note 3 to SR 3.3.1.3 to indicate that SR 3.3.1.9 satisfies the SR 3.3.1.3 requirements. Add new Note 1 to SR 3.3.1.9 that excludes NIS detectors from th SR 3.3.1.9 requirements. Add new Note 2 to the SR 3.3.1.11 so that the NIS channel calibration requires verification of the setpoint time constants. Renumbering of SR 3.3.1.6 and 3.3.1.9 require changes to references to 3.3.1.6 in AFD TS (CAOC Methodology). Revise the associated Bases for each of these surveillances.

BACKGROUND

Operation within the AFD limits (TS 3.2.3) ensures the axial power distribution skewing is sufficiently restricted, consistent with the safety analysis assumptions. AFD surveillance requirements are defined by SR 3.2.3.1. AFD surveillance/monitoring requires calibrated excore detector differential current (ΔI) output signals from the power range channels. The detector outputs are calibrated at BOL based on the SR 3.3.1.6 (new SR 3.3.1.9) incore/excore cross calibration and secondary power calorimetric measurements. The OTΔT setpoint must compensate for changes in axia flux difference to ensure core safety limits are not exceeded during postulated events which credit the OTΔT reactor trij Therefore, the f(ΔI) calibration must be periodically verified. Surveillance SR 3.3.1.3 is primarily intended to periodically verify the correct excore channel f(ΔI) input to the overtemperature delta T function. Revising the notes associated with ISTS SR 3.3.1.3 and 3.3.1.6 (New SR 3.3.1.9) make these surveillance requirement delay times and power levels consistent with SR 3.2.3.1.

NEED FOR CHANGE

SR 3.3.1.3 and SR 3.3.1.6 (new SR 3.3.1.9) both ensure that the excore channel ΔI indications and f(ΔI) inputs to the OTΔT reactor trip are maintained and calibrated consistent with the incore/excore calibration accuracy and periodic surveillance uncertainty allowances in the OTΔT setpoint calculation. Since these Notes place time and power limitations on performance of the associated surveillances, the time and power level in these Notes must be identical to prevent timing and applicability inconsistencies.

The "bracketed" time of 24 hours in surveillances SR 3.3.1.3 and SR 3.3.1.6 (new SR 3.3.1.9) is not sufficient to allow for the actual time required to perform all of the testing required to comply with these SRs in conjunction with other B(power ascension testing and plant chemistry activities with consideration for fuel limitations, such as power ramp and r withdrawal rates.

The "bracketed" power level in SR 3.3.1.3 is changed to $\geq$ 50% RTP to be consistent with the power level in SR 3.3.1.((new SR 3.3.1.9). A power level of $\geq$ 50% RTP also corresponds to the power level required for the surveillance of AI specified in SR 3.2.3.1 for plants that are licensed to operate with a relaxed axial offset control (RAOC) strategy. Sinc most plants are licensed for RAOC, rather than constant axial offset control (CAOC), $\geq$ 50% RTP is an appropriate power level for requiring performance of surveillance SR 3.3.1.3. Regardless of plant axial offset control strategy (i.e., RAOC or CAOC), the power levels and performance times in SR 3.2.3.1, SR 3.3.1.3, and SR 3.3.1.6 (new SR 3.3.1.9) must be in agreement.

Note 3 is added to ISTS surveillance SR 3.3.1.3. The note clarifies that surveillance SR 3.3.1.9 satisfies the surveillan requirements of SR 3.3.1.3. Since SR 3.3.1.9 calibration data is based on a more detailed data analysis and that the

3.1.3, is acceptable.

The "bracketed" frequency of 92 EFPD in SR 3.3.1.6 (new SR 3.3.1.9) is changed to 18 months. Normally this incore/excore calibration surveillance will be performed at BOL to normalize (i.e., calibrate) the NIS Power Range ΔI indications and f(ΔI) inputs for OTΔT by adjusting the excore channels to match the cycle-specific core power distributions. Performance of the periodic calibrations at the 92 EFPD frequency would require some plants to operate once per quarter below full power for about 3 days to obtain the extensive incore flux map data required for a multiple-point cross-calibration. Therefore, a frequency of 18 months is appropriate.

Note 2 must be added to SR 3.3.1.11 to ensure that the Power Range Positive and Negative Rate reactor trip function calibrations include verification (and, if necessary, adjustment) of the time constants specified in Table 3.3.1-1, "RTS Instrumentation," of the Technical Specifications.

PROPOSED CHANGE

Note 3 is added to ISTS surveillance SR 3.3.1.3. The note clarifies that surveillance SR 3.3.1.9 satisfies the surveillance requirements of SR 3.3.1.3. This provision is acceptable. Surveillance SR 3.3.1.3 periodically compares the results of incore flux map measurements to the actual excore ΔI indications. If the absolute difference is ≥3%, then the affected excore channels must be adjusted (i.e., re-normalized). This surveillance provides for periodic calibration checks that will, if necessary, compensate for the potential ΔI de-calibration affects due to slowly changing core flux distributions during the operating cycle. For a given cycle, the results of the incore/excore calibration at BOL are used as the basis for the initial excore channel ΔI calibration adjustments (i.e., the cycle-specific ΔI normalization) under surveillance SR 3.3.1.9. This calibration data is based on analysis of multiple flux maps over a range of core flux distributions. The initial normalization ensures that excore ΔI indications and the inputs to f(ΔI) for the OTΔT reactor trip are matched to the cycle-specific power distributions. In that SR 3.3.1.9 calibration data is based on a more detailed data analysis and that the surveillance requires excore channel adjustments, performance of SR 3.3.1.9, in lieu of the comparisons required by SR 3.3.1.3, is acceptable.

The "bracketed" time and power level in ISTS surveillance SR 3.3.1.3 Note 2 are changed. The "bracketed" time in ISTS surveillance SR 3.3.1.6 (new SR 3.3.1.9) existing Note is changed. ISTS SR 3.3.1.3 requires periodic excore channel ΔI adjustment (i.e., normalization), if necessary, based on incore flux map surveillance data. ISTS SR 3.3.1.6 (new SR 3.3.1.9) requires excore channel ΔI calibration (i.e., adjustments to normalize), based on multiple flux maps over a range of core power distributions. Both surveillances ensure that the excore channel ΔI indications and f(ΔI) inputs to the OTΔT reactor trip are maintained and calibrated consistent with the incore/excore calibration and periodic surveillance uncertainty allowances in the OTΔT setpoint calculation. Since these Notes place time and power limitations on performance of the associated surveillances, the time and power level in these Notes must be identical to prevent timing and applicability inconsistencies.

The "bracketed" time of 24 hours in surveillances SR 3.3.1.3 and SR 3.3.1.9 is changed to 7 days. This time is reasonable based on the actual time required to: perform a full core flux map at full power or multiple flux maps over a range of power distributions at part-power; analyze the resultant data and calculate new excore detector calibration currents; revise NIS excore power range calibration procedures; and implement the new calibration data in each power range and OTΔT protection channel. In addition, SR 3.3.1.9 must be coordinated with other BOL power ascension testing and plant chemistry activities with consideration for fuel limitations, such as power ramp and rod withdrawal rates. A time allowance of 7 days is also consistent with the time allowance for performance of AFD surveillance in SR 3.2.3.1, which requires calibrated excore channel ΔI indications based on the cycle-specific core power distributions. The 7-day allowance provides sufficient time for surveillance performance, including excore channel normalization if necessary, and the subsequent performance of the AFD surveillance, without placing unwarranted duress on the plant operations, maintenance, and/or engineering staffs.

The "bracketed" power level in ISTS surveillance SR 3.3.1.3 of ≥15% RTP is changed to ≥ 50% RTP. This is identical to the power level in ISTS surveillance 3.3.1.9. A power level of ≥ 50% RTP corresponds to the power level required for the surveillance of AFD specified in SR 3.2.3.1 for plants that are licensed to operate with a relaxed axial offset control (RAOC) strategy. Whereas, 15% RTP corresponds to the power level required for AFD surveillance for plants that are

licensed to operate with a CAOC strategy.

The frequency of ISTS SR 3.3.1.6 (new SR 3.3.1.9) is revised to require the excore power range instrumentation to be calibrated (i.e., adjusted/normalized) to the incore instrumentation readings on a frequency of every 18 months consistent with the frequency for performing an incore/excore cross calibration. In addition, the ISTS SR number is revised to SR 3.3.1.9 (ISTS SR 3.3.1.9 is likewise revised to SR 3.3.1.6) to preserve the ISTS format of the longer SR intervals being presented later in the numerical order. Operating experience has proven this 18 month frequency to be adequate for performing the incore/excore cross calibration and for establishing the BOL cycle-specific power range channel ΔI calibration. Because variations in core design and fuel assembly manufacturing influence core power distributions, a robust incore/excore calibration at the beginning of each operating cycle should be performed. The excore channel ΔI calibration data is based on analysis of multiple incore flux maps over a range of power distributions. As a result, the BOL incore/excore cross-calibration normalizes the excore channel ΔI indications and f(ΔI) input for OTΔT to match the cycle-specific core power distributions. The monthly calibration checks and re-normalization, if necessary, of the power range ΔI channels, required by SR 3.3.1.3, address the affects of flux re-distribution with burnup. Therefore, the ISTS SR 3.3.1.6 (new SR 3.3.1.9) frequency change from 92 EFPD to 18 months is appropriate.

JUSTIFICATION

SR 3.3.1.3 requires excore channel ΔI adjustment (i.e., normalization), if necessary, based on periodic incore flux map surveillance data throughout the cycle. SR 3.3.1.9 requires excore channel ΔI calibration (i.e., adjustments to normalize), normally conducted at BOL, based on multiple flux maps over a range of core power distributions. Both surveillances ensure that the excore channel ΔI indications and f(ΔI) inputs to the OTΔT reactor trip are maintained and calibrated consistent with the incore/excore calibration accuracy and periodic surveillance uncertainty allowances in the OTΔT setpoint calculation. Since these Notes place time and power limitations on performance of the associated surveillances, the time and power level in these Notes must be identical to prevent timing and applicability inconsistencies.

The "bracketed" time of 24 hours in surveillances SR 3.3.1.3 and SR 3.3.1.9 is changed to 7 days. This time is reasonable based on the actual time required to: perform a full core flux map at full power or multiple flux maps over a range of power distributions at part-power; analyze the resultant data and calculate new excore detector calibration currents; revise NIS excore power range calibration procedures; and implement the new calibration data in each power range and OTΔT protection channel. In addition, SR 3.3.1.9 must be coordinated with other BOL power ascension testing and plant chemistry activities with consideration for fuel limitations, such as power ramp and rod withdrawal rates. A time allowance of 7 days is also consistent with the time allowance for performance of AFD surveillance in SR 3.2.3.1, which requires calibrated excore channel ΔI indications based on the cycle-specific core power distributions. The 7-day allowance provides sufficient time for surveillance performance, including excore channel normalization if necessary, and the subsequent performance of the AFD surveillance, without placing unwarranted duress on the plant operating, maintenance and engineering staffs.

The "bracketed" power level in SR 3.3.1.3 of ≥ 15% RTP is changed to ≥ 50% RTP. This is identical to the power level in SR 3.3.1.9. A power level of ≥ 50% RTP corresponds to the power level required for the surveillance of AFD specified in SR 3.2.3.1 for plants that are licensed to operate with a relaxed axial offset control (RAOC) strategy. Whereas, 15% RTP corresponds to the power level required for AFD surveillance for plants that are licensed to operate with a CAOC strategy. Since most plants are licensed for RAOC, ≥ 50% RTP is an appropriate power level for requiring performance of surveillance SR 3.3.1.3. Regardless of plant axial offset control strategy (i.e., RAOC or CAOC), the power levels and performance times in SR 3.2.3.1, SR 3.3.1.3, and SR 3.3.1.9 must be in agreement.

Note 3 is added to ISTS surveillance SR 3.3.1.3. The note clarifies that surveillance SR 3.3.1.9 satisfies the surveillance requirements of SR 3.3.1.3. Surveillance SR 3.3.1.3 periodically compares the results of incore flux map measurements to the actual excore ΔI indications. If the absolute difference is ≥ 3%, then the affected excore channels must be adjusted (i.e., re-normalized). This surveillance provides for periodic calibration checks that will, if necessary, compensate for the potential ΔI de-calibration affects due to slowly changing core flux distributions during the operating cycle. For a given cycle, the results of the incore/excore calibration at BOL are used as the basis for the initial excore channel ΔI calibration adjustments (i.e., the cycle-specific ΔI normalization) under surveillance SR 3.3.1.9. This calibration data is based on analysis of multiple flux maps over a range of core flux distributions. The initial normalization ensures that excore ΔI

SR 3.3.1.9 calibration data is based on a more detailed data analysis and that the surveillance requires excore channel adjustments, performance of SR 3.3.1.9, in lieu of the comparisons required by SR 3.3.1.3, is acceptable.

The addition of a new note to SR 3.3.1.9 specifies that the NIS Power Range detectors are not calibrated; the associated Bases revision clarifies that the detector output is adjusted (i.e., normalized) to be in agreement with the incore calibration data.

The "bracketed" frequency of 92 EFPD in SR 3.3.1.6 (new SR 3.3.1.9) is changed to 18 months. Normally this incore/excore calibration surveillance will be performed at BOL to normalize (i.e., calibrate) the NIS Power Range ΔI indications and $f(\Delta I)$ inputs for $OT\Delta T$ by adjusting the excore channels to match the cycle-specific core power distributions. Plant operating experience has proven the 18-month frequency to be adequate. The monthly calibration checks and re-normalization, if necessary, of the power range ΔI channels, required by SR 3.3.1.3, address the affects of flux re-distribution with burnup. Furthermore, the $OT\Delta T$ setpoint calculations include an explicit process measurement uncertainty allowance of about 3% difference between the incore and excore instruments. This allowance is consistent with periodic verification required by SR 3.3.1.3. As such, the SR 3.3.1.6 (new SR 3.3.1.9) cross-calibration frequency of 92 EFPD does not provide any improvement in safety. In addition, performance of the periodic calibrations at the 92 EFPD frequency would require some plants to operate once per quarter below full power for about 3 days to obtain the extensive incore flux map data required for a multiple-point cross-calibration. Therefore, a frequency of 18 months is appropriate.

Note 2 must be added to SR 3.3.1.11 to ensure that the Power Range Positive and Negative Rate reactor trip function calibrations include verification (and, if necessary, adjustment) of the time constants specified in Table 3.3.1-1, "RTS Instrumentation," of the Technical Specifications.

The basis for each of these RTS surveillance changes must be added to the Surveillance Requirements Bases Section B 3.3.1. In addition, technical errors pertaining to incore/excore calibration and the NIS Power Range, Intermediate Range and Source Range detector calibrations must be corrected in the Bases for SR 3.3.1.3, SR 3.3.1.9 and SR 3.3.1.11.

DETERMINATION OF NO SIGNIFICANT HAZARDS CONSIDERATION

Reactor Trip System (RTS) Instrumentation Surveillance Requirements (SRs) for the Nuclear Instrumentation System (NIS) detectors and the incore/excore cross-calibration require the following changes. SR 3.3.1.3 Note 2 should allow 7 days (versus 24 hours) and should specify 50% RTP (versus 15% RTP) for periodic comparison of the incore/excore calibration data. Change the existing SR 3.3.1.6 Note to Note 2 and revise the time for incore/excore cross-calibration performance from 24 hours to 7 days and the frequency from 92 EFPD to 18 months. Renumber SR 3.3.1.6 to SR 3.3.1.9 and renumber SR 3.3.1.9 to SR 3.3.1.6 to organize SRs based on new frequencies. Add Note 3 to SR 3.3.1.3 to indicate that SR 3.3.1.9 satisfies the SR 3.3.1.3 requirements. Add new Note 1 to SR 3.3.1.9 that excludes NIS detectors from the SR 3.3.1.9 requirements. Add new Note 2 to the SR 3.3.1.11 so that the NIS channel calibration requires verification of the setpoint time constants. Renumbering of SR 3.3.1.6 and 3.3.1.9 require changes to references to 3.3.1.6 in the Axial Flux Difference (AFD) TS (Constant Axial Offset Control (CAOC) Methodology). Revise the associated Bases for each of these surveillances.

In accordance with the criteria set forth in 10 CFR 50.92, the Industry has evaluated the proposed Improved Standard Technical Specifications (ISTS) changes and determined they do not represent a significant hazards consideration. The following is provided in support of this conclusion.

1. Does the change involve a significant increase in the probability or consequences of an accident previously evaluated?

   The proposed changes do not significantly increase the probability or consequences of an accident previously evaluated in the Final Safety Analysis Report (FSAR). The surveillance testing associated with the excore and incore instrumentation system does not directly initiate an accident. The consequences of accidents previously evaluated in the FSAR are not adversely affected by these proposed changes because the changes are made to

provide consistency in the format and requirements of the ISTS and provide sufficient time to perform these surveillances at the BOL. Therefore, these changes do not involve a significant increase in the probability or consequences of an accident previously evaluated.

2. Does the change create the possibility of a new or different kind of accident from any accident previously analyzed?

The proposed changes do not create the possibility of a new or different kind of accident than any accident already evaluated in the FSAR. No new accident scenarios, failure mechanisms, or limiting single failures are introduced as a result of the proposed changes. The proposed Technical Specifications changes do not challen the performance or integrity of any safety-related systems. Therefore, these changes do not create the possibil of a new or different kind of accident from any accident previously analyzed.

3. Does this change involve a significant reduction in the margin of safety?

The proposed changes do not involve a significant reduction in a margin of safety. The proposed changes are made to provide consistency in the format and requirements of the ISTS and provide sufficient time to perform these surveillances at the BOL. Periodic surveillances are still required throughout the cycle. The nominal actuation setpoints specified by the Technical Specifications and the safety analysis limits assumed in the transient and accident analysis are unchanged. The margin of safety associated with the acceptance criteria fc any accident is unchanged because the basis for incore/excore cross-calibration uncertainties remain the same Therefore, the proposed change will not significantly reduce the margin of safety as defined in the Technical Specifications.

Conclusion

Based on the preceding information, it has been determined that the proposed changes to the Reactor Trip System (RTS) TS do not involve a significant hazards consideration as defined in 10 CFR 50.92 (c).

3.2 POWER DISTRIBUTION LIMITS

3.2.3A AXIAL FLUX DIFFERENCE (AFD) (Constant Axial Offset Control (CAOC) Methodology)

LCO 3.2.3 The AFD:

a. Shall be maintained within the target band about the target flux difference. The target band is specified in the COLR.

b. May deviate outside the target band with THERMAL POWER < 90% RTP but ≥ 50% RTP, provided AFD is within the acceptable operation limits and cumulative penalty deviation time is ≤ 1 hour during the previous 24 hours. The acceptable operation limits are specified in the COLR.

c. May deviate outside the target band with THERMAL POWER < 50% RTP.

- NOTES -

1. The AFD shall be considered outside the target band when two or more OPERABLE excore channels indicate AFD to be outside the target band.

2. With THERMAL POWER ≥ 50% RTP, penalty deviation time shall be accumulated on the basis of a 1 minute penalty deviation for each 1 minute of power operation with AFD outside the target band.

3. With THERMAL POWER < 50% RTP and > 15 % RTP, penalty deviation time shall be accumulated on the basis of a 0.5 minute penalty deviation for each 1 minute of power operation with AFD outside the target band.

4. A total of 16 hours of operation may be accumulated with AFD outside the target band without penalty deviation time during surveillance of power range channels in accordance with SR 3.3.1.6 provided AFD is maintained within acceptable operation limits.

APPLICABILITY: MODE 1 with THERMAL POWER > 15% RTP.

SURVEILLANCE REQUIREMENTS (continued)

	SURVEILLANCE	FREQUENCY
SR 3.3.1.2	- NOTES - 1. Adjust NIS channel if absolute difference is > 2%. 2. Not required to be performed until [12] hours after THERMAL POWER is ≥ 15% RTP. Compare results of calorimetric heat balance calculation to Nuclear Instrumentation System (NIS) channel output.	24 hours
SR 3.3.1.3	- NOTES - 1. Adjust NIS channel if absolute difference is ≥ [3]%. 2. Not required to be performed until [24] hours after THERMAL POWER is ≥ [15]% RTP. Compare results of the incore detector measurements to NIS AFD.	[7] days 31 effective full power days (EFPD)
SR 3.3.1.4	- NOTE - This Surveillance must be performed on the reactor trip bypass breaker prior to placing the bypass breaker in service. Perform TADOT.	31 days on a STAGGERED TEST BASIS
SR 3.3.1.5	Perform ACTUATION LOGIC TEST.	31 days on a STAGGERED TEST BASIS

1. Neutron detectors are excluded from CHANNEL CALIBRATION.

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE	FREQUENCY
SR 3.3.1.6 **- NOTE -** 1. Neutron detectors are excluded from CHANNEL CALIBRATION. 2. Not required to be performed until [24] hours after THERMAL POWER is ≥ 50% RTP. Calibrate excore channels to agree with incore detector measurements.	[92] EFPD
SR 3.3.1.7 **- NOTE -** 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.	[92] days

[7] days

18 months

SURVEILLANCE REQUIREMENTS (continued)

	SURVEILLANCE	FREQUENCY
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.	- NOTE - Only required when not performed within previous [92] days Prior to reactor startup AND Four hours after reducing power below P-6 for source range instrumentation AND [Twelve] hours after reducing power below P-10 for power and intermediate range instrumentation AND Every 92 days thereafter
SR 3.3.1.9 (6)	- NOTE - Verification of setpoint is not required. Perform TADOT.	[92] days

2. This surveillance shall include verification that the time constants are adjusted to the prescribed values.

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE		FREQUENCY
SR 3.3.1.10	- NOTE - This Surveillance shall include verification that the time constants are adjusted to the prescribed values. Perform CHANNEL CALIBRATION.	[18] months
SR 3.3.1.11	- NOTE - 1. Neutron detectors are excluded from CHANNEL CALIBRATION. Perform CHANNEL CALIBRATION.	[18] months
SR 3.3.1.12	- NOTE - 2. This Surveillance shall include verification of Reactor Coolant System resistance temperature detector bypass loop flow rate. Perform CHANNEL CALIBRATION.	[18] months
SR 3.3.1.13	Perform COT.	18 months
SR 3.3.1.14	- NOTE - Verification of setpoint is not required. Perform TADOT.	[18] months
SR 3.3.1.15	- NOTE - Verification of setpoint is not required. Perform TADOT.	Prior to exceeding the [P-9] interlock whenever the unit has been in MODE 3, if not performed within the previous 31 days

1. Neutron detectors are excluded from CHANNEL CALIBRATION.

Table 3.3.1-1 (page 2 of 6)
Reactor Trip System Instrumentation

FUNCTION	APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS	REQUIRED CHANNELS	CONDITIONS	SURVEILLANCE REQUIREMENTS	ALLOWABLE VALUE	NOMINAL TRIP SETPOINT
6. Overtemperature ΔT	1,2	[4]	E	SR 3.3.1.1 SR 3.3.1.3 SR 3.3.1.6 SR 3.3.1.7 SR 3.3.1.12 SR 3.3.1.16	Refer to Note 1 (Page 3.3.1-16)	Refer to Note 1 (Page 3.3.1-16)
7. Overpower ΔT	1,2	[4]	E	SR 3.3.1.1 SR 3.3.1.7 SR 3.3.1.12 SR 3.3.1.16	Refer to Note 2 (Page 3.3.1-17)	Refer to Note 2 (Page 3.3.1-17)
8. Pressurizer Pressure						
a. Low	1[(f)]	[4]	K	SR 3.3.1.1 SR 3.3.1.7 SR 3.3.1.10 SR 3.3.1.16	≥ [1886] psig	[1900] psig
b. High	1,2	[4]	E	SR 3.3.1.1 SR 3.3.1.7 SR 3.3.1.10 SR 3.3.1.16	≤ [2396] psig	[2385] psig
9. Pressurizer Water Level - High	1[(e)]	3	K	SR 3.3.1.1 SR 3.3.1.7 SR 3.3.1.10	≤ [93.8]%	[92]%
10. Reactor Coolant Flow - Low	1[(f)]	3 per loop	K	SR 3.3.1.1 SR 3.3.1.7 SR 3.3.1.10 SR 3.3.1.16	≥ [89.2]%	[90]%
11. Reactor Coolant Pump (RCP) Breaker Position						
a. Single Loop	1[(f)]	1 per RCP	L	SR 3.3.1.14	NA	NA
b. Two Loops	1[(g)]	1 per RCP	K	SR 3.3.1.14	NA	NA

(e) Above the P-7 (Low Power Reactor Trips Block) interlock.

(f) Above the P-8 (Power Range Neutron Flux) interlock.

(g) Above the P-7 (Low Power Reactor Trips Block) interlock and below the P-8 (Power Range Neutron Flux) Interlock

BASES

LCO (continued)

to RTP with the AFD within the target band, provided the time duration of the deviation is limited. Accordingly, while THERMAL POWER is ≥ 50% RTP and < 90% RTP (i.e., Part b of this LCO), a 1 hour cumulative penalty deviation time limit, cumulative during the preceding 24 hours, is allowed during which the unit may be operated outside of the target band but within the acceptable operation limits provided in the COLR (Note 2). This penalty time is accumulated at the rate of 1 minute for each 1 minute of operating time within the power range of Part b of this LCO (i.e., THERMAL POWER ≥50% RTP. The cumulative penalty time is the sum of penalty times from Parts b and c of this LCO.

For THERMAL POWER levels > 15% RTP and < 50% RTP (i.e., Part c of this LCO), deviations of the AFD outside of the target band are less significant. Note 3 allows the accumulation of 1/2 minute penalty deviation time per 1 minute of actual time outside the target band and reflects this reduced significance. With THERMAL POWER < 15% RTP, AFD is not a significant parameter in the assumptions used in the safety analysis and, therefore, requires no limits. Because the xenon distribution produced at THERMAL POWER levels less than RTP does affect the power distribution as power is increased, unanalyzed xenon and power distribution is prevented by limiting the accumulated penalty deviation time.

For surveillance of the power range channels performed according to SR 3.3.1.[illegible], Note 4 allows deviation outside the target band for 16 hours and no penalty deviation time accumulated. Some deviation in the AFD is required for doing the NIS calibration with the incore detector system. This calibration is performed every 92 days

APPLICABILITY

AFD requirements are applicable in MODE 1 above 15% RTP. Above 50% RTP, the combination of THERMAL POWER and core peaking factors are the core parameters of primary importance in safety analyses (Ref. 1).

Between 15% RTP and 90% RTP, this LCO is applicable to ensure that the distributions of xenon are consistent with safety analysis assumptions.

At or below 15% RTP and for lower operating MODES, the stored energy in the fuel and the energy being transferred to the reactor coolant are low. The value of the AFD in these conditions does not affect the consequences of the design basis events.

Table 3.3.1-1 (page 3 of 6)
Reactor Trip System Instrumentation

FUNCTION	APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS	REQUIRED CHANNELS	CONDITIONS	SURVEILLANCE REQUIREMENTS	ALLOWABLE VALUE	NOMINAL TRIP SETPOINT
12. Undervoltage RCPs	1[(e)]	[3] per bus	K	SR 3.3.1.9 SR 3.3.1.10 SR 3.3.1.16 (6)	≥ [4760] V	[4830] V
13. Underfrequency RCPs	1[(e)]	[3] per bus	K	SR 3.3.1.9 SR 3.3.1.10 SR 3.3.1.16 (6)	≥ [57.1] Hz	[57.5] Hz
14. Steam Generator (SG) Water Level - Low Low	1,2	[4 per SG]	E	SR 3.3.1.1 SR 3.3.1.7 SR 3.3.1.10 SR 3.3.1.16	≥ [30.4]%	[32.3]%
15. SG Water Level - Low	1,2	2 per SG	E	SR 3.3.1.1 SR 3.3.1.7 SR 3.3.1.10 SR 3.3.1.16	≥ [30.4]%	[32.3]%
Coincident with Steam Flow/ Feedwater Flow Mismatch	1,2	2 per SG	E	SR 3.3.1.1 SR 3.3.1.7 SR 3.3.1.10 SR 3.3.1.16	≤ [42.5]% full steam flow at RTP	[40]% full steam flow at RTP
16. Turbine Trip						
a. Low Fluid Oil Pressure	1[(h)]	3	M	SR 3.3.1.10 SR 3.3.1.15	≥ [750] psig	[800] psig
b. Turbine Stop Valve Closure	1[(h)]	4	M	SR 3.3.1.10 SR 3.3.1.15	≥ [1]% open	[1]% open
17. Safety Injection (SI) Input from Engineered Safety Feature Actuation System (ESFAS)	1,2	2 trains	N	SR 3.3.1.14	NA	NA

(e) Above the P-7 (Low Power Reactor Trips Block) interlock.

(h) Above the P-9 (Power Range Neutron Flux) interlock.

A power level of ≥ 50% RTP is consistent with the requirements of SR 3.3.1.9. Performance of SR 3.3.1.9 may be used in lieu of SR 3.3.1.3 since SR 3.3.1.9 calibrates (i.e., requires channel adjustment) the excore channels to the incore channels and therefore envelopes the performance of SR 3.3.1.3.

BASES

SURVEILLANCE REQUIREMENTS (continued)

When the channel is outside the 3% allowance assumed in the setpoint uncertainty calculation, the channel must be adjusted (i.e., normalized) based on incore surveillance data.

SR 3.3.1.3

SR 3.3.1.3 compares the incore system to the NIS channel output every 31 EFPD. If the absolute difference is ≥ 3%, the NIS channel is still OPERABLE, but must be readjusted.

If the NIS channel cannot be properly readjusted, the channel is declared inoperable. This Surveillance is performed to verify the f(ΔI) input to the overtemperature ΔT Function.

Two Notes modify SR 3.3.1.3. Note 1 indicates that the excore NIS channel shall be adjusted if the absolute difference between the incore and excore AFD is ≥ 3%. Note 2 clarifies that the Surveillance is required only if reactor power is ≥ [15%] RTP and that 24 hours is allowed for performing the first Surveillance after reaching [15%] RTP.

For each operating cycle, the initial channel normalization is performed under SR 3.3.1.9. Subsequent verification at a frequency

The Frequency of every 31 EFPD is adequate. It is based on unit operating experience, considering instrument reliability and operating history data for instrument drift. Also, the slow changes in neutron flux during the fuel cycle can be detected during this interval.

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. 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 once per refueling interval with applicable extensions.

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.

BASES

SURVEILLANCE REQUIREMENTS (continued)

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.

SR 3.3.1.6

SR 3.3.1.6 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 ΔT Function.

A Note modifies SR 3.3.1.6. The Note states that this Surveillance is required only if reactor power is ≥ 50% RTP and that [24] 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 3.3.1.7

SR 3.3.1.7 is the performance of a COT every [92] days.

A COT is performed on each required channel to ensure the entire channel will perform the intended Function. 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 CHANNEL OPERATIONAL TEST of a relay. This is acceptable because all of the other required contacts of the

adjusted (i.e., normalized) for a given operating cycle. The surveillance also normalizes the excore ΔI indicators.

based on analysis of a range of core flux distributions.

at BOL

normalize the excore

Two Notes modify SR 3.3.1.9. Note 1 states that neutron detectors are excluded from the CHANNEL CALIBRATION.

[7] days are

Based on operating experience, a time allowance of 7 days for test performance, data analysis, and channel adjustments is sufficient. A power level of ≥ 50 % RTP corresponds to the power level for the AFD surveillance (SR 3.2.3.1), which requires calibrated excore ΔI indications , and has proven sufficient to establish the cycle-specific calibration of the excore ΔI indications and f(ΔI).

18 months

BASES

SURVEILLANCE REQUIREMENTS (continued)

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 plant remains in the MODE of Applicability after the initial performances of prior to reactor startup and [12] 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.

SR 3.3.1.8 (6)

SR 3.3.1.9 is the performance of a TADOT and is performed every [92] days, as justified in Reference 7. 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 once per refueling interval with applicable extensions.

The SR is modified by a Note that excludes verification of setpoints from the TADOT. Since this SR applies to RCP undervoltage and underfrequency relays, setpoint verification requires elaborate bench calibration and is accomplished during the CHANNEL CALIBRATION.

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

BASES

SURVEILLANCE REQUIREMENTS (continued)

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.

an incore/excore cross-calibration (SR 3.3.1.6). In addition, the CHANNEL CALIBRATION for the power range neutron detector outputs includes normalization of the channel output based on a power calorimetric (SR 3.3.1.2)

The CHANNEL CALIBRATION for the intermediate range neutron detector outputs includes normalization of the high flux bistable based on a power calorimetric.

after a detector is replaced.

Note 2 states that this test shall include verification that the time constants are adjusted to the prescribed values where applicable. The power range neutron flux rate functions contain required time constants.

SR 3.3.1.11

two Notes. Note 1 states

outputs

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 the 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 required for the NIS intermediate range detectors for entry into MODE 2, because the unit must be in at least MODE 2 to perform the test for the intermediate range detectors and MODE 1 for the power range detectors. The [18] month Frequency is based on the need to perform this Surveillance under the conditions that apply during a plant outage and the potential for an unplanned transient if the Surveillance were performed with the reactor at power. Operating experience has shown these components usually pass the Surveillance when performed on the [18] month Frequency.

outputs

new

and

SR 3.3.1.12 → move to next page

BASES

SURVEILLANCE REQUIREMENTS (continued)

SR 3.3.1.12

SR 3.3.1.12 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 this test shall include verification of the RCS resistance temperature detector (RTD) bypass loop flow rate. Whenever a sensing element is replaced, the next required CHANNEL CALIBRATION of the resistance temperature detectors (RTD) sensors is accomplished by an inplace cross calibration that compares the other sensing elements with the recently installed sensing element.

two Notes. Note 1 states that neutron detectors are excluded from the CHANNEL CALIBRATION. Note 2 states

This test will verify the rate lag compensation for flow from the core to the RTDs.

The Frequency is justified by the assumption of an 18 month calibration interval in the determination of the magnitude of equipment drift in the setpoint analysis.

SR 3.3.1.13

SR 3.3.1.13 is the performance of a COT of RTS interlocks every [18] months. 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 CHANNEL OPERATIONAL TEST 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 once per refueling interval with applicable extensions.

The Frequency is based on the known reliability of the interlocks and the multichannel redundancy available, and has been shown to be acceptable through operating experience.

SR 3.3.1.14

SR 3.3.1.14 is the performance of a TADOT of the Manual Reactor Trip, RCP Breaker Position, and the SI Input from ESFAS. 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 once per refueling interval with applicable extensions. This TADOT is performed every [18] months. The test shall independently verify the OPERABILITY of the undervoltage and shunt trip mechanisms for the

VIRGINIA ELECTRIC AND POWER COMPANY
RICHMOND, VIRGINIA 23261

November 8, 2001

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

Serial No. 01-634A
NL&OS/ETS R0'
Docket No. 50-280
License No. DPR-32

Gentlemen:

VIRGINIA ELECTRIC AND POWER COMPANY
SURRY POWER STATION UNIT 1
PROPOSED RISK-INFORMED TECHNICAL SPECIFICATIONS CHANGE
FIVE YEAR EXTENSION OF TYPE A TEST INTERVAL
ADDITIONAL INFORMATION

In an October 15, 2001 letter (Serial No. 01-634), Virginia Electric and Power Company (Dominion) requested an amendment to Facility Operating License Number DPR-32 in the form of a change to the Technical Specifications for Surry Power Station Unit 1. The proposed change will permit a one-time five-year extension of the ten-year performance based Type A test interval established in NEI 94-01, "Nuclear Energy Institute Industry Guideline For Implementing Performance-Based Option of 10 CFR Part 50, Appendix J," Revision 0, July 26, 1995.

In an October 24, 2001 telephone conference call, the NRC staff requested clarification of past Type A test results presented in the discussion of change for the proposed Technical Specification change. Clarification is provided by revision of the table and associated footnotes of the Type A test results in the discussion of change. Please substitute the attached revised page five of the discussion of the change to complete your review.

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

Very truly yours,

Leslie N. Hartz
Vice President – Nuclear Engineering

Commitments made is this letter: None

Attachment

cc: U.S. Nuclear Regulatory Commission
Region II
Sam Nunn Atlanta Federal Center
61 Forsyth Street, SW
Suite 23 T85
Atlanta, Georgia 30303

Mr. R. A. Musser
NRC Senior Resident Inspector
Surry Power Station

Commissioner
Bureau of Radiological Health
1500 East Main Street
Suite 240
Richmond, VA 23218

SN: 01-634A
Docket No.: 50-280
Subject: Proposed R-I TS Change
Five-Year Ext. of Type A Test Interval

COMMONWEALTH OF VIRGINIA)
)
COUNTY OF HENRICO)

The foregoing document was acknowledged before me, in and for the County and Commonwealth aforesaid, today by Leslie N. Hartz, who is Vice President - Nuclear Engineering, of Virginia Electric and Power Company. She has affirmed before me that she is duly authorized to execute and file the foregoing document in behalf of that Company, and that the statements in the document are true to the best of her knowledge and belief.

Acknowledged before me this 8th day of November, 2001.

My Commission Expires: March 31, 2004.

Maggie McClure
Notary Public

(SEAL)

Attachment

Discussion of Change -
Revised Page Five

Surry Power Station Unit 1
Virginia Electric and Power Company
(Dominion)

from a once-per-ten-years to a once-per-fifteen-years is 4.37×10^{-8}/yr. Since guidance in Reg. Guide 1.174 defines very small changes in LERF as below 10^{-7}/yr, increasing the ILRT interval from ten to fifteen years is therefore, considered non-risk significant. The calculation is included as an attachment to this Technical Specification change request.

- The one-time change to the Type A test interval from ten years to fifteen increases the risk of those associated specific accident sequences by 0.001%. In addition, the risk impact on the total integrated (fifteen year increase) plant risk above baseline, for those accident sequences influenced by Type A testing is only 0.004%. Therefore, the risk impact when compared to other severe accident risks is negligible.

10 CFR 50 *Appendix J, Option B Integrated Leak Test Information:*

A Type A test can detect containment leakage due to a loss of structural capability. All other sources of containment leakage detected in Type A test analyses can be detected by the Type B and C tests.

Previous Type A tests confirmed that the Surry Unit 1 reactor containment structure has extremely low leakage and represents an insignificant potential risk contributor to increased containment leakage. The increased leakage is minimized by continued Type B and Type C testing for penetrations with direct communication with containment atmosphere. Also, the In-Service Inspection (ISI) program and maintenance rule program require periodic inspection of the interior and exterior of the containment structure to identify degradation.

The results for the last two Type A test are reported in the following table for Surry Unit 1:

Date	As Found Leakage(*)	Acceptance Limit(**)	Test Pressure (psia)
April 23, 1992	0.396 L_a	1.0 L_a	44.46
June 26, 1988	0.5055 L_a	1.0 L_a	44.46

* This is the leakage attributable to containment leakage as well as a number of Type B and Type C leakage components being tested as part of the Type A test.

** The total allowable "as-left" leakage is 0.75 L_a (L_a = 0.1% of primary containment air by weight per day and is the leakage assumed in dose consequences), with 0.6 L_a, the maximum leakage from Type B and C components.