

Commitments made in this letter: None.

Attachment:

- Response to NRC Request for Additional Information – Correction to TS Table 3.7-1 Operator Action 3.b

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ATTACHMENT

**RESPONSE TO NRC REQUEST FOR ADDITIONAL INFORMATION
CORRECTION TO TS TABLE 3.7-1 OPERATOR ACTION 3.b**

**VIRGINIA ELECTRIC AND POWER COMPANY
(DOMINION)
SURRY POWER STATION UNITS 1 AND 2**

RESPONSE TO NRC REQUEST FOR ADDITIONAL INFORMATION CORRECTION TO TS TABLE 3.7-1 OPERATOR ACTION 3.b

The Nuclear Regulatory Commission (NRC) staff has reviewed the Surry Power Station, Unit Nos. 1 and 2, license amendment request regarding correction to Technical Specification (TS) Table 3.7-1, Operator Action 3.b, and identified areas to be clarified by Virginia Electric and Power Company.

With respect to proposed change to TS Table 3.7-1, Operator Action 3.b, there are three numbers of Rated Power such as 7%, 10% and 11% given in the statement quoted in the revision of September 19, 2007, letter. Please provide the following information:

NRC Question 1

Provide the rationale for why it takes years to claim that the revision proposed now is a correction of the information transmitted to the NRC by the September 19, 2007, letter;

Dominion Response

The following chronology is provided to clarify the sequence of events associated with the proposed amendment request (i.e., correction of TS Table 3.7-1 Operator Action 3.b) in the April 13, 2009 letter (Serial No. 09-208):

- September 19, 2007 – Letter Serial No. 07-0470 was submitted to the NRC requesting review of revised setting limits and time constants. In this letter, Operator Action 3.b in TS Table 3.7-1 was being revised from:

“ACTION 3.b. Above the P-6 (Block of Source Range Reactor Trip) setpoint, but below 10% of RATED POWER, decrease power below P-6 or, increase THERMAL POWER above 10% of RATED POWER within 24 hours.”

To state: “ACTION 3.b. Above the P-6 (Block of Source Range Reactor Trip) setpoint, but below 7% of RATED POWER, decrease power below P-6 or, increase THERMAL POWER above 11% of RATED POWER within 24 hours.”

- September 17, 2008 – TS Amendments 261/261 were issued by the NRC approving the amendment request in the September 19, 2007 letter. TS Table 3.7-1 Operator Action 3.b, as stated in our September 19, 2007 letter, was included in TS Amendments 261/261. TS Amendments 261/261 were issued with a 60-day implementation period.
- November 8, 2008 – TS Amendments 261/261 were implemented.

- November 26, 2008 – During routine operator requalification training on the plant simulator, a question was raised requesting clarification regarding application of TS Table 3.7-1 Operator Action 3.b, and a Condition Report (CR) was submitted documenting the question. During investigation of the CR question, it was determined that Operator Action 3.b, as implemented as part of TS Amendments 261/261, does not specify actions to be taken if the less-than-required-minimum-operable-channels-condition for the nuclear flux intermediate range channels occurs between 7% and 11% of rated power. It was therefore concluded that the actions directed by Operator Action 3.b were inadequate.
- December 22, 2008 – Consistent with the guidance in NRC Administrative Letter (AL) 98-10 to impose administrative controls to address an improper or inadequate TS, revisions were made to the Units 1 and 2 Abnormal Procedures for Nuclear Instrumentation Malfunction providing direction for nuclear flux intermediate range channel inoperability for rated power levels between 7% and 11%. The revisions to these Abnormal Procedures stated the following:

“Between 7% and 11% Rated Power, within 24 hours, decrease power below P-6 or increase Thermal Power to greater than 11% of Rated Power.”

Subsequent to imposition of the administrative controls by revision of the Abnormal Procedures, preparation of a license amendment request was initiated to correct TS Table 3.7-1 Operator Action 3.b, including the requisite technical, management and facility safety review committee reviews.

- April 13, 2009 – Letter Serial No. 09-208 was submitted to the NRC requesting correction of TS Table 3.7-1 Operator Action 3.b. In this letter, Operator Action 3.b in TS Table 3.7-1 as implemented by TS Amendments 261/261 is being revised from:

“ACTION 3.b. Above the P-6 (Block of Source Range Reactor Trip) setpoint, but below 7% of RATED POWER, decrease power below P-6 or, increase THERMAL POWER above 11% of RATED POWER within 24 hours.”

To state: “ACTION 3.b. Above the P-6 (Block of Source Range Reactor Trip) setpoint, but below 11% of RATED POWER, within 24 hours, decrease power below P-6 or increase THERMAL POWER above 11% of RATED POWER.”

This chronology demonstrates that the need for correction of TS Table 3.7-1 Operator Action 3.b was realized during simulator training on November 26, 2008 following implementation of TS Amendments 261/261 on November 8, 2008. Consistent with the guidance in AL 98-10, administrative controls were imposed and the April 13, 2009 letter was submitted to the NRC requesting correction of TS Table 3.7-1 Operator Action 3.b.

NRC Question 2

Provide details to show that the methodology for determining these revised setting limits and over-temperature ΔT /overpower ΔT time constants was in agreement with Methods 1 and 2 in ISA-RP67.04, Part II;

Dominion Response

Attachment 4 to the September 19, 2007 letter (Serial No. 07-0470), which requested review of various setting limits and the overtemperature ΔT /overpower ΔT time constants, contained the Surry results from Technical Report EE-0116, Revision 3 with Addendum 1. This document, titled "Allowable Values For North Anna Improved Technical Specifications (ITS) Tables 3.3.1-1 and 3.3.2-1 and Setting Limits For Surry Custom Technical Specifications (CTS), Sections 2.3 and 3.7," presents the methodology used to determine the Allowable Values and Setting Limits for Reactor Protection System (RPS) and Engineered Safety Features Actuation System (ESFAS) instrumentation at North Anna and Surry. As described in Technical Report EE-0116, the Allowable Values (Limiting Safety System Settings or Setting Limits for Surry) for the Primary RPS and ESFAS functions (i.e., functions that have an associated Safety Analysis Limit) at Surry were calculated in accordance with Methods 1 or 2 in ISA-RP67.04, Part II. Although Methods 1 and 2 do not apply to dynamic functions, the overtemperature ΔT /overpower ΔT time constants are also addressed in Technical Report EE-0116.

The functions at Surry related to the proposed revision of Operator Action 3.b are Permissives P-6, P-7 and P-10. As stated in Technical Report EE-0116, Permissives P-6, P-7 and P-10 are assumed to be available in the Surry Safety Analysis, but no specific setpoint is assumed. Therefore, the direct application of Methods 1 or 2 do not apply for these functions. However, the Allowable Values (Limiting Safety System Settings) were calculated based on the Channel Operational Test (COT) error components associated with the equipment used to generate these functions in the same manner used to calculate the Allowable Values for Primary RPS and ESFAS Functions at Surry. Refer to Pages 103, 104, and 107 in Technical Report EE-0116 for detailed information about the P-6, P-7, and P-10 functions, respectively.

NRC Question 3

Clarify the real errors caused by TS Amendment 261/261 dated September 19, 2007, on page 1 of the submittal with three power setting limits;

Dominion Response

As noted in the Dominion Response to NRC Question 1 above, the proposed license amendment request in our September 19, 2007 letter requested review of revised setting limits and time constants. When that request was prepared, the 7% of rated power was

erroneously reflected in TS Table 3.7-1 Operator Action 3.b. The error was introduced in an effort to minimize plant operation in the range of 7% to 11% of rated power due to instrumentation tolerances for the P-7 and P-10 permissive bistables, as discussed in the following paragraphs. In preparing the September 19, 2007 request, we failed to recognize that changing the 10% to 11% in the pre-TS Amendments 261/261 Operator Action 3.b would have addressed this concern.

Based on the calibration accuracy for Permissive P-7 (actuated by Turbine Load) the high power trips can be unblocked between 9.54% and 10.59% Turbine Load, noting that the Nominal Trip Setpoint is 10% Turbine Load (increasing) and the Limiting Safety System Setting is 11% Turbine Load. The high power trips can also be unblocked by Permissive P-10 (actuated by Power Range Nuclear Instrumentation). In addition to unblocking the high power trips on increasing power, Permissive P-10 also enables the manual block of the Intermediate Range Reactor Trip/Rod Stop, Power Range (low setpoint) Reactor Trip, and automatically blocks the Source Range Reactor Trip. The calibration accuracy for Permissive P-10 allows the high power trips to be unblocked between 8% and 10% power, noting that the Nominal Trip Setpoint is 10% power (increasing) and the Limiting Safety System Setting is 11% power. Therefore, the maximum range where the high power trips can be unblocked from P-7 or P-10 can be between 8% and 11% Turbine Load/Power.

On decreasing Turbine Load, Permissive P-7 in conjunction with Permissive P-10 blocks the high power trips. The P-7 setpoint to block the high power trips can occur between 8.1% and 9.39% Turbine Load, noting that the Nominal Trip Setpoint is 8.79% Turbine Load (decreasing), and there is no Limiting Safety System Setting for this part of the permissive. Permissive P-10 is also required for the block of the high power trips. In addition to blocking the high power trips on decreasing power, Permissive P-10 also defeats the manual block of the Intermediate Range Reactor Trip/Rod Stop and the Power Range (low setpoint) Reactor Trip. The calibration accuracy for Permissive P-10 allows high power trips to be blocked between 7% and 8% power, noting that the Nominal Trip Setpoint is 8% power (decreasing) and the Limiting Safety System Setting is 7% power. Therefore, the maximum range where the high power trips can be blocked from P-7 and P-10 is from 7% to 9.39% Turbine Load/Power. The maximum range for the defeat of the manual block of the Intermediate Range Reactor Trip/Rod Stop and the Power Range (low setpoint) Reactor Trip is from 7% to 8% power.

In view of this discussion of the instrumentation tolerances for the P-7 and P-10 permissive bistables and the potential for overlap of the tolerances, under conditions that necessitate entry into Operator Action 3.b, plant operation in the range of 7% to 11% of rated power should be minimized. These instrumentation tolerances were the basis for the inappropriate inclusion of 7% of rated power in TS Table 3.7-1 Operator Action 3.b when the setting limit and time constant request was submitted in our September 19, 2007 letter. As indicated in our April 13, 2009 letter, the appropriate action for nuclear flux intermediate range channel inoperability at rated power levels between 7% and 11% is to decrease power below P-6 or increase thermal power above 11% of rated power, within 24 hours.

These instrumentation tolerances also provide the basis for 11% being the appropriate rated power level above which thermal power should be increased for conditions necessitating entry into Operator Action 3.b. It should be noted that the operation of Permissives P-7 and P-10 at Surry, as well as at other Westinghouse plants, is related to the design and operation of bistables used to develop these functions.

NRC Question 4

Describe findings during simulator training for the power setting limits;

Dominion Response

As noted in the Dominion Response to NRC Question 1 above, on November 26, 2008, during simulator training, a question was raised requesting clarification regarding application of TS Table 3.7-1 Operator Action 3.b between 7% and 11% of rated power. During investigation of the question, it was determined that Operator Action 3.b as implemented as part of TS Amendments 261/261 does not specify actions to be taken if the condition of less-than-required-minimum-operable-channels for the nuclear flux intermediate range channels occurs between 7% and 11% of rated power.

NRC Question 5

Provide basis to show that 11% of Rated Power is a right power setting limits.

Dominion Response

As discussed in the response to Question 3, instrumentation tolerances for the P-7 and P-10 permissive bistables provide the basis for 11% being the appropriate rated power level above which thermal power should be increased for conditions necessitating entry into TS Table 3.7-1 Operator Action 3.b. Additionally, as stated in the response to Question 2, the basis for the Limiting Safety System Settings for Permissives P-7 and P-10 (i.e., 11 % of rated power for the unblock of the high power trips) is provided in Technical Report EE-0116 on Pages 104 and 107, respectively.