

VIRGINIA ELECTRIC AND POWER COMPANY
RICHMOND, VIRGINIA 23261

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

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NL&OS/ETS R0
Docket Nos. 50-338/339
License Nos. NPF-4/7

Gentlemen:

VIRGINIA ELECTRIC AND POWER COMPANY
NORTH ANNA POWER STATION UNITS 1 AND 2
TECHNICAL SPECIFICATION BASES CHANGES

Pursuant to the Technical Specifications Bases Control Program, Virginia Electric and Power Company (Dominion) hereby submits changes to the Bases to the Technical Specifications for your information in accordance with 10 CFR 50.71(e). These changes provide clarification to the Bases sections associated with the Power Range Neutron Flux High bistables, the requirements for inverters supplying AC vital buses during fuel movement, and elimination of the seismic allowance from the control rod drop times.

The Technical Specifications Bases changes have been reviewed and approved by the Station Nuclear Safety and Operating Committee. It has been determined that these changes do not require a change to the Technical Specification or license, or involve a change to the UFSAR or Bases that require NRC prior approval pursuant to 10 CFR 50.59. A summary of the changes and the revised Technical Specifications Bases pages are being provided in Attachments 1 and 2, respectively. These changes have been incorporated into the Technical Specifications Bases.

If you have any further questions, please contact us.

Very truly yours,



L. N. Hartz
Vice President – Nuclear Engineering

Attachments

1. Summary of Changes
2. Technical Specification Bases Changes

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

Mr. J. E. Reasor, Jr.
Old Dominion Electric Cooperative
Innsbrook Corporate Center, Suite 300
4201 Dominion Blvd.
Glen Allen, Virginia 23060

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

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

Stephen Monarque
NRC Project Manager
Division of Licensing Project Management
Washington, D. C. 20555

ATTACHMENT 1

SUMMARY OF CHANGES

**Virginia Electric and Power Company
(Dominion)
North Anna Power Station Units 1 and 2**

Summary of Changes

Clarification of Power Range Neutron Flux High bistables (Bases SR 3.3.1.2)

The purpose of the change was to clarify the installation of the power range high flux trip setpoint at less than or equal to 109% RTP (normal full power setting) using pre-established uncertainty values to adjust the power range channels, in place of the performance of a calorimetric above 85% RTP.

Elimination of the Effects of a Concurrent Seismic Event (Bases SR 3.1.4.3)

The purpose of the change was to eliminate from analytical considerations the effects of a concurrent seismic event on control rod drop times by means of the 10 CFR 50.59 process in lieu of an Amendment request. This was based upon the recommendation by the NRC staff in a conference call on June 26, 2002.

Clarification of MCR/ESGR System Operability (BASES LCO 3.8.8)

The purpose of the change was to clarify the requirements for inverters supplying AC vital buses in MODES 5 and 6, and during movement of recently irradiated fuel assemblies.

ATTACHMENT 2

TECHNICAL SPECIFICATION BASES CHANGES

**Virginia Electric and Power Company
(Dominion)
North Anna Power Station Units 1 and 2**

BASES

SURVEILLANCE
REQUIREMENTS
(continued)

SR 3.1.4.2

Verifying each rod is OPERABLE would require that each rod be tripped. However, in MODES 1 and 2, tripping each rod would result in radial or axial power tilts, or oscillations. Exercising each individual rod every 92 days provides increased confidence that all rods continue to be OPERABLE without exceeding the alignment limit, even if they are not regularly tripped. Moving each rod by 10 steps will not cause radial or axial power tilts, or oscillations, to occur. The 92 day Frequency takes into consideration other information available to the operator in the control room and SR 3.1.4.1, which is performed more frequently and adds to the determination of OPERABILITY of the rods. Between required performances of SR 3.1.4.2 (determination of rod OPERABILITY by movement), if a rod(s) is discovered to be immovable, but remains trippable, the rod(s) is considered to be OPERABLE. At any time, if a rod(s) is immovable, a determination of the trippability (OPERABILITY) of the rod(s) must be made, and appropriate action taken.

SR 3.1.4.3

Verification of rod drop times allows the operator to determine that the maximum rod drop time permitted is consistent with the assumed rod drop time used in the safety analysis. Measuring rod drop times prior to reactor criticality, after reactor vessel head removal, ensures that the reactor internals and rod drive mechanism will not interfere with rod motion or rod drop time, and that no degradation in these systems has occurred that would adversely affect rod motion or drop time. This testing is performed with all RCPs operating and the average moderator temperature $\geq 500^{\circ}\text{F}$ to simulate a reactor trip under actual conditions. For this surveillance, a fully withdrawn position of 229 steps is used in order to provide consistent test conditions to facilitate trending. This rod position is not necessarily the same as the cycle-dependent fully withdrawn rod position specified in the COLR and will yield conservative drop times relative to the COLR position. The surveillance procedure limits for rod drop time ensure that the Surveillance Requirement criterion and the Safety Analysis Limit are met.

This Surveillance is performed during a unit outage, due to the unit conditions needed to perform the SR and the potential for an unplanned unit transient if the Surveillance were performed with the reactor at power.

BASES

- REFERENCES
1. UFSAR, Sections 3.1.6 and 3.1.22.
 2. 10 CFR 50.46.
 3. UFSAR, Chapter 15.
 4. UFSAR, Section 15.2.3.
 5. UFSAR, Section 4.3.1.5.
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BASES

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SR 3.3.1.2 (continued)

Range Neutron Flux-High bistables when: (1) the power range channel output is adjusted in the decreasing power direction due to a part power calorimetric below 85% RTP; or (2) for a post refueling startup. The evaluation of extended operation at part power conditions would also conclude that the potential need to adjust the indication of the Power Range Neutron Flux in the decreasing power direction is quite small, primarily to address operation in the intermediate range about P-10 (nominally 10% RTP) to allow the enabling of the Power Range Neutron Flux-Low Setpoint and the Intermediate Range Neutron Flux reactor trips. Before the Power Range Neutron Flux-High bistables are reset to $\leq 109\%$ RTP, a calorimetric must be performed and the power range channels must be adjusted such that the high flux bistables will trip at $\leq 109\%$ RTP. Consideration must be given to calorimetric uncertainty, and its impact on decalibration of the power range channels.

The Note clarifies that this Surveillance is required only if reactor power is $\geq 15\%$ RTP and that 12 hours are allowed for performing the first Surveillance after reaching 15% RTP. A power level of 15% RTP is chosen based on plant stability, i.e., automatic rod control capability and turbine generator synchronized to the grid.

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 that a difference between calorimetric heat balance calculation and the power range channel output of more than +2% RTP is not expected 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 $\geq 3\%$, the NIS channel is still OPERABLE, but it must be readjusted. The excore NIS channel shall be adjusted if the absolute

(continued)

BASES

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SR 3.3.1.3 (continued)

difference between the incore and excore AFD is $\geq 3\%$. The adjustment is a recalibration of the upper and lower Power Range detectors to incorporate the results of the flux map.

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

A Note clarifies that the Surveillance is required only if reactor power is $\geq 15\%$ RTP and that 72 hours is 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.

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 test of the bypass breaker is a local shunt trip actuation. 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.

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BASES

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SR 3.3.1.4 (continued)

This test must be conducted prior to the start of testing on the RTS or maintenance on a RTB. This checks the mechanical operation of the bypass breaker.

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 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.

BASES

APPLICABLE SAFETY ANALYSES (continued) The inverters were previously identified as part of the distribution system and, as such, satisfy Criterion 3 of 10 CFR 50.36(c)(2)(ii).

LCO The required inverter(s) ensure the availability of electrical power for the instrumentation for systems required to shut down the reactor and maintain it in a safe condition after an anticipated operational occurrence or a postulated DBA. The battery powered inverters provide uninterruptible supply of AC electrical power to the AC vital buses even if the 4.16 kV safety buses are de-energized. OPERABILITY of the inverters requires that the AC vital bus be powered by the inverter. This ensures the availability of sufficient inverter power sources to operate the unit in a safe manner and to mitigate the consequences of postulated events during shutdown (e.g., fuel handling accidents involving handling recently irradiated fuel). Supported system(s) that do not provide automatic function(s) may be connected to a vital bus that is powered by a constant voltage transformer (example: Low Temperature Overpressure Protection, when not in automatic).

APPLICABILITY The inverters required to be OPERABLE in MODES 5 and 6 and during movement of recently irradiated fuel assemblies provide assurance that:

- a. Systems to provide adequate coolant inventory makeup are available for the irradiated fuel in the core;
- b. Systems needed to mitigate a fuel handling accident involving handling recently irradiated fuel (i.e., fuel that has occupied part of a critical core within a time frame established by analysis. The term recently is defined as all irradiated fuel assemblies, until analysis is performed to determine a specific time frame.) are available;
- c. Systems necessary to mitigate the effects of events that can lead to core damage during shutdown are available; and
- d. Instrumentation and control capability is available for monitoring and maintaining the unit in a cold shutdown condition or refueling condition.

BASES

APPLICABILITY (continued) Inverter requirements for MODES 1, 2, 3, and 4 are covered in LCO 3.8.7.

ACTIONS A.1, A.2.1, A.2.2, A.2.3, and A.2.4

The required OPERABLE Inverters are capable of supporting sufficient required features to allow continuation of CORE ALTERATIONS, recently irradiated fuel movement, and operations with a potential for positive reactivity additions. By the allowance of the option to declare required features inoperable with the associated inverter(s) inoperable, appropriate restrictions will be implemented in accordance with the affected required features LCOs' Required Actions. In many instances, this option may involve undesired administrative efforts. Therefore, the allowance for sufficiently conservative actions is made (i.e., to suspend CORE ALTERATIONS, movement of recently irradiated fuel assemblies, and operations involving positive reactivity additions) that could result in loss of required SDM (MODE 5) or boron concentration (MODE 6). Suspending positive reactivity additions that could result in failure to meet the minimum SDM or boron concentration limit is required to assure continued safe operation. Introduction of coolant inventory must be from sources that have a boron concentration greater than what would be required in the RCS for minimum SDM or refueling boron concentration. This may result in an overall reduction in RCS boron concentration, but provides acceptable margin to maintaining subcritical operation. Introduction of temperature changes including temperature increases when operating with a positive MTC must also be evaluated to ensure they do not result in a loss of required SDM.

Suspension of these activities shall not preclude completion of actions to establish a safe conservative condition. These actions minimize the probability of the occurrence of postulated events. It is further required to immediately initiate action to restore the required inverters and to continue this action until restoration is accomplished in order to provide the necessary inverter power to the unit safety systems.

The Completion Time of immediately is consistent with the required times for actions requiring prompt attention. The restoration of the required inverters should be completed as
(continued)

BASES

ACTIONS A.1, A.2.1, A.2.2, A.2.3, and A.2.4 (continued)

quickly as possible in order to minimize the time the unit safety systems may be without power or powered from a constant voltage source transformer.

SURVEILLANCE
REQUIREMENTS SR 3.8.8.1

This Surveillance verifies that the inverters are functioning properly with all required circuit breakers closed and AC vital buses energized from the inverter. The verification of proper voltage output ensures that the required power is readily available for the instrumentation connected to the AC vital buses. The 7 day Frequency takes into account the redundant capability of the inverters and other indications available in the control room that alert the operator to inverter malfunctions.

REFERENCES 1. UFSAR, Chapter 6.
 2. UFSAR, Chapter 15.
