Attachment 2

Proposed Technical Specification Changes

North Anna Units 1 and 2

Virginia Electric and Power Company

## 3/4.1 REACTIVITY CONTROL SYSTEMS

## BASES

### 3/4.1.1 BORATION CONTROL

#### 3/4.1.1.1 and 3/4.1.1.2 SHUTDOWN MARGIN

A sufficient SHUTDOWN MARGIN ensures that 1) the reactor can be made subcritical from all operating conditions, 2) the reactivity transients associated with postulated accident conditions are controllable within acceptable limits, and 3) the reactor will be maintained sufficiently subcritical to preclude inadvertent criticality in the shutdown condition.

SHUTDOWN MARGIN requirements vary throughout core life as a function of fuel depletion, RCS boron concentration, and RCS $T_{avg}$. The most restrictive condition occurs at EOL, with $T_{avg}$ at no load operating temperature, and is associated with a postulated steam line break accident and resulting uncontrolled RCS cooldown. In the analysis of this accident, a minimum SHUTDOWN MARGIN of 1.77% $\Delta k/k$ is initially required to control the reactivity transient. Accordingly, the SHUTDOWN MARGIN requirement is based upon this limiting condition and is consistent with FSAR safety analysis assumptions. With $T_{avg}$ < 200°F, the reactivity transients resulting from a postulated steam line break cooldown are minimal. A 1.77% $\Delta k/k$ shutdown margin provides adequate protection for the boron dilution accident.

#### 3/4.1.1.3 BORON DILUTION

A minimum flow rate of at least 3000 GPM provides adequate mixing, prevents stratification and ensures that reactivity changes will be gradual during boron concentration reductions in the Reactor Coolant System. A flow rate of at least 3000 GPM will circulate the Reactor Coolant System volume in approximately 30 minutes. The reactivity change rate associated with boron reductions will therefore be within the capability for operator recognition and control.

#### 3/4.1.1.4 MODERATOR TEMPERATURE COEFFICIENT (MTC)

The limitations on MTC are provided to ensure that the value of this coefficient remains within the limiting conditions assumed for this parameter in the FSAR accident and transient analyses.

The MTC values of this specification are applicable to a specific set of plant operations; accordingly, verification of MTC values at

a. In accordance with the code requirements specified in Section 5.2 of the FSAR, with allowance for normal degradation pursuant to the applicable Surveillance Requirements,

b. For a pressure of 2485 psig, and

c. For a temperature of 650°F, except for the pressurizer which is 680°F.

VOLUME

5.4.2 The total water and steam volume of the reactor coolant system is approximately 10,000 cubic feet at nominal operating conditions.

## 5.5 METEOROLOGICAL TOWER LOCATION

5.5.1 The meteorological tower shall be located as shown on Figure 5.1-1.

## 5.6 FUEL STORAGE

CRITICALITY

5.6.1.1 The spent fuel storage racks are designed and shall be maintained with:

a. A $K_{eff}$ equivalent to less than or equal to 0.95 when flooded with unborated water, which includes a conservative allowance of 3.4% delta k/k for uncertainties.

b. A nominal 10 9/16 inch center-to-center distance between fuel assemblies placed in the storage racks.

5.6.1.2 The new fuel pit storage racks are designed and shall be maintained with a nominal 21 inch center-to-center distance between new fuel assemblies such that, on a best estimate basis, $K_{eff}$ will not exceed .98, with fuel of the highest anticipated enrichment in place, when aqueous foam moderation is assumed.

5.6.1.3 If new fuel for the first core loading is stored dry in the spent fuel storage racks, the center-to-center distance between the new fuel assemblies will be administratively limited to 28 inches and the $k_{eff}$ shall not exceed 0.98 when aqueous foam moderation is assumed.

## BASES

### 3/4.1.1 BORATION CONTROL

#### 3/4.1.1.1 and 3/4.1.1.2 SHUTDOWN MARGIN

A sufficient SHUTDOWN MARGIN ensures that 1) the reactor can be made subcritical from all operating conditions, 2) the reactivity transients associated with postulated accident conditions are controllable within acceptable limits, and 3) the reactor will be maintained sufficiently subcritical to preclude inadvertent criticality in the shutdown condition.

SHUTDOWN MARGIN requirements vary throughout core life as a function of fuel depletion, RCS boron concentration, and RCS $T_{avg}$. The most restrictive condition occurs at EOL, with $T_{avg}$ at no load operating temperature, and is associated with a postulated steam line break accident and resulting uncontrolled RCS cooldown. In the analysis of this accident, a minimum SHUTDOWN MARGIN of 1.77% $\Delta k/k$ is initially required to control the reactivity transient. Accordingly, the SHUTDOWN MARGIN requirement is based upon this limiting condition and is consistent with FSAR safety analysis assumptions. With $T_{avg}$ less than 200°F, the reactivity transients resulting from a postulated steam line break cooldown are minimal.

#### 3/4.1.1.3 BORON DILUTION

A minimum flow rate of at least 3000 GPM as provided by either one RCP or one RHR pump as required by Specification 3.4.1.1, provides adequate mixing, prevents stratification and ensures that reactivity changes will be gradual during boron concentration reductions in the Reactor Coolant System. A flow rate of at least 3000 GPM will circulate the Reactor Coolant System volume in approximately 30 minutes. The reactivity change rate associated with boron reductions will therefore be within the capability for operator recognition and control. The requirement that certain valves remain closed at all times except during planned boron dilution or makeup, activities provides assurance that an inadvertent boron dilution will not occur.

## 5.3 REACTOR CORE

### FUEL ASSEMBLIES

5.3.1 The reactor core shall contain 157 fuel assemblies with each fuel assembly containing 264 fuel rods clad with Zircaloy-4. Each fuel rod shall have a nominal active fuel length of 144 inches and contain a maximum total weight of 1780 grams uranium. The initial core loading shall have a maximum enrichment of 3.2 weight percent U-235. Reload fuel shall be similar in physical design to the initial core loading and shall have a maximum enrichment of 4.3 weight percent U-235.

### CONTROL ROD ASSEMBLIES

5.3.2 The reactor core shall contain 48 full length control rod assemblies. The full length control rod assemblies shall contain a nominal 142 inches of absorber material. The nominal values of absorber material shall be 80 percent silver, 15 percent indium and 5 percent cadmium. All control rods shall be clad with stainless steel tubing.

## 5.4 REACTOR COOLANT SYSTEM

### DESIGN PRESSURE AND TEMPERATURE

5.4.1 The reactor coolant system is designed and shall be maintained:

a. In accordance with the code requirements specified in Section 5.2 of the FSAR, with allowance for normal degradation pursuant to the applicable Surveillance Requirements,

b. For a pressure of 2485 psig, and

c. For a temperature of 650°F, except for the pressurizer which is 680°F.

### VOLUME

5.4.2 The total water and steam volume of the reactor coolant system is approximately 10,000 cubic feet at nominal operating conditions.

Attachment 3

10 CFR 50.92, Significant Hazards Consideration

North Anna Units 1 and 2

Virginia Electric and Power Company

# 10 CFR 50.92 SIGNIFICANT HAZARDS CONSIDERATION REVIEW

Virginia Electric and Power Company proposes to revise the Technical Specifications for its North Anna Power Station, Units 1 and 2, by revising the description of the Reactor Coolant System (RCS) volume in the design features. The RCS volume in Technical Specification 5.4.2 will change from "...9957 ±10 cubic feet at a nominal $T_{avg}$ of 525°F" to "...approximately 10,000 cubic feet at nominal operating conditions." The reference to the RCS volume of 9957 cubic feet in the bases for Technical Specification 3/4.1.1.3 on Boron Dilution will be deleted.

NUREG 0452, "Standard Technical Specifications for Westinghouse PWRs," Revision 4, (STS) provides guidance to licensees when preparing Technical Specifications. One design feature specified in the STS is the RCS volume. A calculated RCS volume was obtained from the reactor vendor and included in the North Anna Technical Specifications consistent with STS guidance. However, that calculated volume is not used in accident analyses. Rather, the transient system models used to perform accident analyses divide the RCS into component mass-energy cells for which volumes are specified. The definition and volume of these mass-energy cells vary depending on the model used and the accident being analyzed. Thus, the methodology does not require that a single total RCS volume be specified as an accident analysis basis and revising the current description would have no significant effect on safety.

Technical Specification 5.4.2, as currently worded, also may be somewhat confusing. It refers to a $T_{avg}$ that is significantly lower than normal operating conditions. Also, citing an RCS volume at a $T_{avg}$ of 525°F provides insufficient information for meeting a tolerance of plus or minus ten cubic feet. Other parameters, such as system pressure and pressurizer temperature, are also required to calculate the volume to within ten cubic feet. Those parameters are not clearly defined since the cited $T_{avg}$ is not based on normal operating conditions.

Technical Specification 3/4.1.1.3 requires the flow rate of reactor coolant through the RCS to be $\geq$ 3000 gpm when a reduction in RCS boron concentration is being made. The bases for Technical Specification 3/4.1.1.3 state that the minimum flow rate of at least 3000 gpm provides adequate mixing, prevents stratification and ensures that reactivity change will be gradual during boron concentration reductions in the RCS. It then states that a flow rate of at least 3000 gpm will circulate an equivalent RCS volume of 9957 cubic feet in approximately 30 minutes. It is proposed that the phase "will circulate an equivalent Reactor Coolant System volume of 9957 cubic feet" be changed to "will circulate the Reactor Coolant System volume." Deleting the phrase does not alter the meaning of the bases and eliminates a potential conflict with the revised design feature.

Virginia Electric and Power Company has reviewed the proposed changes to the Technical Specifications against the criteria of 10 CFR 50.92 and has concluded that the proposed changes do not pose a significant hazards consideration. This determination was based on the following points:

1. The proposed changes do not involve a significant increase in the probability or consequences of an accident previously evaluated. Revising the description of the RCS volume in the design features of the Technical Specifications has no impact on the probability of any accident previously evaluated because total RCS volume in not used in any accident analysis.

2. The proposed changes do not create the possibility of a new or different kind of accident from any accident previously evaluated. The proposed changes do not involve any change to plant design or methods of operation. The proposed changes do not involve operation of any plant equipment in a manner different from that in which it was designed to be operated. Since a new failure mode is not created, a new or different type of accident is not made possible.

3. The proposed changes do not involve a significant reduction in a margin of safety. The proposed changes do not involve any changes to safety limits or limiting safety system settings. Neither setpoints nor operating parameters are affected by the proposed changes. Therefore, no significant reductions in a margin of safety occur as a result of the proposed changes.

Virginia Electric and Power Company concludes that the activities associated with these proposed Technical Specification changes satisfy the no significant hazards consideration standards of 10 CFR 50.92 (c) and, accordingly, a no significant hazards consideration finding is justified.