E. Minimum Temperature for Criticality

Specifications

1. Except during LOW POWER PHYSICS TESTS, the reactor shall not be made critical at any Reactor Coolant System temperature above which the moderator temperature coefficient is more positive than the limit specified in the CORE OPERATING LIMITS REPORT. The maximum upper limit for the moderator temperature coefficient shall be:

   a. + 6 pcm/°F at less than 50% of RATED POWER, or
   b. + 6 pcm/°F at 50% of RATED POWER and linearly decreasing to 0 pcm/°F at RATED POWER.

2. In no case shall the reactor be made critical with the Reactor Coolant System temperature below DTT + 10°F, where the value of DTT + 10°F is as determined in Part B of this specification.

3. When the Reactor Coolant System temperature is below the minimum temperature as specified in E-1 above, the reactor shall be subcritical by an amount equal to or greater than the potential reactivity insertion due to primary coolant depressurization.

4. The reactor shall not be made critical when the Reactor Coolant System temperature is below 522°F.

Basis

During the early part of a fuel cycle, the moderator temperature coefficient may be calculated to be slightly positive at coolant temperatures in the power operating range. The moderator coefficient will be most positive at the beginning of cycle life, when the boron concentration in the coolant is the greatest. Later in the cycle, the boron concentration in the coolant will be lower and the moderator coefficient will be less positive or will be negative in the power operating range. At the beginning of cycle life, during pre-operational physics tests, measurements are made to determine that the moderator coefficient is less than the limit specified in the CORE OPERATING LIMITS REPORT.

Amendment Nos.

b. The moderator temperature coefficient in the power operating range is less than or equal to the limits specified in the CORE OPERATING LIMITS REPORT. The maximum upper limit for the moderator temperature coefficient shall be:

1) + 6 pcm/°F at less than 50% of RATED POWER, or

2) + 6 pcm/°F at 50% of RATED POWER and linearly decreasing to 0 pcm/°F at RATED POWER.

c. Capable of being made subcritical in accordance with Specification 3.12.A.3.C.

B. Reactor Coolant System

1. The design of the Reactor Coolant System complies with the code requirements specified in Section 4 of the UFSAR.

2. All piping, components, and supporting structures of the Reactor Coolant System are designed to Class 1 seismic requirements, and have been designed to withstand:

a. Primary operating stresses combined with the Operational seismic stresses resulting from a horizontal ground acceleration of 0.07g and a simultaneous vertical ground acceleration of 2/3 the horizontal, with the stresses maintained within code allowable working stresses.

b. Primary operating stresses when combined with the Design Basis Earthquake seismic stresses resulting from a horizontal ground acceleration of 0.15g and a simultaneous vertical ground

Attachment 2

Surry Power Station

Discussion of Supplemental Changes and Significant Hazards Consideration

Introduction and Background

By a letter dated July 2, 1993 (Serial No. 93-402), Virginia Electric and Power Company requested changes to the Technical Specifications for Operating License Nos. DPR-32 and DPR-37, Surry Power Station Units 1 and 2, respectively, to include a Core Operating Limits Report (COLR). During NRC review of the proposed Technical Specification changes, a concern was expressed regarding the removal of moderator temperature coefficient (MTC) limits from the Technical Specifications. The analyses that demonstrate compliance with the requirements of 10CFR50.62 (Reduction of Risk from Anticipated Transients Without Scram (ATWS)) indicate that ATWS risk may be significantly affected by MTC. Therefore, the NRC has requested that the proposed Technical Specification changes be modified to specify an upper limit on allowable COLR MTC values which will ensure an acceptable level of ATWS risk.

Because this transmittal supplements our original July 2, 1993 request, the supplemental changes are noted with double revision bars on the affected Technical Specification pages.

Specific Changes

Technical Specifications 3.1.E and 5.3.A.6.b

The current Technical Specifications which govern MTC (Technical Specifications 3.1.E and 5.3.A.6.b) prescribe an MTC limit of +3 pcm/°F between 0% and 50% power and a linearly decreasing limit from +3 pcm/°F at 50% power to 0 pcm/°F at 100% power. The proposed supplemental changes to Technical Specifications 3.1.E and 5.3.A.6.b establish an upper limit on allowable COLR MTC values of +6 pcm/°F between 0% and 50% power and a linearly decreasing upper limit from +6 pcm/°F at 50% power to 0 pcm/°F at 100% power. Although the proposed supplemental Technical Specification changes establish a maximum allowable MTC limit higher than the MTC limit in the current Technical Specifications, the actual operating limit, being relocated to the COLR, is not being changed by the proposed change submittal or this supplement. The proposed supplemental Technical Specification upper limit on allowable MTC values ensures that COLR MTC changes made using the provisions of 10CFR50.59 cannot increase the probability of occurrence or consequences of an ATWS event or decrease the margin of safety demonstrated by the ATWS analysis.

Safety Significance

The most limiting ATWS overpressurization results are obtained at the most positive full power MTC value (0 pcm/°F). The proposed supplemental upper limit on MTC at the most limiting (full power) ATWS condition is unchanged from the full power MTC limit in the current Technical Specifications. Further, the proposed supplemental limitation for Surry is comparable in magnitude to the North Anna Technical Specification limit, although it differs in its functional form (i.e., the North Anna MTC

changes as a step function at 70% power, whereas Surry's MTC changes as a ramp function with a break point at 50% power). Furthermore, the analysis that demonstrates compliance with the 10CFR50.62 ATWS rule ("Joint Westinghouse Owner's Group/Westinghouse Program on Assessment of Compliance with ATWS Rule Basis for Westinghouse PWR's," WCAP-11993, dated December 1988) considered cores licensed with positive MTC values (such as North Anna). Therefore, this analysis supports the conclusion that reactor power and MTC combinations within the proposed limits result in an acceptable level of ATWS risk for Westinghouse plants, such as Surry, which have auxiliary feedwater (AFW) system initiation, turbine trip, and reactor trip circuitry diverse from the reactor trip system.

Significant Hazards Consideration

These proposed supplemental changes constitute additional restrictions to the proposed Technical Specification changes submitted on July 2, 1993. Therefore, the supplemental changes remain bounded by the conclusions of the previously submitted significant hazards consideration evaluation.

Summary

The proposed supplemental Technical Specifications have been developed to establish an upper limit on allowable COLR MTC values. In keeping with the philosophy of the COLR, Virginia Electric and Power Company will be afforded the flexibility of modifying operating MTC limitations using the provisions of 10CFR50.59, provided the modifications are made in accordance with NRC approved methodologies listed in the proposed Technical Specifications changes and provided the COLR MTC values do not exceed the Technical Specification MTC upper limit values.