ATTACHMENT 1

PROPOSED TECHNICAL SPECIFICATION CHANGE

E. Minimum Temperature for Criticality

Specifications

1. Except during low power physics tests, the reactor shall not be made critical at any temperature above which the moderator temperature coefficient is more positive than:

   a. + 3 pcm/°F at less than 50% of rated power, or

   b. + 3 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 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 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 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 + 3 pcm/°F in the power operating range.

The requirement that the reactor is not to be made critical when the moderator coefficient is greater than + 3 pcm/°F has been imposed to prevent any unexpected power excursion during normal operations as a result of either an increase of moderator temperature or decrease of coolant pressure. This requirement is waived during low power physics test to permit measurement of reactor moderator coefficient and other physics design parameters of interest. During physics tests, special operation precautions will be taken. In addition, the strong negative Doppler coefficient(2)(3) and the small integrated Delta k/k would limit the magnitude of a power excursion resulting from a reduction of moderator density.

The requirement that the reactor is not to be made critical with a reactor coolant temperature below DTT + 10°F provides increased assurance that the proper relationship between reactor coolant pressure and temperature will be maintained during system heatup and pressurization whenever the reactor vessel is in the nil ductility transition temperature range. Heatup to this temperature is accomplished by operating the reactor coolant pumps.

The requirement that the reactor is not to be made critical with a reactor coolant temperature below 522°F provides added assurance that the assumptions made in the safety analyses remain bounding by maintaining the moderator temperature within the range of those analyses.

If a specified shutdown reactivity margin is maintained (TS Section 3.12), there is no possibility of an accidental criticality as a result of an increase of moderator temperature or a decrease of coolant pressure.

(1) FSAR Figure 3.3-8
(2) FSAR Table 3.3-1
(3) FSAR Figure 3.3-9

ATTACHMENT 2

DISCUSSION OF PROPOSED CHANGE

DISCUSSION OF PROPOSED TECHNICAL SPECIFICATION CHANGE

Section 3.1.E of the Technical Specifications provides limits governing the minimum temperature for criticality. These limits are currently set by two constraints, namely: 1) the Moderator Temperature Coefficient shall not be more positive than assumed in the safety analysis and 2) the proper relationship between reactor coolant pressure and temperature will be maintained during system heatup and pressurization whenever the reactor vessel is in the nil ductility transition temperature range.

The proposed change would add an additional requirement to Section 3.1.E which would limit the minimum temperature for criticality to 522°F.

Certain of the accidents considered in Chapter 14 of the UFSAR can be more severe at reduced temperatures, and the proposed minimum temperature of 522°F ensures that actual conditions achieved during operations are bounded by the range of conditions assumed in the safety analysis, as required by Section 6.6.2.a(8) of the Specifications.

No unreviewed safety question as defined in 10CFR50.59 is introduced by the proposed change. This conclusion is based on the following:

1) The effect of the proposed change further limits the range of temperatures over which criticality is allowed, thus no new accident types are introduced.

2) The proposed revisions serve to increase the level of assurance such that the results of any postulated accident in the UFSAR will be less severe than those calculated in the safety analysis. Therefore, no reduction in any safety margin results.

3) The probabilities of occurrence of the various accidents or of equipment malfunctions important to safety are unchanged since no change to the facility or widening of the range of operating conditions result.

This change is in the category of Example ii of those types of license amendments that are considered unlikely to involve significant hazards considerations, as published in the Federal Register (48FR14870). Example ii cites "A change that constitutes an additional limitation, restriction or control not presently included in the technical specifications: for example, a more stringent surveillance requirement." Since the proposed change serves to restrict the range of plant operations, it does not involve a significant hazards consideration as defined in 10CFR50.92.

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