ATTACHMENT 1

MARKED-UP TECHNICAL SPECIFICATION PAGES

Page	Specification	Change Description
3/4 1-3a	Figure 3.1-3, "Required Shutdown Margin (Modes 3, 4, and 5)"	Revises the Modes 3 and 4 curves in Figure 3.1-3 to incorporate the more negative boron worths associated with the Cycle 6 core and subsequent cores.
B3/4 2-2	Basis 3/4.2.1, "Axial Flux Difference"	Changes "PFLR" to "COLR." Amendment No. 88 (TAC NO. 75049) replaced the PFLR with the COLR.

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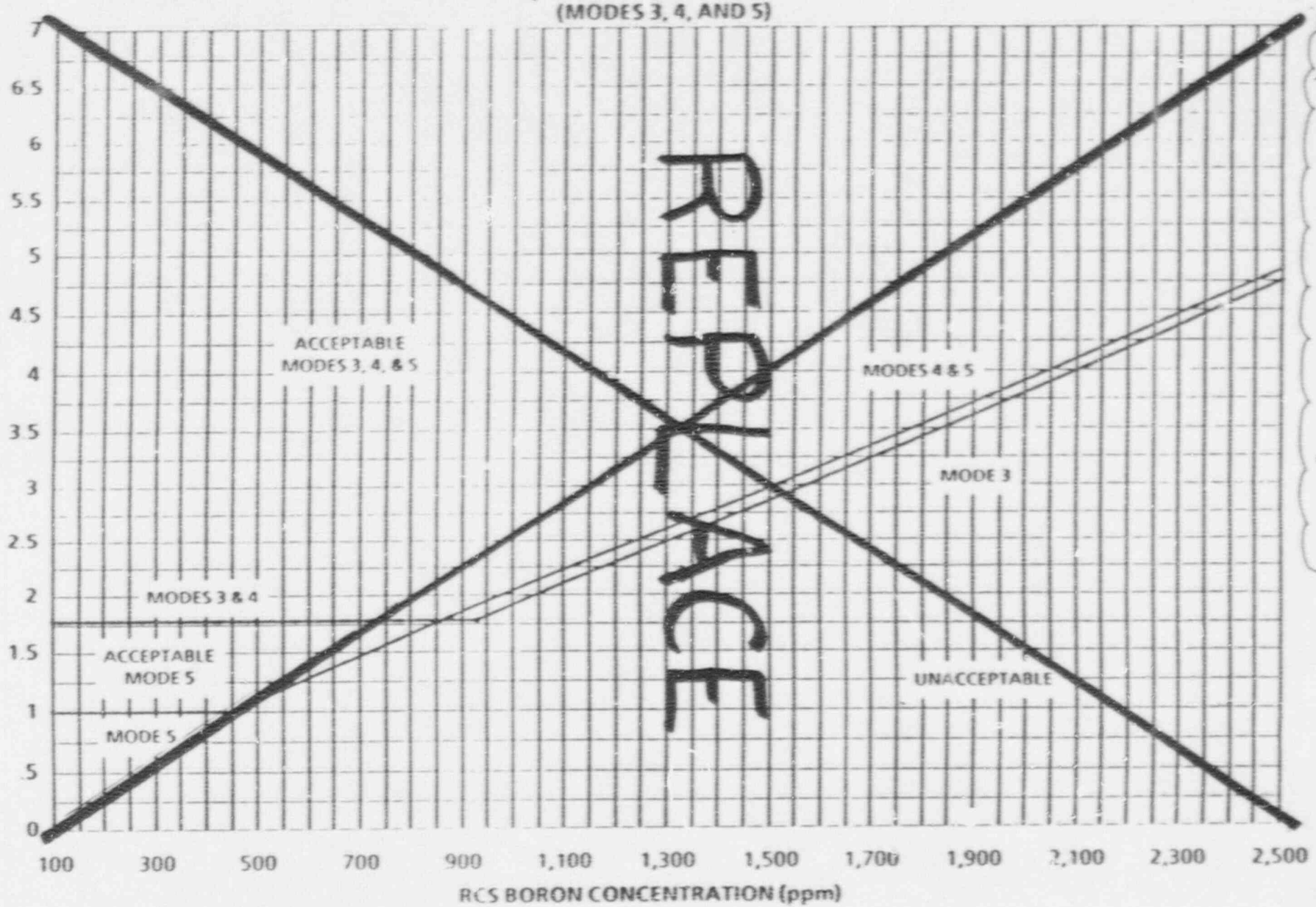
FIGURE 3.1-3
REQUIRED SHUTDOWN MARGIN
(MODES 3, 4, AND 5)

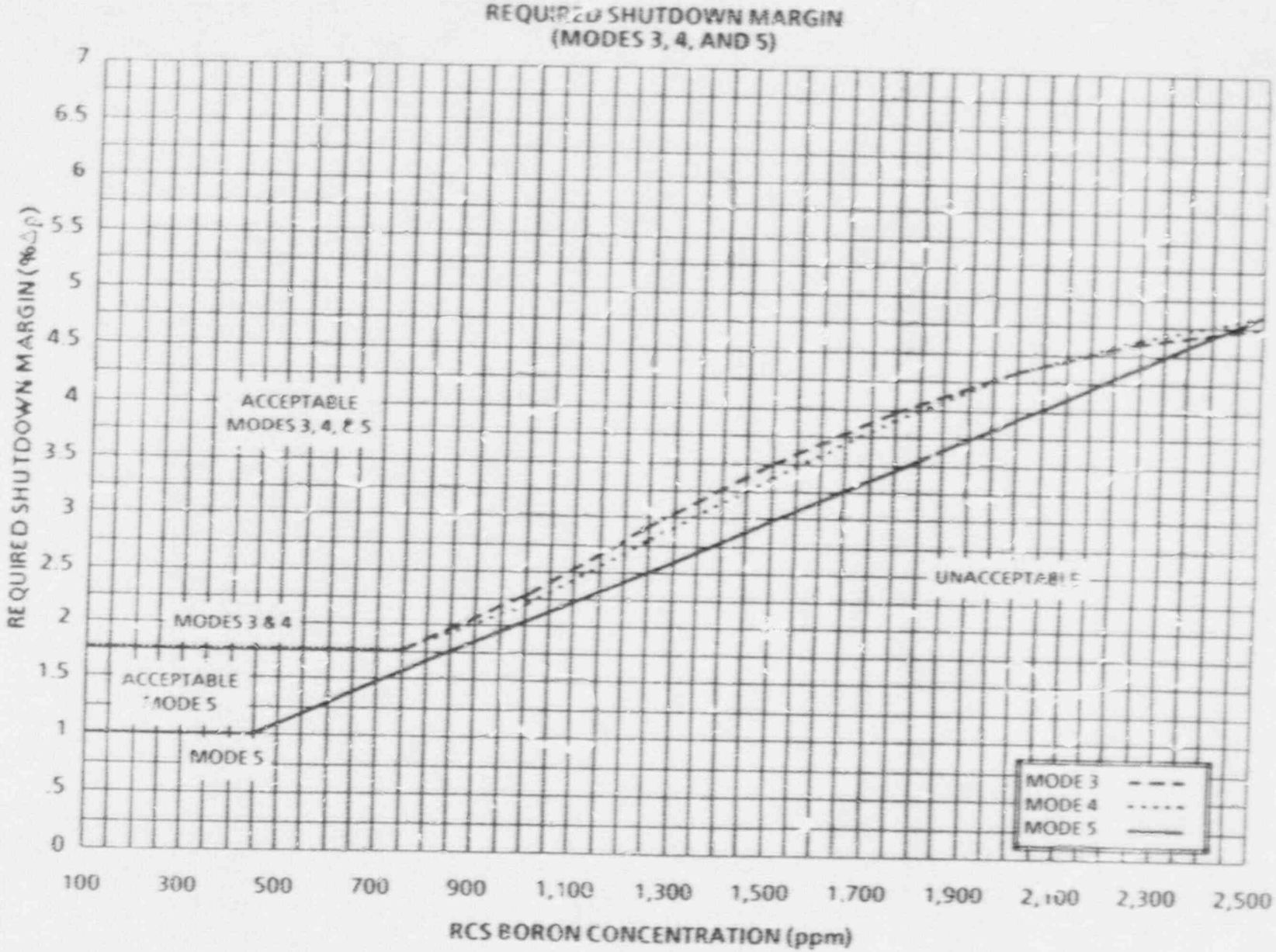


REPLACE

Replace with Revised Fig. 3.1-3

ATTACHMENT 1

Summer, UNIT 1 3/4 1-24 Amendment No. 46, 75



ATTACHMENT 1

POWER DISTRIBUTION LIMIT

BASES

AXIAL FLUX DIFFERENCE (Continued)

At power levels below APL^{ND}, the limits on AFD are defined in the COLR consistent with the Relaxed Axial Offset Control (RAOC) operating procedure and limits. These limits were calculated in a manner such that expected operational transients, e.g., load follow operations, would not result in the AFD deviating outside of those limits. However, in the event such a deviation occurs, the short period of time allowed outside of the limits at reduced power levels will not result in significant xenon redistribution such that the envelope of peaking factors would change sufficiently to prevent operation in the vicinity of the APL^{ND} power level.

At power levels greater than APL^{ND}, two modes of operation are permissible; (1) RAOC, the AFD limit of which are defined in the COLR and (2) Base Load operation, which is defined as the maintenance of the AFD within ~~(FΔH)~~ specifications band about a target value. The RAOC operating procedure above APL^{ND} is the same as that defined for operation below APL^{ND}. However, it is possible when following extended load following maneuvers that the AFD limits may result in restrictions in the maximum allowed power or AFD in order to guarantee operation with $F_Q(z)$ less than its limiting value. To allow operation at the maximum permissible power level the Base Load operating procedure restricts the indicated AFD to relatively small target band (as specified in the COLR) and power swings ($APL^{ND} \leq$ power $\leq APL^{BL}$ or 100% Rated Thermal Power, whichever is lower). For Base Load operation, it is expected that the plant will operate within the target band. Operation outside of the target band for the short time period allowed will not result in significant xenon redistribution such that the envelope of peaking factors would change sufficiently to prohibit continued operation in the power region defined above. To assure there is no residual xenon redistribution impact from past operation on the Base Load operation, a 24-hour waiting period at a power level above APL^{ND} and allowed by RAOC is necessary. During this time period load changes and rod motion are restricted to that allowed by the Base Load procedure. After the waiting period extended Base Load operation is permissible.

The computer determines the one minute average of each of the OPERABLE excore detector outputs and provides an alarm message immediately if the AFD for at least 2 of 4 or 2 of 3 OPERABLE excore channels are: (1) outside the allowed delta-I power operating space (for RAOC operation), or (2) outside the allowed delta-I target band (for Base Load operation). These alarms are active when power is greater than: (1) 50% of RATED THERMAL POWER (for RAOC operation), or (2) APL^{ND} (for Base Load operation). Penalty deviation minutes for Base Load operation are not accumulated based on the short period of time during which operation outside of the target band is allowed.

ATTACHMENT 2

SAFETY EVALUATION

SAFETY EVALUATION FOR THE VIRGIL C. SUMMER NUCLEAR STATION

DESCRIPTION OF AMENDMENT REQUEST

Technical Specification Figure 3.1-3, "Required Shutdown Margin (Modes 3, 4, and 5)," specifies the shutdown margin that must be maintained for varying Reactor Coolant System (RCS) concentrations of boron in order to (1) control, within acceptable limits, the reactivity transients associated with postulated accident conditions, and (2) maintain the reactor sufficiently subcritical to prevent inadvertent criticality.

Current Shutdown Margin requirements in excess of 1.77% for Modes 3 and 4 and in excess of 1% for Mode 5 are based upon the boron dilution accident evaluation submitted in support of Amendment No. 75 to the Virgil C. Summer Nuclear Station Operating License (TAC NO. 68644 - VANTAGE 5 IMPROVED FUEL DESIGN). These evaluations were performed using an accepted Westinghouse methodology that takes credit for the high flux at shutdown alarm set at twice background to alert the operator that a dilution event is in progress. With initial RCS boron concentrations at or above the current Technical Specification shutdown margin requirements, the analyses demonstrate that the operator has at least 13.4 minutes from the high flux at shutdown alarm to recognize and terminate an uncontrolled reactivity insertion before shutdown margin is lost and the reactor becomes critical.

While performing the Reload Safety Evaluation (RSE) for Cycle 6 in accordance with the methodology of WCAP-9272, "Westinghouse Reload Safety Evaluation Methodology," SCE&G discovered that the calculated boron worths for Modes 3 and 4 are more negative than the values assumed in the current VCSNS Boron Dilution Accident analyses. The more negative boron worth reduces the required change in boron concentration to achieve criticality during a dilution event and results in a reduction in operator action time of approximately 2 minutes.

To resolve this discrepancy, SCE&G proposes to revise the Required Shutdown Margin curve to ensure that the operator action time to detect and terminate an inadvertent boron dilution event is not reduced. The proposed Figure 3.1-3 is provided in Attachment 1. The boron worth for Mode 5 continues to be bounded by previously analyzed values, and, as such, the Mode 5 curve in Attachment 1 is identical to the one currently in the Technical Specifications.

One additional proposed change in this request involves page B3/4 2-2 in the VCSNS Technical Specifications which references the Peaking Factor Limit Report (PFLR). This report was eliminated when approval was granted, in Amendment No. 88, to utilize the COLR. This reference was overlooked in the Technical Specifications Change Request for Amendment No. 88, dated December 11, 1989. The proposed revision to change "PFLR" to "COLR" is administrative in nature.

SAFETY EVALUATION:

The proposed shutdown margin requirements for Modes 3 and 4 are based on additional Boron Dilution analyses utilizing the same analytical methods used in creating the current Technical Specification, which was approved by the NRC in granting Amendment Number 75 to the VCSNS Operating License (TAC NO. 68644-VANTAGE 5 IMPROVED FUEL DESIGN). Bounding values of boron worth were utilized to preclude violations during Reload Safety Evaluations for future cycles. These additional analyses define the required shutdown margin as a function of RCS boron concentration for Modes 3 and 4 that will maintain at least 13.4 and 13.6 minutes, respectively, for operator action time. As illustrated in Attachment 3, the proposed shutdown margins for Modes 3 and 4 are more restrictive than the current requirements (i.e., the area of acceptable operation is reduced). However, by requiring this increased shutdown margin, the proposed amendment preserves the previously accepted operator action time, and thus maintains the margins of safety defined in the bases for the Shutdown Margin Technical Specification.

The lines defining the regions of acceptable operation for Modes 3 and 4 in the revised figure exhibit definite curvature, whereas the current Required Shutdown Margin curve consists of straight lines. The method of calculating the data points is identical for both curves. The data for the curve currently in Technical Specifications was bounded by straight lines. To bound the data in the proposed curve would, however, result in requiring prohibitively high shutdown margins for operations at increased boron concentrations. Because of this, the lines defining the regions of acceptable operation for Modes 3 and 4 in the proposed figure reflect the analyses results, and have not been bounded by a linear line.

To summarize, the proposed revision in Figure 3.1-3:

- ensures that the operator has, at least, the previously accepted 13.4 and 13.6 minutes for Modes 3 and 4, respectively, to recognize and terminate the uncontrolled reactivity insertion associated with a boron dilution before shutdown margin is lost and the reactor becomes critical.

- is based on methods previously reviewed and approved by the Nuclear Regulatory Commission.

Based upon the information provided above, SCE&G has determined that the proposed change will not adversely affect the health and safety of the public.

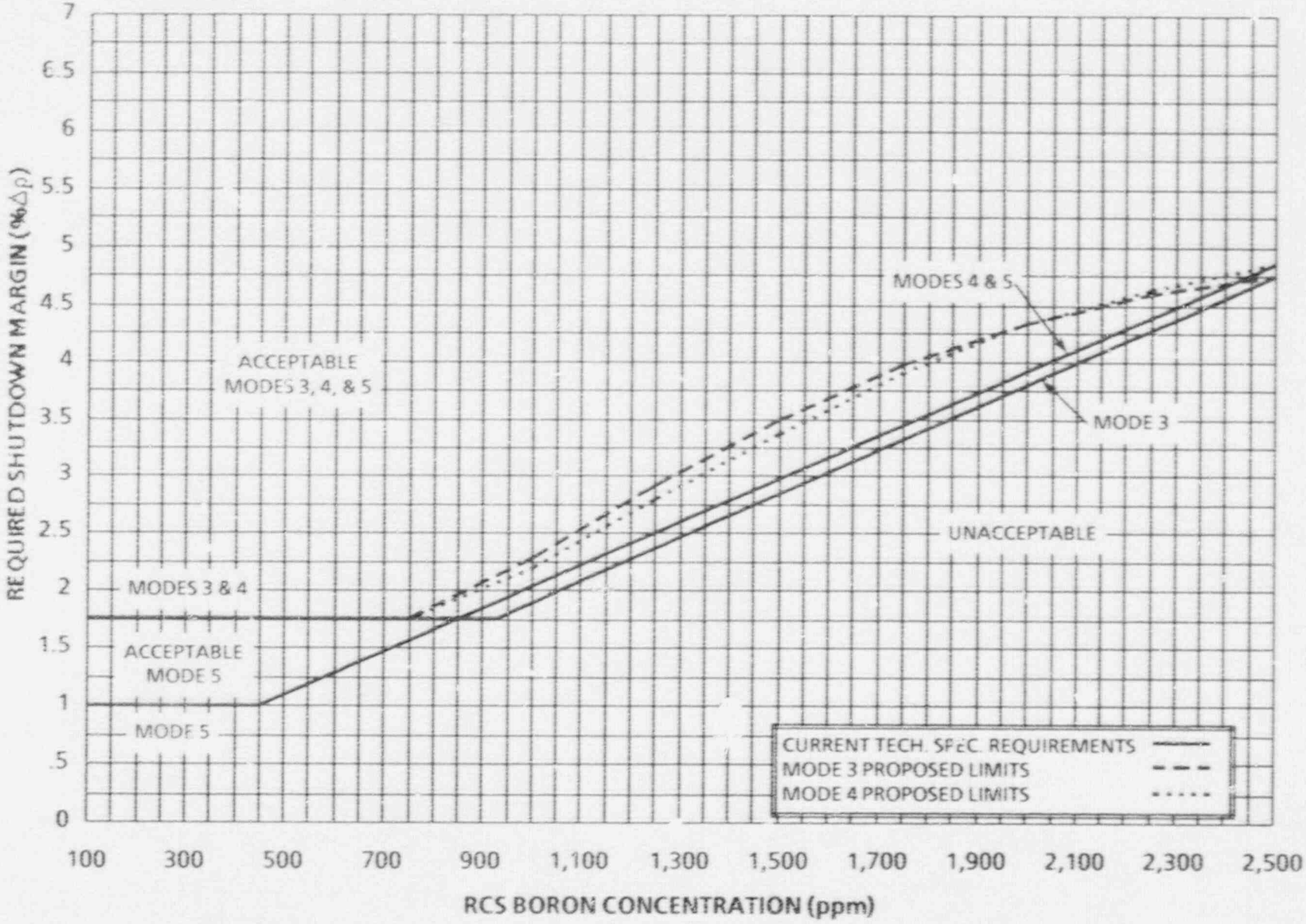
In addition, the proposed revision to change "PFLR" to "COLR" in Technical Specification Basis 3/4.2.1, is purely administrative and has no impact on plant operations or safety. This change deletes the reference to an obsolete report (PFLR) and replaces it with a reference to the current report (COLR). SCE&G is requesting this change to achieve consistency throughout the VCSNS Technical Specifications.

ATTACHMENT 3

PROPOSED REQUIRED SHUTDOWN MARGIN CURVE VS.

CURRENT TECHNICAL SPECIFICATIONS REQUIRED SHUTDOWN MARGIN CURVE

PROPOSED REQUIRED SDM CURVE VS. CURRENT TECHNICAL SPECIFICATION REQUIREMENTS SDM CURVE



ATTACHMENT 3

ATTACHMENT 4

NO SIGNIFICANT HAZARDS EVALUATION

NO SIGNIFICANT HAZARDS EVALUATION FOR THE VIRGIL C. SUMMER NUCLEAR STATION

DESCRIPTION OF AMENDMENT REQUEST:

Technical Specification Figure 3.1-3, "Required Shutdown Margin (Modes 3, 4, and 5)," specifies the shutdown margin that must be maintained for varying Reactor Coolant System (RCS) concentrations of boron in order to (1) control, within acceptable limits, the reactivity transients associated with postulated accident conditions, and (2) maintain the reactor sufficiently subcritical to prevent inadvertent criticality.

Current Shutdown Margin requirements in excess of 1.77% for Modes 3 and 4 and in excess of 1% for Mode 5 are based upon the boron dilution accident evaluation submitted in support of Amendment No. 75 to the Virgil C. Summer Nuclear Station Operating License (TAC NO. 68644 - VANTAGE 5 IMPROVED FUEL DESIGN). These evaluations were performed using an accepted Westinghouse methodology that takes credit for the high flux at shutdown alarm set at twice background to alert the operator that a dilution event is in progress. With initial RCS boron concentrations at or above the current Technical Specification shutdown margin requirements, the analyses demonstrate that the operator has at least 13.4 minutes from the high flux at shutdown alarm to recognize and terminate an uncontrolled reactivity insertion before shutdown margin is lost and the reactor becomes critical.

While performing the Reload Safety Evaluation (RSE) for Cycle 6 in accordance with the methodology of WCAP-9272, "Westinghouse Reload Safety Evaluation Methodology," SCE&G discovered that the calculated boron worths for Modes 3 and 4 are more negative than the values assumed in the current VCSNS Boron Dilution Accident analyses. The more negative boron worth reduces the required change in boron concentration to achieve criticality during a dilution event and results in a reduction in operator action time of approximately 2 minutes.

To resolve this discrepancy, SCE&G proposes to revise the Required Shutdown Margin curve to ensure that the operator action time to detect and terminate an inadvertent boron dilution event is not reduced. The proposed Figure 3.1-3 is provided in Attachment 1. The boron worth for Mode 5 continues to be bounded by previously analyzed values, and, as such, the Mode 5 curve in Attachment 1 is identical to the one currently in the Technical Specifications.

One additional proposed change in this request involves page B3/4 2-2 in the VCSNS Technical Specifications which references the Peaking Factor Limit Report (PFLR). This report was eliminated when approval was granted, in Amendment No. 88, to utilize the COLR. This reference was overlooked in the Technical Specifications Change Request for Amendment No. 88, dated December 11, 1989. The proposed revision to change "PFLR" to "COLR" is administrative in nature.

BASIS FOR PROPOSED NO SIGNIFICANT HAZARDS CONSIDERATION:

Pursuant to 10CFR50.91, SCE&G has determined that operation of the facility in accordance with the proposed license amendment request does not involve any significant hazards considerations as defined by NRC regulations in 10CFR50.92. The following discussion describes how the proposed amendment satisfies each of the three standards of 10CFR50.92(c).

1) The proposed change does not involve a significant increase in the probability or consequences of an accident previously evaluated.

The proposed Shutdown Margin requirements reflect the use of a more negative boron worth as a bounding assumption in the Boron Dilution Analyses. In combination with the high flux at shutdown alarm set at twice background, the proposed change ensures that the operator will have at least 13.4 minutes from the alarm to recognize and terminate an uncontrolled dilution event before shutdown margin is lost. Thus, there will be no increase in the probability or consequences of the Boron Dilution Accident because current margin to criticality will be maintained.

The proposed revision to change "PFLR" to "COLR" in Technical Specification Basis 3/4.2.1 is administrative in nature and does not, therefore, involve an increase in the probability or consequences of an accident previously evaluated.

2) The proposed change does not create the possibility of a new or different kind of accident from any accident previously evaluated.

No safety-related equipment, safety function, or methods of plant operations will be altered as a result of the proposed change to Figure 3.1-3. Therefore, the higher boron concentrations (the end result of the higher shutdown margin requirements) that will be maintained during portions of the fuel cycle while in Modes 3 and 4 do not in any way create the possibility of a new or different kind of accident from any accident previously evaluated.

The proposed revision to change "PFLR" to "COLR" in Technical Specification Basis 3/4.2.1 is administrative in nature and does not in any way create the possibility of an accident which is new or different from any accident previously evaluated. The change simply deletes a reference to an obsolete report (PFLR) and references the report which replaced it (COLR).

3. The proposed change does not involve a significant reduction in a margin of safety.

The proposed change to Figure 3.1-3 revises the required shutdown margin as a function of RCS boron concentration for Modes 3 and 4 such that the operator will have at least 13.4 minutes and 13.6 minutes, respectively, from receipt of a high flux at shutdown alarm to recognize and terminate an uncontrolled dilution event before shutdown margin is lost. This will maintain the current margin to criticality, as reflected in the FSAR analysis of the Boron Dilution Event, and thus preserves the margin of safety as defined in the bases for the Shutdown Margin Technical Specification.

The proposed revision to change "PFLR" to "COLR" in Technical Specification Basis 3/4.2.1 is administrative in nature. The change simply deletes a reference to an obsolete report (PFLR) and references the report which replaced it (COLR). The change does not affect the margin of safety currently provided by the Technical Specifications.

Therefore, based on the above considerations, SCE&G has determined that the proposed changes do not involve any significant hazards considerations.