



South Texas Project Electric Generating Station P.O. Box 289 Wadsworth, Texas 77483

May 23, 2002
NOC-AE-02001315
10CFR50.90

U. S. Nuclear Regulatory Commission
Attention: Document Control Desk
One White Flint North
11555 Rockville Pike
Rockville, MD 20852

South Texas Project
Units 1 and 2
Docket Nos. STN 50-498 and STN 50-499
License Amendment Request -
Conditional Exemption from Measurement of End of Life Moderator Temperature Coefficient

Reference: Letter, S.M. Head to NRC Document Control Desk, "Response to NRC Regulatory Issue Summary 2001-21," dated January 17, 2002 (NOC-AE-02001243)

Pursuant to 10CFR50.90, STP Nuclear Operating Company (STPNOC) hereby requests an amendment to the Technical Specifications (TS). The proposed changes would revise the near-end of life (EOL) Moderator Temperature Coefficient (MTC) Surveillance Requirement 4.1.1.3.b by placing a set of conditions on core operation, which if met, would allow exemption from the required MTC measurement. The conditional exemption will be determined on a cycle-specific basis by considering the margin predicted to the surveillance requirement MTC limit and the performance of other core parameters, such as beginning of life (BOL) MTC measurements and the critical boron concentration as a function of cycle length. The conditional exemption would improve plant availability and minimize disruptions to normal plant operations. Plant safety criteria will not be compromised by the conditional exemption of this one measurement. No changes to the TS Bases will be required as a result of the proposed amendment.

Attachment 1 to this letter provides a No Significant Hazards Consideration Determination and Attachment 2 provides the current TS pages marked up with the proposed changes. Attachment 3 provides the retyped TS pages. Typical revised pages from a Core Operating Limits Report are provided in Attachment 4 for information only.

The Plant Operations Review Committee and the Nuclear Safety Review Board have reviewed the proposed changes. STPNOC has notified the State of Texas in accordance with 10CFR50.91(b).

This amendment request was included as part of the fourteen plant-specific submittals identified for fiscal year 2002 (refer to the referenced letter). STPNOC requests approval of the proposed amendment by November 30, 2002. Once approved, the amendment shall be implemented

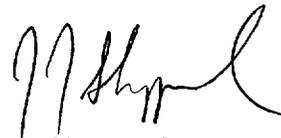
Approval

within 30 days. This approval schedule request is based on a desire to avoid the plant perturbation and expense of a Unit 1 MTC measurement near the end of cycle 11, and on the fact that WCAP-13749-P-A appears as a reference in this license application. The NRC has found the WCAP acceptable for referencing in license applications. STPNOC has also proposed an enhancement that would reduce the regulatory burden of using the WCAP in Section 4 of Attachment 1.

If there are any questions regarding this proposed amendment, please contact Mr. Scott Head at (361) 972-7136 or me at (361) 972-8757.

I declare under penalty of perjury that the foregoing is true and correct.

Executed on 5/23/02



J. J. Sheppard
Vice President,
Engineering & Technical Services

kaw

Attachments:

1. Licensee's Evaluation
2. Proposed Technical Specification Changes (Mark-ups)
3. Proposed Technical Specification Pages (Retyped)
4. Typical Revised Core Operating Limits Report Pages (For Information Only)

cc:

(paper copy)

Ellis W. Merschoff
Regional Administrator, Region IV
U.S. Nuclear Regulatory Commission
611 Ryan Plaza Drive, Suite 400
Arlington, Texas 76011-8064

U. S. Nuclear Regulatory Commission
Attention: Document Control Desk
One White Flint North
11555 Rockville Pike
Rockville, MD 20852

Richard A. Ratliff
Bureau of Radiation Control
Texas Department of Health
1100 West 49th Street
Austin, TX 78756-3189

Cornelius F. O'Keefe
U. S. Nuclear Regulatory Commission
P. O. Box 289, Mail Code: MN116
Wadsworth, TX 77483

C. M. Canady
City of Austin
Electric Utility Department
721 Barton Springs Road
Austin, TX 78704

(electronic copy)

A. H. Gutterman, Esquire
Morgan, Lewis & Bockius LLP

M. T. Hardt/W. C. Gunst
City Public Service

Mohan C. Thadani
U. S. Nuclear Regulatory Commission

R. L. Balcom
Reliant Energy, Inc.

A. Ramirez
City of Austin

C. A. Johnson
AEP - Central Power and Light Company

Jon C. Wood
Matthews & Branscomb

Attachment 1

Licensee's Evaluation

LICENSEE'S EVALUATION

1.0 DESCRIPTION

This letter is a request to amend Operating Licenses NPF-76 and NPF-80 for South Texas Project (STP) Units 1 and 2. The proposed changes would revise the near-end of life (EOL) Moderator Temperature Coefficient (MTC) Surveillance Requirement 4.1.1.3.b by placing a set of conditions on core operation, which if met, would allow exemption from the required MTC measurement. The conditional exemption will be determined on a cycle-specific basis by considering the margin predicted to the surveillance requirement MTC limit and the performance of other core parameters, such as beginning of life (BOL) MTC measurements and the critical boron concentration as a function of cycle length. The conditional exemption would improve plant availability and minimize disruptions to normal plant operations. Plant safety criteria will not be compromised by the conditional exemption of this one measurement. No changes to the TS Bases will be required as a result of the proposed amendment.

STP Nuclear Operating Company (STPNOC) requests approval of the proposed amendment by November 30, 2002. Once approved, the amendment shall be implemented within 30 days.

2.0 PROPOSED CHANGES

Specifically, the proposed changes include the following:

- SR 4.1.1.3b is modified to suspend the MTC measurement if the model benchmark criteria and Revised Prediction specified in the Core Operating Limits Report (COLR) are satisfied.
- WCAP-13749-P-A, "Safety Evaluation Supporting the Conditional Exemption of the Most Negative EOL Moderator Temperature Coefficient Measurement," is added to the list of references for the COLR in TS 6.9.1.6.b.

3.0 BACKGROUND

One of the controlling parameters for power and reactivity increases is the MTC. The requirements of Technical Specification (TS) 3.1.1.3 ensure that the MTC remains within the bounds used in the applicable Updated Final Safety Analysis Report (UFSAR) Chapter 15 accident analysis. This, in turn, ensures inherently stable power operations during normal operation and accident conditions.

The TS place both Limiting Condition for Operation (LCO) and Surveillance Requirement (SR) constraints on the MTC, based on the accident analysis assumptions

for the moderator density coefficient. A positive moderator density coefficient corresponds to a negative MTC. The most negative MTC LCO limit requires that the MTC be less negative than the specified limit for the all rods withdrawn, EOL, rated thermal power condition. To demonstrate compliance with the most negative MTC LCO, the surveillance requires verification of the MTC after 300 ppm equilibrium boron concentration is reached. Because the Hot Full Power (HFP) MTC value will gradually become more negative with further core burnup and boron concentration reduction, a 300 ppm MTC surveillance value should necessarily be less negative than the EOL LCO limit. To account for this effect, the 300 ppm MTC surveillance value is sufficiently less negative than the EOL LCO limit value, providing assurance that the LCO limit will be met as long as the 300 ppm MTC surveillance criterion is met.

Currently, the Technical Specifications require measurements of MTC at BOL to verify the most positive MTC limit and near-EOL to verify the most negative MTC limit. At BOL, the measurement of the isothermal temperature coefficient is relatively simple to perform since it is done at hot zero power isothermal conditions and is not complicated by changes in the enthalpy rise or the presence of xenon. The measurement made near-EOL is performed at or near HFP conditions. MTC measurements at HFP are more difficult to perform due to:

- small variations in soluble boron concentration
- changes in xenon concentration and distribution
- changes in fuel temperature
- and changes in enthalpy rise

created by small changes in the core average power during the measurement. Changes in each of these parameters must be accurately accounted for when reducing the measurement data, or additional measurement uncertainties will be introduced. Even though these additional uncertainties may be small, the total reactivity change associated with the swing in moderator temperature is also relatively small. The resulting MTC measurement uncertainty created by even a small change in power level can then become significant and, if improperly accounted for, can yield misleading measurement results.

Each measurement of MTC requires several hours at less than full power operation (as a buffer to measurement-induced transients) and requires additional manpower. This presents a perturbation to normal operation and to the reactor itself. An alternate method is proposed for use at STP to improve availability and minimize disruption to normal plant operations. The MTC measurement is replaced by a design calculation of the core MTC if predefined requirements are met.

The proposed change would allow modification of the EOL MTC surveillance requirement by placing a set of conditions on core operations. If these conditions are met, i.e., the specified revised prediction of the MTC and limits for several core parameters measured during the cycle are within specified bounds, the surveillance measurement would not be required.

4.0 TECHNICAL ANALYSIS

The conditional exemption from the HFP near-EOL 300 ppm MTC measurement does not impact the safe operation of STP. The safety analysis assumption of a constant moderator density coefficient and the actual value assumed will not change. The TS Bases for and values of the most negative MTC limiting condition for operation and for the surveillance requirement are not altered. Instead, a revised prediction is compared to the surveillance MTC to determine if the limit is met. The method for calculating the revised prediction is consistent with the approved methodology of WCAP-13749-P-A (Reference 1).

The methodology for the proposed change was submitted to the NRC as Westinghouse topical report WCAP-13749 in May 1993. In October 1996, the NRC determined the report to be acceptable for referencing in license applications to the extent specified and under the limitations stated in the Brookhaven technical evaluation report and the NRC staff's safety evaluation report. Reference 1 includes all of these documents.

The topical report was approved by the NRC with two requirements:

- only PHOENIX/ANC calculation methods are used for the individual plant analyses relevant to determinations for the EOL MTC plant methodology, and
- the predictive correction is reexamined if changes in core fuel designs or continued MTC calculation/measurement data show significant effect on the predictive correction

STP will meet both of these requirements. The PHOENIX/ANC calculation methods are used for the STP core designs. Prior to use of the conditional elimination technique, STP will confirm that core design changes and MTC calculation and measurement data do not show a significant effect on the predictive correction. If a significant effect is found, the use of the predictive correction will be re-examined.

All of the core performance benchmark criteria, which are confirmed from startup physics test results, from routine HFP boron concentration measurements, and from flux map surveillances performed during the cycle, must be met before the Revised Predicted MTC can be calculated per the prescribed algorithm in Reference 1.

Enhancement

STPNOC is using NRC-approved WCAP-13749-P-A as the basis for this license amendment request. STPNOC will meet all of the technical requirements in the approved WCAP, but proposes an enhancement to reduce regulatory burden for both the NRC and the licensee. STPNOC proposes not to submit a "Most Negative Moderator Temperature Coefficient Limit Report" (the Report) to the NRC. There are two reasons for this. First, there is an inconsistency in the WCAP regarding the time frame of data collection and the submittal of the Report to the NRC. More importantly, the Report serves no apparent technical or business need. Each of these reasons is explained below.

First, Section 3.3.3 of the WCAP states:

The Technical Specification Bases of the most negative MTC LCO and SR and the values of these limits are not altered. Instead, a **revised prediction** is compared to the SR MTC to determine if the SR limit is met. The **revised prediction** is simply the sum of the predicted HFP 300 ppm SR MTC plus an **AFD correction** factor plus a **predictive correction** term. This algorithm is summarized in Table 3-3.

Table D-2 of the WCAP states that the algorithm for determining the revised predicted near-EOL 300 ppm MTC is (emphasis added):

“The Revised Predicted MTC = Predicted MTC + AFD Correction + Predicted Correction”

where

“Predicted MTC is calculated from Figure 1 [Predicted HFP ARO 300 ppm MTC Versus Cycle Burnup] at the burnup corresponding to the measurement of 300 ppm at RTP conditions...”

Table D-3 of the WCAP provides an example worksheet for calculating the revised predicted near-EOL 300 ppm MTC. Two of the required data inputs for the worksheet (B.1 and B.2) are used to calculate the AFD correction term in the algorithm (emphasis added):

B.1	Burnup of <u>most recent</u> HFP, equilibrium MWD/MTU conditions incore flux map	_____
B.2	Measured HFP AFD at burnup (B.1) Reference incore flux map I.D. _____ Date: _____	_____ % AFD

However, Appendix A to the WCAP requires a new TS 6.9.1.7 to be added (emphasis added):

6.9.1.7 The most negative MTC limits shall be provided to the NRC Regional Administrator with a copy to the Director of Nuclear Reactor Regulation, Attention: Chief, Core Performance Branch, U. S. Nuclear Regulatory Commission, Washington, D. C. 20555, at least 60 days prior to the date the limit would become effective unless otherwise approved by the Commission by letter. This report will include the data required for the determination of the Revised Prediction of the 300 ppm/ARO/RTP MTC per WCAP-13749, “Safety Evaluation Supporting the Conditional Elimination of the Most Negative EOL Moderator Temperature Coefficient Measurement”, May, 1993 (Westinghouse Proprietary).

Because the Report would have to be submitted at least 60 days before reaching 300 ppm boron concentration, it cannot include the 300 ppm data required for determining the Revised Prediction. To meet the Report submittal requirement, the data to be used in calculating the revised predicted MTC may have to be taken 60 to 90 days prior to reaching 300 ppm boron. The WCAP does not provide any method for adjusting the revised predicted MTC to account for data collected 60 to 90 days prior to 300 ppm, nor does it provide justification for using such early data in the calculation. Therefore, the requirement to submit the Report and the requirements for the data that go into the report are inconsistent.

More importantly, the Report serves no apparent technical or business need. The applicability restrictions in the WCAP, the algorithm, and the acceptance criteria of the proposed Report would be included in the station procedure governing the EOL MTC surveillance. There is no compelling reason that this particular surveillance should require notifying the NRC prior to performing the surveillance procedure.

5.0 REGULATORY SAFETY ANALYSIS

5.1 No Significant Hazards Consideration

STPNOC has determined whether a significant hazards consideration is involved with the proposed amendment by focusing on the three criteria set forth in 10CFR50.92 as discussed below:

1. Does the proposed change involve a significant increase in the probability or consequences of an accident previously evaluated?

Response: No

The probability or consequences of accidents previously evaluated in the UFSAR are unaffected by this proposed change because there is no change to any equipment response or accident mitigation scenario. There are no additional challenges to fission product barrier integrity. Therefore, the proposed change does not involve a significant increase in the probability or consequences of an accident previously evaluated.

2. Does the proposed change create the possibility of a new or different kind of accident from any accident previously evaluated?

Response: No

No new accident scenarios, failure mechanisms, or limiting single failures are introduced as a result of the proposed change. The proposed change does not challenge the performance or integrity of any safety-related system. Therefore, the proposed change does not create the possibility of a new or different kind of accident from any previously evaluated.

3. Does the proposed change involve a significant reduction in a margin of safety?

Response: No

The margin of safety associated with the acceptance criteria of any accident is unchanged. The proposed change will have no affect on the availability, operability, or performance of the safety-related systems and components. A change to a surveillance requirement is proposed, but the limiting conditions for operation required by the Technical Specifications are not changed.

The Technical Specifications Bases are founded in part on the ability of the regulatory criteria to be satisfied assuming the limiting conditions for operation are met for the various systems. Conformance to the regulatory criteria for operation with the conditional exemption from the near-EOL MTC measurement is demonstrated and the regulatory limits are not exceeded. Therefore, the margin of safety as defined in the TS is not reduced and the proposed change does not involve a significant reduction in a margin of safety.

Based on the above, STPNOC concludes that the proposed amendment involves no significant hazards consideration under the criteria set forth in 10CFR50.92 and, accordingly, a finding of "no significant hazards consideration" is justified.

6.0 ENVIRONMENTAL CONSIDERATION

A review has determined that the proposed amendment would change a surveillance requirement. However, the proposed amendment does not involve (i) a significant hazards consideration, (ii) a significant change in the types or significant increase in the amounts of any effluent that may be released offsite, or (iii) a significant increase in individual or cumulative occupational radiation exposure. Accordingly, the proposed amendment meets the eligibility criterion for categorical exclusion set forth in 10CFR51.22(c)(9). Therefore, pursuant to 10CFR51.22(b), no environmental impact statement or environmental assessment need be prepared in connection with the proposed amendment.

7.0 REFERENCE

1. WCAP-13749-P-A, "Safety Evaluation Supporting the Conditional Exemption of the Most Negative EOL Moderator Temperature Coefficient Measurement," March 1997

Attachment 2

Proposed Technical Specification Changes (Mark-ups)

REACTIVITY CONTROL SYSTEMS

**No Change on
This Page**

MODERATOR TEMPERATURE COEFFICIENT

LIMITING CONDITION FOR OPERATION

3.1.1.3 The moderator temperature coefficient (MTC) shall be within the limits specified in the Core Operating Limits Report (COLR). The maximum upper limit shall be less than or equal to that shown in Figure 3.1-2a.

APPLICABILITY: Beginning of Life (BOL) limit - MODES 1 and 2* only**.
End of Life (EOL) limit - MODES 1, 2, and 3 only**.

ACTION:

- a. With the MTC more positive than the BOL limit specified in the COLR, operation in MODES 1 and 2 may proceed provided:
 - 1. Control rod withdrawal limits are established and maintained sufficient to restore the MTC to less positive than the BOL limit specified in the COLR within 24 hours or be in HOT STANDBY within the next 6 hours. These withdrawal limits shall be in addition to the insertion limits of Specification 3.1.3.6;
 - 2. The control rods are maintained within the withdrawal limits established above until a subsequent calculation verifies that the MTC has been restored to within its limit for the all rods withdrawn condition; and
 - 3. A Special Report is prepared and submitted to the Commission, pursuant to Specification 6.9.2, within 10 days, describing the value of the measured MTC, the interim control rod withdrawal limits, and the predicted average core burnup necessary for restoring the positive MTC to within its limit for the all rods withdrawn condition.
- b. With the MTC more negative than the EOL limit specified in the COLR, be in HOT SHUTDOWN within 12 hours.

*With K_{eff} greater than or equal to 1.

**See Special Test Exceptions Specification 3.10.3.

REACTIVITY CONTROL SYSTEMS

SURVEILLANCE REQUIREMENTS

- 4.1.1.3 The MTC shall be determined to be within its limits during each fuel cycle as follows:
- a. The MTC shall be measured and compared to the BOL limit specified in the COLR prior to initial operation above 5% of RATED THERMAL POWER, after each fuel loading; and
 - b. The MTC shall be measured at any THERMAL POWER and compared to the 300 ppm surveillance limit specified in the COLR (all rods withdrawn, RATED THERMAL POWER condition) within 7 EFPD after reaching an equilibrium boron concentration of 300 ppm.* In the event this comparison indicates the MTC is more negative than the 300 ppm surveillance limit specified in the COLR, the MTC shall be remeasured, and compared to the EOL MTC limit specified in the COLR, at least once per 14 EFPD during the remainder of the fuel cycle.

* Measurement of the MTC in accordance with Surveillance Requirement 4.1.1.3.b may be suspended, provided that the benchmark criteria in WCAP-13749-P-A (refer to 6.9.1.6.b.10) and the Revised Prediction specified in the COLR are satisfied.

ADMINISTRATIVE CONTROLS

CORE OPERATING LIMITS REPORT (Continued)

9. CENPD-397-P-A, Revision 01, "Improved Flow Measurement Accuracy Using Crossflow Ultrasonic Flow Measurement Technology," May 2000.

(Methodology for operating at a RATED THERMAL POWER of 3,853 Mwt)

10. WCAP-13749-P-A, "Safety Evaluation Supporting the Conditional Exemption of the Most Negative EOL Moderator Temperature Coefficient Measurement," March 1997,
(W Proprietary)

(Methodology for Specification 3.1.1.3 – Moderator Temperature Coefficient.)

- 6.9.1.6.c The core operating limits shall be determined so that all applicable limits (e.g., fuel thermal-mechanical limits, core thermal-hydraulic limits, ECCS limits, nuclear limits such as shutdown margin, and transient and accident analysis limits) of the safety analysis are met.

Attachment 3

Proposed Technical Specification Pages (Retyped)

REACTIVITY CONTROL SYSTEMS

SURVEILLANCE REQUIREMENTS

- 4.1.1.3 The MTC shall be determined to be within its limits during each fuel cycle as follows:
- a. The MTC shall be measured and compared to the BOL limit specified in the COLR prior to initial operation above 5% of RATED THERMAL POWER, after each fuel loading; and
 - b. The MTC shall be measured at any THERMAL POWER and compared to the 300 ppm surveillance limit specified in the COLR (all rods withdrawn, RATED THERMAL POWER condition) within 7 EFPD after reaching an equilibrium boron concentration of 300 ppm.* In the event this comparison indicates the MTC is more negative than the 300 ppm surveillance limit specified in the COLR, the MTC shall be remeasured, and compared to the EOL MTC limit specified in the COLR, at least once per 14 EFPD during the remainder of the fuel cycle.

* Measurement of the MTC in accordance with Surveillance Requirement 4.1.1.3.b may be suspended, provided that the benchmark criteria in WCAP-13749-P-A (refer to 6.9.1.6.b.10) and the Revised Prediction specified in the COLR are satisfied.

ADMINISTRATIVE CONTROLS

CORE OPERATING LIMITS REPORT (Continued)

9. CENPD-397-P-A, Revision 01, "Improved Flow Measurement Accuracy Using Crossflow Ultrasonic Flow Measurement Technology," May 2000.

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(W Proprietary)

(Methodology for Specification 3.1.1.3 – Moderator Temperature Coefficient.)

- 6.9.1.6.c The core operating limits shall be determined so that all applicable limits (e.g., fuel thermal-mechanical limits, core thermal-hydraulic limits, ECCS limits, nuclear limits such as shutdown margin, and transient and accident analysis limits) of the safety analysis are met.

Attachment 4

Typical Revised Core Operating Limits Report Pages (For Information Only)

FOR INFORMATION ONLY



**SOUTH TEXAS
UNIT 1 CYCLE 11**

CORE OPERATING LIMITS REPORT

October 2001

Edited by

C. A. Olson
J. E. Skutch

APPROVED:

A handwritten signature in black ink, appearing to read "J. J. Akers", is written over a horizontal line.

J. J. Akers, Manager
Core Analysis B

FOR INFORMATION ONLY



Westinghouse Electric Company LLC
Nuclear Fuel
P.O. Box 355
Pittsburgh, Pennsylvania 15230

Attachment to CAB-01-289, Rev. 1

2.3 MODERATOR TEMPERATURE COEFFICIENT (Specification 3.1.1.3):

- 2.3.1 The BOL, ARO, MTC shall be less positive than the limits shown in Figure 2.
 2.3.2 The EOL, ARO, HFP, MTC shall be less negative than $-6.12 \times 10^{-4} \Delta k/k/^\circ F$.
 2.3.3 The 300 ppm, ARO, HFP, MTC shall be less negative than $-5.36 \times 10^{-4} \Delta k/k/^\circ F$ (300 ppm Surveillance Limit).

where: BOL stands for Beginning-of-Cycle Life,
 EOL stands for End-of-Cycle Life,
 ARO stands for All Rods Out,
 HFP stands for Hot Full Power (100% RATED THERMAL POWER)
 HFP vessel average temperature is 592 °F.

2.3.4 INSERT E**2.4 ROD INSERTION LIMITS (Specification 3.1.3.5 and 3.1.3.6):**

- 2.4.1 All banks shall have the same Full Out Position (FOP) of at least 250 steps withdrawn but not exceeding 259 steps withdrawn.
 2.4.2 The Control Banks shall be limited in physical insertion as specified in Figure 3.
 2.4.3 Individual Shutdown bank rods are fully withdrawn when the Bank Demand Indication is at the FOP and the Rod Group Height Limiting Condition for Operation is satisfied (T.S. 3.1.3.1).

2.5 AXIAL FLUX DIFFERENCE (Specification 3.2.1):

- 2.5.1 AFD limits as required by Technical Specification 3.2.1 are determined by CAOC Operations with an AFD target band of +5, -10%.
 2.5.2 The AFD shall be maintained within the ACCEPTABLE OPERATION portion of Figure 4, as required by Technical Specifications.

2.6 HEAT FLUX HOT CHANNEL FACTOR (Specification 3.2.2):

- 2.6.1 $F_q^{RTP} = 2.55$.
 2.6.2 $K(Z)$ is provided in Figure 5.
 2.6.3 The F_{xy} limits for RATED THERMAL POWER (F_{xy}^{RTP}) within specific core planes shall be:
 2.6.3.1 Less than or equal to 2.102 for all core planes containing Bank "D" control rods, and
 2.6.3.2 Less than or equal to the appropriate core height-dependent value from Table 1 for all unrodded core planes.
 2.6.3.3 $PF_{xy} = 0.2$.

These F_{xy} limits were used to confirm that the heat flux hot channel factor $F_q(Z)$ will be limited by Technical Specification 3.2.2 assuming the most-limiting axial power distributions expected to result for the insertion and removal of Control Banks C and D during operation, including the accompanying variations in the axial xenon and power distributions, as described in WCAP-8385. Therefore, these F_{xy} limits provide assurance that the initial conditions assumed in the LOCA analysis are met, along with the ECCS acceptance criteria of 10 CFR 50.46.

INSERT E

- 2.3.4 The Revised Predicted near-EOL 300 ppm MTC shall be calculated using the following algorithm from Reference 3.5:

$$\text{Revised Predicted MTC} = \text{Predicted MTC} + \text{AFD Correction} - \text{Predictive Correction}$$

If the Revised Predicted MTC is less negative than the SR 4.1.1.3 b. limit of $-5.36 \times 10^{-4} \Delta k/k/^{\circ}\text{F}$, and all of the benchmark data contained in the surveillance procedure are met, then an MTC measurement in accordance with SR 4.1.1.3 b. is not required.

INSERT F

- 3.5 WCAP-13749-P-A, "Safety Evaluation Supporting the Conditional Exemption of the Most Negative EOL Moderator Temperature Coefficient Measurement," March 1997, (W Proprietary)

For Unit 1 Cycle 11, the L(Z) penalty is not applied (i.e., $L(Z) = 1.0$ for all core elevations).

2.7 ENTHALPY RISE HOT CHANNEL FACTOR (Specification 3.2.3):

2.7.1 WITHOUT RCS Loop-specific Temperature Calibrations:

*Standard Fuel*¹ $F_{\Delta H}^{RTP} = 1.46$
 VANTAGE 5H / RFA Fuel² $F_{\Delta H}^{RTP} = 1.53$

WITH RCS Loop-specific Temperature Calibrations:

Standard Fuel $F_{\Delta H}^{RTP} = 1.49$
 VANTAGE 5H / RFA Fuel $F_{\Delta H}^{RTP} = 1.557$

2.7.2 *Standard Fuel* / VANTAGE 5H / RFA Fuel $PF_{\Delta H} = 0.3$

2.8 DNB PARAMETERS (Specification 3.2.5):

2.8.1 The following DNB-related parameters shall be maintained within the following limits:³

- Reactor Coolant System $T_{avg} \leq 595$ °F⁴,
- Pressurizer Pressure, > 2200 psig⁵,
- Minimum Measured Reactor Coolant System Flow $\geq 403,000$ gpm⁶.

3.0 REFERENCES

- Letter from R. A. Wiley (Westinghouse) to Dave Hoppes (STPNOC), "Unit 1 Cycle 11 Core Operating Limits Report," 01TG-G-085, Rev. 1 (ST-UB-NOC-01002182, Rev. 1), October 2001.
- NUREG-1346, Technical Specifications, South Texas Project Unit Nos. 1 and 2.
- STPNOC Calculation ZC-7035, Rev. 1, "Loop Uncertainty Calculation for RCS T_{avg} Instrumentation," October 19, 1998.
- STPNOC Calculation ZC-7032, Rev. 3, "Loop Uncertainty Calculation for Narrow Range Pressurizer Pressure Monitoring Instrumentation," June 27, 2001.

3.5 INSERT F

¹ Applies to Region 5.

² Applies to Regions 10A, 11A, 11B, 12A, 13A and 13B.

³ A discussion of the processes to be used to take these readings is provided in the basis for Technical Specification 3.2.5.

⁴ Includes a 1.9 °F measurement uncertainty.

⁵ Limit not applicable during either a Thermal Power ramp in excess of 5% of RTP per minute or a Thermal Power step in excess of 10% RTP. Includes a 10.7 psi measurement uncertainty as read on the QDPS display per Reference 3.4.

⁶ Includes a 2.8% flow measurement uncertainty.