SURVEILLANCE REQUIREMENTS (Continued)

e. With measurements indicating

$$\text{maximum over } z \left[\frac{F_Q^M(z)}{K(z)}\right]$$

has increased since the previous determinatin of $F_Q^M(z)$ either of the following actions shall be taken:

BY THE APPROPRIATE FACTOR SPECIFIED IN THE COLR

1. $F_Q^M(z)$ shall be increased ~~by 2 percent~~ over that specified in 4.2.2.2.c, or

2. $F_Q^M(z)$ shall be measured at least once per 7 effective full power days until 2 successive maps indicate that

$$\text{maximum over } z \left[\frac{F_Q^M(z)}{K(z)}\right]$$ is not increasing.

f. With the relationships specified in 4.2.2.2.c above not being satisfied:

1. Calculate the percent $F_Q(z)$ exceeds its limit by the following expression:

$$\left\{\left(\text{maximum over } z \left[\frac{F_Q^M(z) \times W(z)}{\frac{F_Q^{RTP}}{P} \times K(z)}\right]\right) - 1\right\} \times 100 \quad \text{for } P \geq 0.5 \qquad \text{R159}$$

$$\left\{\left(\text{maximum over } z \left[\frac{F_Q^M(z) \times W(z)}{\frac{F_Q^{RTP}}{0.5} \times K(z)}\right]\right) - 1\right\} \times 100 \quad \text{for } P < 0.5 \qquad \text{R159}$$

2. Either of the following actions shall be taken:

   a. Place the core in an equilibrium condition where the limit in 4.2.2.2.c is satisfied. Power level may then be increased provided the AFD limits of Specification 3.2.1 are reduced 1% AFD for each percent $F_Q(z)$ exceeded its limit, or R159

   b. Comply with the requirements of Specification 3.2.2 for $F_Q(z)$ exceeding its limit by the percent calculated above.

R144

MONTHLY REACTOR OPERATING REPORT

6.9.1.10 Routine reports of operating statistics and shutdown experience, including documentation of all challenges to the PORVs or Safety Valves, shall be submitted on a monthly basis no later than the 15th of each month following the calendar month covered by the report. R76

CORE OPERATING LIMITS REPORT

6.9.1.14 Core operating limits shall be established and documented in the CORE OPERATING LIMITS REPORT before each reload cycle or any remaining part of a reload cycle for the following: R159

1. Moderator Temperature Coefficient BOL and EOL limits and 300 ppm surveillance limit for Specification 3/4.1.1.3,
2. Shutdown Bank Insertion Limit for Specification 3/4.1.3.5,
3. Control Bank Insertion Limits for Specification 3/4.1.3.6,
4. Axial Flux Difference Limits for Specification 3/4.2.1,
5. Heat Flux Hot Channel Factor, K(z), ~~and~~ W(z) for Specification 3/4.2.2, and
6. Nuclear Enthalpy Hot Channel Factor and Power Factor Multiplier for Specification 3/4.2.3.

6.9.1.14.a The analytical methods used to determine the core operating limits shall be those previously reviewed and approved by NRC in:

1. WCAP-9272-P-A, "WESTINGHOUSE RELOAD SAFETY EVALUATION METHODOLOGY", July 1985 (W Proprietary).
   (Methodology for Specifications 3.1.1.3 - Moderator Temperature Coefficient, 3.1.3.5 - Shutdown Bank Insertion Limit, 3.1.3.6 -Control Bank Insertion Limits, 3.2.1 - Axial Flux Difference, 3.2.2 - Heat Flux Hot Channel Factor, and 3.2.3 - Nuclear Enthalpy Hot Channel Factor.)
2. WCAP-10216-P-A, "RELAXATION OF CONSTANT AXIAL OFFSET CONTROL F_Q SURVEILLANCE TECHNICAL SPECIFICATION", JUNE 1983 (W Proprietary).
   (Methodology for Specification 3.2.1 - Axial Flux Difference (Relaxed Axial Offset Control) and 3.2.2 - Heat Flux Hot Channel Factor (W(z) surveillance requirements for F_Q Methodology).)
3. WCAP-10266-P-A Rev. 2, "THE 1981 REVISION OF WESTINGHOUSE EVALUATION MODEL USING BASH CODE", March 1987, (W Proprietary).
   (Methodology for Specification 3.2.2 - Heat Flux Hot Channel Factor).
4. WCAP-13631-P-A, "SAFETY EVALUATION SUPPORTING A MORE NEGATIVE EOL MODERATOR TEMPERATURE COEFFICIENT TECHNICAL SPECIFICATION FOR THE SEQUOYAH NUCLEAR PLANTS," MARCH 1993 (W Proprietary).
   (Methodology for Specification 3.1.1.3 - Moderator Temperature Coefficient) R175

AND THE FACTOR THAT ACCOUNTS FOR THE POTENTIAL DECREASE IN F_Q MARGIN BETWEEN SURVEILLANCES

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SURVEILLANCE REQUIREMENTS (Continued)

e. With measurements indicating

$$\text{maximum over } z \left[\frac{F_Q^M(z)}{K(z)}\right]$$

has increased since the previous determinatin of $F_Q^M(z)$ either of the following actions shall be taken:

BY THE APPROPRIATE FACTOR SPECIFIED IN THE COLR

1. $F_Q^M(z)$ shall be increased ~~by 2 percent~~ over that specified in 4.2.2.2.c, or
2. $F_Q^M(z)$ shall be measured at least once per 7 effective full power days until 2 successive maps indicate that

$$\text{maximum over } z \left[\frac{F_Q^M(z)}{K(z)}\right]$$ is not increasing. R21

f. With the relationships specified in 4.2.2.2.c above not being satisfied:

1. Calculate the percent $F_Q(z)$ exceeds its limit by the following expression:

$$\left\{\left(\text{maximum over } z \left[\frac{F_Q^M(z) \times W(z)}{\frac{F_Q^{RTP}}{P} \times K(z)}\right]\right) - 1\right\} \times 100 \quad \text{for } P \geq 0.5$$ R146

$$\left\{\left(\text{maximum over } z \left[\frac{F_Q^M(z) \times W(z)}{\frac{F_Q^{RTP}}{0.5} \times K(z)}\right]\right) - 1\right\} \times 100 \quad \text{for } P < 0.5$$ R146

2. Either of the following actions shall be taken: R21

   a. Place the core in an equilibrium condition where the limit in 4.2.2.2.c is satisfied. Power level may then be increased provided the AFD limits of Specification 3.2.1 are reduced 1% AFD for each percent $F_Q(z)$ exceeded its limit, or R146

   b. Comply with the requirements of Specification 3.2.2 for $F_Q(z)$ exceeding its limit by the percent calculated above. R2

MONTHLY REACTOR OPERATING REPORT

6.9.1.10 Routine reports of operating statistics and shutdown experience, including documentation of all challenges to the PORVs or Safety Valves, shall be submitted on a monthly basis no later than the 15th of each month following the calendar month covered by the report. R64

CORE OPERATING LIMITS REPORT

6.9.1.14 Core operating limits shall be established and documented in the CORE OPERATING LIMITS REPORT before each reload cycle or any remaining part of a reload cycle for the following: R146

1. Moderator Temperature Coefficient BOL and EOL limits and 300 ppm surveillance limit for Specification 3/4.1.1.3,
2. Shutdown Bank Insertion Limit for Specification 3/4.1.3.5,
3. Control Bank Insertion Limits for Specification 3/4.1.3.6,
4. Axial Flux Difference Limits for Specification 3/4.2.1,
5. Heat Flux Hot Channel Factor, K(z), ~~and~~ W(z) for Specification 3/4.2.2, and
6. Nuclear Enthalpy Hot Channel Factor and Power Factor Multiplier for Specification 3/4.2.3.

6.9.1.14.a The analytical methods used to determine the core operating limits shall be those previously reviewed and approved by NRC in:

1. WCAP-9272-P-A, "WESTINGHOUSE RELOAD SAFETY EVALUATION METHODOLOGY", July 1985 (W Proprietary).
   (Methodology for Specifications 3.1.1.3 - Moderator Temperature Coefficient, 3.1.3.5 - Shutdown Bank Insertion Limit, 3.1.3.6 -Control Bank Insertion Limits, 3.2.1 - Axial Flux Difference, 3.2.2 - Heat Flux Hot Channel Factor, and 3.2.3 - Nuclear Enthalpy Hot Channel Factor.)
2. WCAP-10216-P-A, "RELAXATION OF CONSTANT AXIAL OFFSET CONTROL F_Q SURVEILLANCE TECHNICAL SPECIFICATION", JUNE 1983 (W Proprietary).
   (Methodology for Specification 3.2.1 - Axial Flux Difference (Relaxed Axial Offset Control) and 3.2.2 - Heat Flux Hot Channel Factor (W(z) surveillance requirements for F_Q Methodology).)
3. WCAP-10266-P-A Rev. 2, "THE 1981 REVISION OF WESTINGHOUSE EVALUATION MODEL USING BASH CODE", March 1987, (W Proprietary).
   (Methodology for Specification 3.2.2 - Heat Flux Hot Channel Factor).
4. WCAP-13631-P-A, "SAFETY EVALUATION SUPPORTING A MORE NEGATIVE EOL MODERATOR TEMPERATURE COEFFICIENT TECHNICAL SPECIFICATION FOR THE SEQUOYAH NUCLEAR PLANTS," MARCH 1993 (W Proprietary).
   (Methodology for Specification 3.1.1.3 - Moderator Temperature Coefficient)

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AND THE FACTOR THAT ACCOUNTS FOR THE POTENTIAL DECREASE IN F_Q MARGIN BETWEEN SURVEILLANCES R161

6.9.1.14.b 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. R146

ENCLOSURE 2

PROPOSED TECHNICAL SPECIFICATION (TS) CHANGE

SEQUOYAH NUCLEAR PLANT (SQN) UNITS 1 AND 2

DOCKET NOS. 50-327 AND 50-328

(TVA-SQN-TS-95-17)

DESCRIPTION AND JUSTIFICATION FOR HEAT FLUX

HOT CHANNEL FACTOR SURVEILLANCE AND CORE

OPERATING LIMITS REPORT REVISION

Description of Change

TVA proposes to modify the Sequoyah Nuclear Plant (SQN) Units 1 and 2 technical specifications (TSs) by transferring the two percent penalty in Surveillance Requirement (SR) 4.2.2.2.e.1 to the Core Operating Limits Report (COLR). Accordingly, the following changes are being proposed:

1. SR 4.2.2.2.e.1 will have the phrase "by 2 percent" deleted and the phrase "by the appropriate factor specified in the COLR" added.

2. TS 6.9.1.14.5 will have a reference to the penalty term that was deleted from SR 4.2.2.2.e.1 added.

3. TS 6.9.1.14.a.2 will be revised to reference Revision 1A of Westinghouse Commercial Atomic Power (WCAP) 10216-P-A, "Relaxation of Constant Axial Offset Control - F_Q Surveillance Technical Specification," dated February 1994.

Reason for Change

Recently, some Westinghouse Electric Corporation designed cores have experienced increases in the measured value of the heat flux hot channel factor, $F_Q(Z)$, as high as five to six percent between monthly measurements over certain burnup ranges. Therefore, the assumption that $F_Q(Z)$ will not increase by more than two percent over a burnup interval of 31 effective full power days (EFPD) is not conservative. To address this issue, Westinghouse submitted to NRC Revision 1 of WCAP 10216-P, which was approved by NRC on November 26, 1993. The revised WCAP incorporates minor methodology changes to account for $F_Q(Z)$ increases of greater than two percent between monthly surveillances.

Justification for Changes

During normal operation, $F_Q(Z)$ is shown to be within its limit by performing periodic measurements. Since $F_Q(Z)$ surveillance is required when power has been increased by 10 percent of rated thermal power from the previous surveillance, or at least every 31 EFPD, the TSs take into account the possibility that $F_Q(Z)$ may increase between surveillances. The TS requires that when performing the surveillance, the resulting maximum $F_Q(Z)$ value must be compared to the maximum $F_Q(Z)$ determined from the previous measurement. If the maximum $F_Q(Z)$ has increased since the previous determination of $F_Q(Z)$, the TS allows two options. Either the current $F_Q(Z)$ must be increased by an additional two percent to account for further increases in $F_Q(Z)$ before the next surveillance, or the surveillance period must be reduced to every seven EFPD.

The $F_Q(Z)$ penalty of two percent was based on the Westinghouse assumption that $F_Q(Z)$ would change by no more than two percent between monthly flux maps. This assumption was based on calculations for previous core designs that predate the low-leakage loading patterns, high amounts of burnable poisons, and 18-month cycles typical of recent cores. Recently, some Westinghouse-designed cores experienced increases in the measured $F_Q(Z)$ as high as five to six percent between monthly flux maps over certain burnup ranges. Therefore, for those cores that are predicted to have larger increases in $F_Q(Z)$ over certain burnup ranges, a larger penalty will be provided on a cycle-specific basis. The penalties will be calculated using NRC-approved methods.

The burnup-dependent penalty will be included in the cycle-specific COLR as a replacement to the standard value of two percent in the current TS. The penalty will be presented in tabular form specifying the values, at specific burnups, that are in excess of two percent. At all other burnups, the COLR will indicate that the standard two percent penalty will still apply.

The staff has determined that the above-described method for accounting for the additional $F_Q(Z)$ penalty, including the relocation of the penalty to the COLR, is acceptable. The staff's conclusions are documented and have been included in the approved topical report WCAP-10216-P-A, Revision 1A.

Environmental Impact Evaluation

The proposed change does not involve an unreviewed environmental question because operation of SQN Units 1 and 2 in accordance with this change would not:

1. Result in a significant increase in any adverse environmental impact previously evaluated in the Final Environmental Statement (FES) as modified by NRC's testimony to the Atomic Safety and Licensing Board, supplements to the FES, environmental impact appraisals, or decisions of the Atomic Safety and Licensing Board.

2. Result in a significant change in effluents or power levels.

3. Result in matters not previously reviewed in the licensing basis for SQN that may have a significant environmental impact.

ENCLOSURE 3

PROPOSED TECHNICAL SPECIFICATION CHANGE

SEQUOYAH NUCLEAR PLANT (SQN) UNITS 1 AND 2

DOCKET NOS. 50-327 AND 50-328

(TVA-SQN-TS-95-17)

DETERMINATION OF NO SIGNIFICANT HAZARDS CONSIDERATION FOR

THE HEAT FLUX HOT CHANNEL FACTOR AND CORE

OPERATING LIMITS REPORT REVISION

Significant Hazards Evaluation

TVA has evaluated the proposed technical specification (TS) change and has determined that it does not represent a significant hazards consideration based on criteria established in 10 CFR 50.92(c). Operation of Sequoyah Nuclear Plant (SQN) in accordance with the proposed amendment will not:

1. Involve a significant increase in the probability or consequences of an accident previously evaluated.

   The proposed change involves only the manner in which the penalty factors for $F_Q(Z)$ would be specified (i.e., a burnup-dependent factor specified in the Core Operating Limits Report [COLR] versus a constant factor specified in the TS). This is simply used to account for the fact that $F_Q(Z)$ may increase between surveillance intervals. These penalty factors are not assumed in any of the initiating events for the accident analyses. Therefore, the proposed change will have no effect on the probability of any accidents previously evaluated. The penalty factors specified in the COLR will be calculated using NRC-approved methodology and will therefore continue to provide an equivalent level of protection as the existing TS requirement. Therefore, the proposed change will not affect the consequences of any accident previously evaluated.

2. Create the possibility of a new or different kind of accident from any previously analyzed.

   The proposed change does not involve a physical alteration to the plant (no new or different kind of equipment will be installed) or alter the manner in which the plant would be operated. Thus, this change does not create the possibility of a new or different kind of accident from any accident previously evaluated.

3. Involve a significant reduction in a margin of safety.

   The proposed change will continue to ensure that potential increases in $F_Q(Z)$ over a surveillance interval will be properly accounted for. The penalty factors will be caiculated using NRC-approved methodology. Therefore, the proposed change will not involve a reduction in margin of safety.