UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555-0001

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

RELATED TO AMENDMENT NO. 186 TO FACILITY OPERATING LICENSE NO. DPR-53

AND AMENDMENT NO. 163 TO FACILITY OPERATING LICENSE NO. DPR-69

BALTIMORE GAS AND ELECTRIC COMPANY

CALVERT CLIFFS NUCLEAR POWER PLANT, UNIT NOS. 1 AND 2

DOCKET NOS. 50-317 AND 50-318

1.0 INTRODUCTION

By letter dated September 17, 1993, as supplemented January 4, 1994, the Baltimore Gas and Electric Company (the licensee) submitted a request for changes to the Calvert Cliffs Nuclear Power Plant, Unit Nos. 1 and 2, Technical Specifications (TSs). The requested changes would implement the recommendations provided in Generic Letter (GL) 88-16, "Removal of Cycle-Specific Parameter Limits From Technical Specifications." The GL recommends the removal of cycle specific values from the TSs and to incorporate them in a separate document that could be revised by the licensee as long as previously approved methodologies are used. The proposed amendments also include two other requested changes. One is the removal of outdated references to power operation with less than four reactor coolant pumps (RCPs) in operation and the other is to make administrative changes to clarify the existing TSs, but do not alter the current requirements. The January 4, 1994, letter provided clarifying information that did not change the initial proposed no significant hazards consideration determination.

2.0 EVALUATION

The first requested change, the removal of cycle-specific parameter limits, is requested in accordance with GL 88-16. The GL indicates that three specific actions are necessary to remove the cycle-specific parameter limits from the TSs which are: (1) the addition of the definition of a named formal report that includes the values of cycle-specific parameter limits that have been established using an NRC-approved methodology and consistent with all applicable limits of the safety analysis, (2) the addition of an administrative reporting requirement to submit the formal report on cycle-specific parameter limits to the Commission for information, and (3) the modification of individual TSs to note that cycle-specific parameters shall be maintained within the limits provided in the defined formal report.

TS 1.0, Definitions, is modified to include a definition for a Core Operating Limits Report (COLR). The definition is consistent with that recommended in GL 88-16. Three other definitions are changed which is discussed later in

this evaluation when clarifications are addressed. The definition section is also renumbered to accommodate the COLR definition. The Table of Contents, page XVII, includes the COLR in Section 6.9.1, "Routine Reports."

As noted, the COLR definition is consistent with that recommended in the GL and notes that operation within these limits is addressed by individual TSs. Based on the above, the first action required by the GL which is necessary to remove cycle-specific parameter limits from the TSs has been met.

TS 6.9.1.9, "Core Operating Limits Report," has been added as an additional routine reporting requirement in the Administrative Controls section of the TSs.

TS 6.9.1.9 requires that the COLR be documented before each reload cycle or any remaining part of a reload cycle if specified parameters change, and, upon issuance, submitted to the NRC Document Control Desk with copies to the Regional Administrator and Resident Inspector. The report references the individual TSs which address core operating limits and provides the values of cycle-specific parameter limits that are applicable for the current fuel cycle. Furthermore, the specification requires that the values of these limits be established using NRC-approved methodologies. A list of 40 approved documents are included in the TSs and 4 approved documents are listed which describe the Full Core Power Distribution Monitoring System which is referenced in TSs 3.1.3.1, 3.2.2.1, 3.2.3, and their supporting Bases Section.

The additional reporting requirement, as discussed above, is consistent with the second action required by the GL necessary to remove cycle-specific parameter limits from the TS, therefore, the second required action is met.

The following individual TSs were revised:

Table 2.2.1, "Reactor Protective Instrumentation Trip Setpoint Limits"

The references to removed Figures 2.2-1, 2.2-2, and 2.2-3, which are relocated to the COLR, are deleted and the COLR is referenced for the specified limits of axial flux offset and thermal margin/low pressure. Although these parameters are incorporated in Section 2.0, they are not safety limits but are cycle-dependent trip parameters to protect against violating safety limits. The staff has previously approved the relocation of other cycle-dependent trip parameters and setpoints to the COLR.

TS 3.1.1.1, "Shutdown Margin-T_{avg} > 200 °F"

The reference to removed Figure 3.1.1.1 is deleted and the COLR is referenced for the specified shutdown margin versus time in cycle limits. The licensee noted that this value has been revised in 13 of 17 previous Calvert Cliffs reload amendments. The staff has previously approved relocation of this value to the COLR.

TS 3.1.1.2, "Shutdown Margin ≤ 200 °F"

The specific shutdown margin is removed and the COLR is referenced for the specified limit.

TS 3.1.1.4, "Moderator Temperature Coefficient"

The reference to the moderator temperature coefficient limit (MTC) is removed and the COLR is referenced for the specific MTC limit and the figure, which is referenced, has its number changed from 3.1.1-2 to 3.1.1-1. This change reflects the removal of the existing, Figure 3.1.1-1 to the COLR.

TS 3.1.2.2, "Flow Paths Operating," TS 3.1.2.4, "Charging Pumps Operating," TS 3.1.2.6, "Boric Acid Pumps Operating," and TS 3.1.2.9, "Borated Water Sources Operating"

The action statements for these Boration System TSs are modified to delete the specific shutdown margin value and references TS 3.1.1.1 (discussed above) which in turn references the COLR for the specific shutdown margin value.

TS 3.1.3.1, "Full Length CEA Position," TS 3.1.3.6, "Regulating CEA Insertion Limits"

The references to removed Figures 3.1.3.1 and 3.1.3.2 are deleted and the COLR is referenced for the allowable time to realign control element assemblies (CEA) versus initial total integrated radial peaking factor and the CEA insertion limits versus fraction of allowable thermal power limit values. In addition, the reference to the Better Axial Shape Selection System (BASSS) is removed and the generic title, "Full Core Power Distribution Monitoring System," is inserted. The list of approved documents describing the Full Core Power Distribution Monitoring System is included in TS 6.9.1.9 as previously discussed.

TS 3.2.1, "Linear Heat Rate"

The references to removed Figures 3.2.1-1, 3.2.1-2, and 3.2.1-3 are deleted and the COLR is referenced for the allowable peak linear heat rate versus time in cycle, linear heat rate axial flux offset control limits, and the total planar radial peaking factor versus N values. In addition, the Incore Detector Monitoring System uncertainty factors are removed and the COLR is referenced for these values.

TS 3.2.2.1, "Total Planar Radial Peaking - F_{xyT}"

The reference to removed Figure 3.2.2.1 is deleted and the COLR is referenced for the total planar radial peaking factor versus allowable fraction of rated power value. The F_{xyT} limit value is deleted and the COLR is reference for the value. In addition, the phrase "full length" before the CEA is deleted. All CEA at the Calvert Cliffs facility are full length and no partial length CEA are used. The reference to the BASSS is deleted and replaced with the Full Core Power Distribution Monitoring System as previously discussed.

TS 3.2.3, "Total Integrated Radial Peaking Factor"

The specified limits and references to removed Figures 3.2.3-1 and 3.2.3-2 are deleted and the COLR is referenced for the total integrated radial peaking factor versus allowable fraction of rated thermal power and the departure from nucleate boiling (DNB) axial flux offset control values. The phrase "full length" before CEA and the reference to BASSS are also deleted as discussed above.

Action Statement b.1 is rewritten to integrate the clarification paragraph indicating that the thermal power is to be reduced to bring the thermal power and total integrated radial peaking factor within the limits provided in the COLR and maintain the peripheral axial shape index within the DNB axial flux offset control limits or comply with the existing Action Statement b.2.

TS 3.9.1, "Boron Concentration"

The specified boron concentration limits are deleted and the COLR is referenced for the specific values.

The TS Bases Section has been revised to reflect the proposed changes.

The revisions to the individual TSs as discussed above are consistent with the guidance provided in the GL, therefore, the third required action of the GL has been met.

In summary, we have reviewed this portion of the licensee's request to revise the Calvert Cliffs Nuclear Power Plant, Units 1 and 2, TSs to remove the cycle-specific values from the TSs and incorporate them in a separate document (COLR) which is appropriately referenced in the TSs. Because plant operation will continue to be limited in accordance with values of cycle-specific parameter limits that are established using NRC-approved methodologies, this change has no impact on safety. Therefore, based on the above, we have concluded that the licensee has met the necessary actions specified in GL 88-16 and this portion of the licensee's request is acceptable.

The second requested change is the removal of outdated references to power operation with less than four reactor coolant pumps (RCPs) in operation. The licensee notes that the required design features to operate with less than four RCPs were never implemented at the Calvert Cliffs Nuclear Power Plant, Units 1 and 2. TS 3.4.1.1 requires that all four RCPs be operating during startup and power operation (Modes 1 and 2) for each unit. In addition, Unit 2 has a license condition, 2.C.5, which prohibits power operation in excess of 5 percent of rated thermal power with less than four RCPs in operation.

Based on the above, the licensee has requested the following specific changes to the TS:

TS 2.1.1, "Reactor Core"

TS Figures 2.1-2, 2.1-3 and 2.1-4 which relate to operation with less than four RCPs are deleted. These figures are currently blank because approval to operate with less than four pumps was never granted by the NRC. The reference

to operation in TS 2.1.1 is also deleted. That portion of the title for Figure 2.1-1 that states, "Four Reactor Coolant Pumps Operating," is deleted. This is not necessary in the title because TS 3.4.1.1 requires all four RCPs be operable. The word "integrated" is deleted from the note on Figure 2.1-1 to be consistent with it's referenced Figure B 2.1-1.

TS Table 2.2-1, "Reactor Protective Instrumentation Trip Setpoint Limits"

References to operation with less than four RCPs is deleted. Also, the specified value for the reactor coolant flow is deleted and is replaced with a reference to TS 3.2.5, "DNB Parameters," for the specified reactor coolant flow.

The TS Bases Section has been revised to reflect the proposed changes.

As noted, the Calvert Cliffs Nuclear Power Plant, Unit 1 and 2, TSs do not allow operation with less than four RCPs. The staff agrees with the licensee that the above TSs are not applicable, and may be removed. Therefore, the staff finds this portion of the licensees request acceptable.

The third requested change relates to corrections and clarifications. During the review of TS 3/4-1, "Reactivity Control Systems," and 3/4-2, "Power Distribution Limits," for the removal of cycle-specific parameter limits and deletion of outdated requirements for operating with less than four RCPs, it was noted that clarifications were needed to improve the overall use and consistency of these TS sections. The improvements include changes in the use and location of footnotes by incorporation into the body of an applicable TS or relocating to the Bases section, clarification of confusing or repetitive requirements, reformatting for consistency, and correction of typographical errors. The following specific changes are requested:

Table of Contents and TS 1.0, "Definitions"

The "Unrodded Integrated Radial Peaking Factor - F_r," and the "Unrodded Planar Radial Peaking Factor - F_{xy}," are retitled by removing "Unrodded" and adding "Total." The definition for each is modified to indicate that core power tilt is included in calculating the total peaking factor using a full core power distribution monitoring system. The unrodded peaking factor, which requires correction for core power tilt, no longer appears in the TSs. Therefore, we find this proposed change acceptable.

A typographical error in the definition of Axial Shape Index is corrected by changing "encore" to "excore" for Unit 1 only. This correction is consistent with the definition in Unit 2 TSs which is correct. Therefore, we find this proposed change acceptable.

TS 3.1.1.1, "Shutdown Margin - $T_{avg} > 200$ °F"

The footnotes specifying, "With $K_{eff} \geq 1.0$," are moved from footnotes to the appropriate Surveillance TSs 4.1.1.1.1.b and 4.1.1.1.1.c. The footnote relating to adherence with TS 3.1.3.6 as specified in Surveillance TS 4.1.1.1.1 assures that there is sufficient available shutdown margin to match

the shutdown margin requirements of the safety analyses which is relocated to the Bases Section. The remaining footnote is relabeled due to moving the other footnotes.

The movement of the first two footnotes to the applicable TSs clarifies the requirements, the relocation of the other footnote to the Bases Section of the TSs is appropriate in that it is information and not required for the specific action, and the relabeling of the remaining footnote maintains the appropriate TS format. Therefore, we find these proposed changes acceptable.

TS 3.1.1.4, "Moderator Temperature Coefficient"

The footnote, "With $K_{eff} \geq 1.0$," is relocated from a footnote to the applicable TS 3.1.1.4. We find this acceptable.

TS 3.1.1.5, "Minimum Temperature for Criticality"

The footnote, "With $K_{eff} \geq 1.0$," is relocated from a footnote to the applicable TS 3.1.1.5. We find this acceptable.

TS 3.1.3.1, "Full Length CEA Position"

The title is revised to delete "Full Length." As previously indicated, part length CEAs are no longer used and the reference to full length is no longer needed. Therefore, we find this proposed change acceptable.

TS 3.1.3.3, "Position Indicator Channel"

Reference to operation with less than 4 RCPs is deleted. We find this acceptable because operation with less than 4 RCPs is not allowed by the TSs.

TS 3.3.1.4, "CEA Drop Time"

Action "b" is deleted, this action address operation with less than 4 RCPs, which is not allowed by the TSs, and is inconsistent with LCO 3.1.3.4.b, "All reactor coolant pumps operating." We find this acceptable.

TS 3.1.3.5, "Shutdown CEA Insertion Limit," and TS 3.1.3.6, "Regulating CEA Insertion Limit"

The footnotes, "With $K_{eff} \geq 1.0$" to TS are relocated from a footnote to the applicable 3.1.3.5 and 3.1.3.6 regarding Mode 2 operation. We find this acceptable for the reason previously stated.

TS 3.2.1, "Linear Heat Rate"

A footnote is added which references Surveillance 4.2.2.1.2.d, which requires that the total planar radial peaking factor be verified at least once per 3 days of accumulated operation in Mode 1 when monitoring linear heat rate using the Excore Detector monitoring system per surveillance TS 4.2.1.3. Also

the reference to "full length" is deleted from the CEA. We find the reference to this requirement acceptable and also the deletion of full length because part length CEAs are no longer used.

TS 3.2.2.1, "Total Planar Radial Peaking Factor"

The reference to unrodded planar radial peaking factor is deleted because the total planar radial peaking factor is measured using the full core power distribution monitoring system as previously noted. For Unit 2 only, the option to monitor the total planar radial peaking factor with a nonfull core power distribution mapping system is deleted because this option is no longer used. The reference to the specific value of azimuthal power tilt is deleted and TS 3.2.4 is referenced which specifies the value. Surveillance 4.2.2.1.2.d (as discussed in TS 3.2.1 above) is added. This is relocated from TS 4.2.2.2.2.b which is deleted. The reference to full length is deleted from the CEA and the reference to operation with less than 4 RCPs is also deleted.

We find these changes acceptable because they clarify the requirements.

TS 3.2.2.2, "Total Planar Radial Peaking Factor"

This TS is deleted in its entirety based on the following:

The LCO requirement is included in the surveillance requirement 4.2.1.3 which requires that the values specified in the COLR be used when monitoring linear heat rate using the incore or excore detectors.

The applicability requirement (Mode 1) is also included in TS 3.2.1 for surveillance 4.2.1.3.

The Action requirements are also included in TS 3.2.2.1.b (be at least in Hot Standby within 6 hours).

The surveillance requirements in TSs 4.2.2.2.2 and 4.2.2.2.3 are redundant to those in TSs 4.2.2.1.2 and 4.2.2.1.3, respectively, with the exception of 4.2.2.2.b. This requirement was relocated to TS 4.2.2.1.2.d. This was discussed above in TS 3.2.2.1, "Total Planar Radial Peaking Factor."

For Unit 2 only, the option to monitor total planar radial peaking factor with a nonfull core power distribution mapping system is deleted because this option is no longer used as previously discussed.

We find the deletion of TS 3.2.2.2 acceptable in that [illegible] its requirements are included in other portions of the TSs and a nonfull [illegible]e power distribution mapping system is no longer used.

TS 3.2.3, "Total Integrated Radial Peaking Factor"

The reference to unrodded integrated radial peaking factor and the use of a non full core power distribution mapping system (Unit 2 only) are deleted. This is acceptable because the total planar radial peaking factor is measured using the full core power distribution monitoring system as previously noted.

The specified value of azimuthal power tilt is deleted and TS 3.2.4 is referenced for the specific value. We find this acceptable in that the specified value is included in the referenced TS.

TS 3.2.4, "Azimuthal Power Tilt"

The reference to operation with less than 4 RCPs is deleted. We find this acceptable because operation with less than 4 RCPs is not allowed by the TSs.

TS 3.2.5, "DNB Parameters"

The surveillance requirement, TS 4.2.5.3, and TS Table 3.2.1, "DNB Parameters," are deleted. TS 4.2.5.3 is not a surveillance requirement, but indicates an acceptable way to monitor thermal power as a function of axial shape index. The information in both the TS and TS table are relocated in the COLR, therefore, we find this acceptable.

TS 3.3.3.2, "Incore Detectors"

The reference to unrodded Planer radial peaking factor is deleted and total radial integrated peaking factor is inserted. We find this acceptable because this option no longer exists and the total planar radial peaking factor is used.

TS 3.7.1.1, "Safety Values"

The reference to operating in Modes 1 and 2 is deleted with less than 4 RCPs operable. Table 3.7.2, "Maximum allowable Power Level - High Trip Setpoint With Inoperable Steam Line Safety Valves During Operation with One Steam Generator," is deleted. This table is related to operation at power with less than 4 RCPs operable. The reference to this table is also deleted in TS 3.7.1.1. The portion of the title for Table 3.7.1, "... With Both Steam Generators," is deleted in that it is unnecessary because both steam generators are required for 4 RCPs and all 4 RCPs must be operable when operating at power.

We find these changes acceptable because operation at power with less than 4 RCPs is not allowed by the TSs.

TS 3.9.1, Boron Concentration

The footnote indicating that the reactor shall be maintained in Mode 6 when the head is unbolted or removed is deleted.

This footnote is redundant to TS Table 1.1, "Operational Modes," which has a footnote indicating that Mode 6 is when the reactor vessel head is unbolted or removed and fuel is in the vessel. We find the change acceptable in that the deleted footnote is redundant and, therefore, not necessary.

The TS Bases Section has been revised to reflect the proposed changes.

3.0 SUMMARY

We have concluded, based on the above, the requested changes to the TSs for Calvert Cliffs Nuclear Power Plant, Units 1 and 2, are acceptable.

4.0 STATE CONSULTATION

In accordance with the Commission's regulations, the Maryland State official was notified of the proposed issuance of the amendments. The State official had no comments.

5.0 ENVIRONMENTAL CONSIDERATION

The amendments change a requirement with respect to installation or use of a facility component located within the restricted area as defined in 10 CFR Part 20 and changes surveillance requirements. The NRC staff has determined that the amendments involve no significant increase in the amounts, and no significant change in the types, of any effluents that may be released offsite, and that there is no significant increase in individual or cumulative occupational radiation exposure. The Commission has previously issued a proposed finding that the amendments involve no significant hazards consideration, and there has been no public comment on such finding (58 FR 57844). Accordingly, the amendments meet the eligibility criteria for categorical exclusion set forth in 10 CFR 51.22(c)(9). Pursuant to 10 CFR 51.22(b) no environmental impact statement or environmental assessment need be prepared in connection with the issuance of the amendments.

6.0 CONCLUSION

The Commission has concluded, based on the considerations discussed above, that: (1) there is reasonable assurance that the health and safety of the public will not be endangered by operation in the proposed manner, (2) such activities will be conducted in compliance with the Commission's regulations, and (3) the issuance of the amendments will not be inimical to the common defense and security or to the health and safety of the public.

Principal Contributor:
D. McDonald

Date: March 17, 1994

March 17, 1994

Docket Nos. 50-317
and 50-318

Mr. Robert E. Denton
Vice President - Nuclear Energy
Baltimore Gas and Electric Company
Calvert Cliffs Nuclear Power Plant
1650 Calvert Cliffs Parkway
Lusby, Maryland 20657-4702

Dear Mr. Denton:

SUBJECT: ISSUANCE OF AMENDMENTS FOR CALVERT CLIFFS NUCLEAR POWER PLANT, UNIT NO. 1 (TAC NO. 87746) AND UNIT NO. 2 (TAC NO. M87747)

The Commission has issued the enclosed Amendment No. 186 to Facility Operating License No. DPR-53 and Amendment No. 163 to Facility Operating License No. DPR-69 for the Calvert Cliffs Nuclear Power Plant, Unit Nos. 1 and 2, respectively. The amendments consist of changes to the Technical Specifications (TSs) in response to your application transmitted by letter dated September 17, 1993, as supplemented on January 4, 1994.

The amendments implement the recommendations provided in Generic Letter (GL) 88-16, "Removal of Cycle-Specific Parameter Limits From Technical Specification," by removing cycle specific values from the TSs and incorporating them in a separate document. The amendments also include two other changes. One is the removal of outdated references to power operation with less than four reactor coolant pumps in operation and the other includes administrative changes to clarify the existing TSs, but do not alter the existing requirements.

A copy of the related Safety Evaluation is enclosed. A Notice of Issuance will be included in the Commission's next regular biweekly Federal Register notice.

Sincerely,
Original signed by:

Daniel G. McDonald, Senior Project Manager
Project Directorate I-1
Division of Reactor Projects - I/II
Office of Nuclear Reactor Regulation

Enclosures:
1. Amendment No. 186 to DPR-53
2. Amendment No. 163 to DPR-69
3. Safety Evaluation

cc w/enclosures:
See next page

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