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November 1, 1988

U. S. Nuclear Regulatory Commission
Washington, DC 20555

ATTENTION: Document Control Desk

SUBJECT: Calvert Cliffs Nuclear Power Plant
Unit Nos. 1 & 2; Docket Nos. 50-317 & 50-318
Request for Amendment

REFERENCE: (a) NRC Generic Letter 87-09, Sections 3.0 and 4.0 of the Standard Technical Specifications (STS) on the Applicability of Limiting Conditions for Operation and Surveillance Requirements

Gentlemen:

The Baltimore Gas and Electric Company hereby requests an Amendment to its Operating License Nos. DPR-53 and DPR-69 for Calvert Cliffs Unit Nos. 1 & 2, respectively, with the submittal of the proposed changes to the Technical Specifications.

CHANGE NO. 1 (BG&E FCR 88-147)

Delete pages 3/4 4-25a&b of the Unit 2 Technical Specifications and replace with 3/4 4-25b attached to this transmittal.

DISCUSSION

This proposed amendment would change Technical Specification 3.4.9.1. Specifically, the Minimum Pressurization Temperature (MPT) between 530 and 20 psia on Technical Specification Figure 3.4-2c would shift to 90°F (20°F to the right). This amendment request resulted from a QA audit that identified part of the MPT on the Unit 2 Operator's Curves as being incorrect.

The Nil Ductility Transition Temperatures (NDTTs) for each reactor vessel are different and associated with different vessel components. For Unit 1, the maximum NDTT (based on drop weight tests) of +10°F is based on the nozzles, upper shell and closure head peels. For Unit 2, the maximum NDTT of +30°F is based on the vessel flange.

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In accordance with the original design code, ASME Boiler and Pressure Vessel Code, Section III, 1965, through Winter 1967 Addenda, this portion of MPT is equal to $NDTT_{max} + 60^{\circ}F$. Therefore, the MPT between 530 and 20 psia for Unit 1 is $70^{\circ}F$ and for Unit 2 is $90^{\circ}F$. This is identified in the reactor vessel technical manual.

Based on the vessel technical manual, the MPT in the Unit 1 Technical Specification should be $70^{\circ}F$ and is correctly listed as such. However, the Unit 2 Technical Specification identifies the MPT in question to be $70^{\circ}F$. This is incorrect. The MPT of concern should be $90^{\circ}F$. This portion of the Operator's Curves is off by $20^{\circ}F$ in the non-conservative direction.

As a result of the audit finding, corrective actions were immediately initiated. The operating curves in the Unit 2 Emergency Operating Procedures were changed to reflect correct requirements from the technical manual. All shift crews received training on the new limit. Plant operating history was reviewed and the results indicated that a MPT limit of $90^{\circ}F$ for the Unit 2 reactor vessel flange has always been implemented despite the less conservative Technical Specification limit. The applicable maintenance procedures are based on the technical manual requirements. Our tensioning procedures ensure that flange temperature limits are not violated during stud tensioning.

A metallurgical review determined that going below the MPT limit, with or without stress, does not change the material properties. Since the failure mechanism at low temperature is catastrophic brittle fracture, the fact that failure has not occurred shows that the vessel fracture toughness characteristics have not been affected. Additionally, this area is subject to volumetric inservice inspection.

Our NSSS vendor was consulted on this issue and they stated that part of the basis for the $90^{\circ}F$ limit is founded on the minimum allowable temperature at which the reactor vessel head bolts can be bolted (tensioned) to the vessel flange and pre-stressed, without inducing local tensile stresses in the vessel material which might lead to brittle fracture. This limit is called the Minimum Bolt-up Temperature and is identified in the vessel technical manual.

The NSSS vendor verified that the MPT "operating curve" applies only when the reactor vessel studs are tensioned. Our bolt-up procedures ensure that flange temperature limits are not violated during stud tensioning.

For the Minimum Bolt-up Temperature, the RT_{NDT} does not have to be adjusted for irradiation effects. This is because the limiting component, the vessel flange, is not subject to significant fluence throughout vessel life. This proposal would shift the MPT line on the "Operator's Curve" to the right $20^{\circ}F$ (in the conservative direction). No other portions of the curves would be changed. The rectangular indentation at 530 psia between the Lowest Service Temperature and Minimum Bolt-up Temperature would stay. The step reduction at 20 psia to $40^{\circ}F$ would also remain.

The Lowest Service Temperature curve includes a $6^{\circ}F$ instrument error correction factor. We have verified with the NSSS vendor that no temperature instrument error was included in the original NRC-approved MPT and was never required. The instrumentation used to measure Minimum Bolt-up Temperature is within an accuracy of $1-2^{\circ}F$.

DETERMINATION OF SIGNIFICANT HAZARDS

This proposed change has been evaluated against the standards in 10 CFR 50.92 and has been determined to involve no significant hazards considerations, in that operation of the facility in accordance with the proposed amendment would not:

- (i) involve a significant increase in the probability or consequences of an accident previously evaluated; or

Justification:

Shifting the MPT curve between 530 and 20 psia for Unit 2 from 70°F to 90°F is a conservative change. Plant operations on Technical Specification Figure 3.4-2c must be to the right of the curve line. A 20°F shift to the right removes area to operate. This shift would be done in accordance with the reactor vessel technical manual and the applicable ASME Code. The probability of a previously evaluated accident would not be significantly increased. Nothing in the Technical Specifications would be changed that would increase that likelihood. In addition, the proposed change would not increase significantly the consequences of a previously evaluated accident. Brittle fracture of the reactor vessel is not an analyzed accident. Fracture mechanics are discussed in Chapter 4 of our UFSAR, but vessel fracture is not considered to be a credible accident.

- (ii) create the possibility of a new or different type of accident from any accident previously evaluated; or

Justification:

This change does not create a new or different type of accident by shifting a pressure-temperature limit in the conservative direction. This proposed change would impose a limit based on our design code and other regulatory requirements. No new or different actions would take place that could create an accident.

- (iii) involve a significant reduction in a margin of safety.

The proposed amendment would shift a temperature limit in the conservative direction and actually impose more stringent operating requirements. A margin of safety would not be reduced because the change is being made to ensure conformance with the applicable ASME Code and the reactor vessel technical manual.

CHANGE NO. 2 (BG&E FCR 88-148)

Change pages 0-1, 0-2, 3-30, 3-31, 3-34, 3-43, 3-48, 3-53, 11-1, 11-5, 11-6, 11-7, 11-11, 11-12, 11-13, 11-14, 11-15, 11-16, 11-17, 12-1, 12-2, 12-13 in Section 3/4, plus pages B 3/4 0-1, B 3/4 0-3, and B 3/4 0-4 all common to the Unit 1 and Unit 2 Technical Specifications. Also, Unit 1 pages 7-63, 7-66, 7-69, 7-72, 7-73, 7-75, 7-77 and Unit 2 pages 7-55, 7-58, 7-61, 7-64, 7-65, 7-67, and 7-69. Changes are shown on the marked-up pages attached to this transmittal.

DISCUSSION

Reference (a), NRC Generic Letter 87-09, discusses three concerns with the general requirements of Sections 3.0 and 4.0 of the Standard Technical Specifications (STS) on the applicability of Limiting Conditions for Operation (LCO) and Surveillance Requirements. It gives guidance on alternatives to resolve these concerns. This change follows that guidance.

First Concern

The first concern is with Specification 3.0.4. Specification 3.0.4 prevents entry into an OPERATIONAL MODE or other specified condition unless the conditions for LCOs are met without reliance on provisions in ACTION requirements. This impacts operation in two ways. First, it delays startup if conformance to the ACTION requirements establishes an acceptable level of safety for unlimited continued operation. Second, it delays a return to power when the facility is required to be in a lower mode of operation as a consequence of other ACTION requirements. This is because the LCO must be met without reliance on the ACTION requirements before returning to a mode for which unlimited continued operation was previously permitted by the previous ACTION requirements.

The NRC staff position on this in Generic Letter 87-09 is that Specification 3.0.4 unduly restricts facility operation when conformance to the ACTION requirements provides an acceptable level of safety for continued operation. However, they point out that they are not endorsing or encouraging a plant startup with inoperable equipment. Startup with inoperable equipment must be the exception rather than the rule.

The change to Specification 3.0.4 clearly defines the conditions under which its requirements apply. Consequently, those specifications that noted exception to Specification 3.0.4 and had ACTION requirements permitting continued operation no longer need to indicate the exception. Those ACTION requirements have had the exception deleted.

Second Concern

The second concern is with Specification 4.0.3. Specification 4.0.3 states that the failure to perform a surveillance within the specified time interval shall constitute a failure to meet the LCO's Operability Requirements. A missed surveillance, therefore, causes entry into ACTION requirements. Some ACTION requirements have allowable outage time limits of only one or two hours, which is normally not a practical amount of time for completing a missed Surveillance Requirement. This can lead to unnecessary plant shutdown to comply with the ACTION requirements. Since completing the missed surveillance is what is needed to return to power, it will probably be performed during the SHUTDOWN. This increases the chance that the plant system being tested may be needed and not available during the transient.

The NRC staff position on this in Generic Letter 87-09 is that Surveillance Requirements for the most part demonstrate operability and missed Surveillance Requirements are primarily a question of operability that has not been verified. Specification 4.0.3 should include a time limit that would allow a delay of the required actions to permit the performance of the missed surveillance. Based on considerations detailed in the generic letter, 24 hours could be an acceptable time limit when the allowable outage times of the ACTION requirements are less than this time limit or when SHUTDOWN ACTION requirements apply.

The change to Specification 4.0.3 allows for the delay of ACTION requirements for up to 24 hours to permit completion of a missed surveillance. The change clarifies the time that the ACTION requirements are applicable. Also, the statement that exceptions to Specification 4.0.3 are stated in individual specifications is deleted because this specification is always applicable and no exceptions exist.

Third Concern

The third concern involves conflicts between Specifications 4.0.3 and 4.0.4 related to mode changes. Specification 4.0.4 prohibits entry into an operational mode or other specified condition when Surveillance Requirements have not been performed within the specified surveillance interval. There are two parts to this problem.

Part 1

A conflict exists when a mode change is required as a result of a SHUTDOWN ACTION requirement and the Surveillance Requirements that become applicable have not been done. The unit may even have to be placed in a lower mode than that required by the original SHUTDOWN ACTION requirement.

The NRC staff position on this in Generic Letter 87-09 is that the potential for a plant upset and challenge to safety systems is heightened if surveillances are performed during a SHUTDOWN to comply with ACTION requirements. The specification should be modified to note that its provisions shall not prevent passage through or to operational modes as required to comply with ACTION requirements.

The change to Specification 4.0.4 notes that its provisions shall not prevent passage through or to operational modes as required to comply with ACTION requirements.

Part 2

Allowance of an exception to Specification 4.0.4 can create a conflict with Specification 4.0.3. An exception to Specification 4.0.4 is allowed when Surveillance Requirements can be completed only after entry into a mode or specified condition for which they apply. However, upon entry into the mode, Specification 4.0.3 may not be met because the Surveillance Requirements may not have been performed within the allowed interval. If the system has redundant trains, all trains are inoperable. Therefore, neither the LCO or the ACTION requirements can be met and Specification 3.0.3 applies and initially requires a SHUTDOWN to HOT STANDBY within six hours.

The NRC staff position in Generic Letter 87-09 is that Specification 4.0.3 is not intended to preclude the performance of surveillances when an exception to Specification 4.0.4 is allowed. The change to permit a delay of up to 24 hours in the applicability of the ACTION requirements of Specification 4.0.3 provides an appropriate time limit for the completion of those Surveillance Requirements. Therefore, the conflict between 4.0.4 and 4.0.3 cannot occur.

The BASES for Specifications 3.0.4, 4.0.3, and 4.0.4 have also been changed to reflect these changes. Much discussion was added to the BASES of Specification 4.0.3. The changes to these BASES recommended in Generic Letter 87-09 were used almost verbatim.

DETERMINATION OF SIGNIFICANT HAZARDS

This proposed change has been evaluated against the standard in 10 CFR 50.92 and has been determined to involve no significant hazards considerations, in that operation of the facility in accordance with the proposed amendment would not:

- (i) involve a significant increase in the probability or consequences of an accident previously evaluated;

The change to Specification 3.0.4, allowing mode changes while in ACTION STATEMENTS that allow continued, unlimited operation, does not affect the probability or consequences of any accident previously evaluated. Since continued, unlimited operation is allowed in either of the modes involved in the mode change, the only difference is that now the mode change is allowed to happen.

The change to Specification 4.0.3, allowing 24-hours to complete missed Surveillance Requirements, does not effect the consequences of previously evaluated accidents, but it may slightly increase the probability of an accident previously evaluated by increasing the time between surveillances. However, the frequency of missed Surveillance Requirements is very low and it is overly conservative to assume that systems or components are inoperable when a Surveillance Requirement has not been performed. Also, by not shutting down the plant, accidents that might occur as a result of the transient are avoided. Therefore, overall, the change does not increase the probabilities significantly, if at all.

Clarification of Specification 4.0.4 for mode changes as a consequence of ACTION requirements does not affect the probability or consequences of previously evaluated accidents. It is not the intent of Specification 4.0.4 to prevent passage through or to operational modes to comply with ACTION requirements. The change resolves potential conflicts between Specifications 4.0.3 and 4.0.4.

or

- (ii) create the possibility of a new or different type of accident from any accident previously evaluated;

This change does not add or modify any plant equipment. Therefore, the only possible accidents are still those previously evaluated.

or

- (iii) involve a significant reduction in a margin of safety.

The change to Specification 3.0.4 reduces the margin of safety in those specifications that allow for continued, unlimited operation and which did not have an exception to 3.0.4 prior to the change. However, as discussed in the NRC staff position in the generic letter, for an LCO that has ACTION requirements permitting continued operation for an unlimited period of time, entry into an operational mode should be permitted in accordance with those ACTION requirements. Therefore, these ACTION requirements provide an acceptable level of safety for continued operation, and there is not a significant reduction in the margin of safety.

Deleting the exception to Specification 3.0.4 in the specifications that allow for continued, unlimited operation does not affect any margin of safety. Prior to this change, Specification 3.0.4 did not apply, as indicated by the exception, and mode changes could be made. With this change, Specification 3.0.4 applies, but, since these specifications allow for continued, unlimited operation, mode changes can still be made.

The proposed change to Specification 4.0.3 would allow time to complete a missed surveillance test and avoid a forced power reduction. Since the majority of surveillances are completed successfully, this avoids potentially unnecessary transients and reduces the potential for plant upset and challenges to safety systems. Therefore, no reduction in a margin of safety results.

Deletion of the statement that exceptions to Specification 4.0.3 are stated in the individual specifications does not effect margin of safety since no such statements exist.

Clarification of Specification 4.0.4 for mode changes as a consequence of ACTION requirements does not affect margin of safety. As pointed out in the NRC staff position on this area in Generic Letter 87-09, it is not the intent of Specification 4.0.4 to prevent passage through or to operational modes to comply with ACTION requirements. The change resolves potential conflicts between Specifications 4.0.3 and 4.0.4.

SAFETY COMMITTEE REVIEW

These proposed changes to the Technical Specifications and our determination of significant hazards have been reviewed by our Plant Operations and Off-Site Safety Review Committees, and they have concluded that implementation of these changes will not result in an undue risk to the health and safety of the public.

