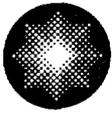


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August 3, 2004

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 Additional Information: Proposed Amendment to Increase the
Setpoint of the Main Steam Safety Valves (TAC Nos. MC1578 and MC1579)

- REFERENCES:**
- (a) Letter from G. Vanderheyden (CCNPP) to Document Control Desk (NRC), dated December 9, 2003, "License Amendment Request: Increase of the Lift Setpoint of the First Bank of Main Steam Safety Valves and Increase in the Completion Time to Reset the Power Level-High Trip Setpoint"
 - (b) Letter from G. S. Vissing (NRC) to G. Vanderheyden (CCNPP), dated March 26, 2004, "Calvert Cliffs Nuclear Power Plant, Unit Nos. 1 and 2 - Request for Additional Information Re: Proposed Amendment to Increase the Setpoint of the Main Steam Safety Valves (TAC Nos. MC1578 and MC1579)"
 - (c) Letter from G. Vanderheyden (CCNPP) to Document Control Desk (NRC), dated May 19, 2004, "Request for Additional Information: Proposed Amendment to Increase the Setpoint of the Main Steam Safety Valves (TAC Nos. MC1578 and MC1579)"
 - (d) Letter from G. S. Vissing (NRC) to G. Vanderheyden (CCNPP), dated June 22, 2004, "Calvert Cliffs Nuclear Power Plant, Unit Nos. 1 and 2 - Amendment Re: Request for Additional Information Relating to Proposed Amendment to Increase the Setpoint of the Main Steam Safety Valves (TAC Nos. MC1578 and MC1579)"

Reference (a) proposed to increase the lift setpoint of the first bank of main steam safety valves and increase the completion time to reset the power level-high trip setpoint. Reference (b) requested additional information. Reference (c) responded to Reference (b). This letter is in response to the questions posed in Reference (d).

The responses in Attachment (1) do not change the no significant hazards discussion in Reference (a).

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ATTACHMENT (1)

**RESPONSE TO REQUEST FOR ADDITIONAL INFORMATION
RE: PROPOSED AMENDMENT TO INCREASE THE SETPOINT
OF THE MAIN STEAM SAFETY VALVES**

ATTACHMENT (1)

RESPONSE TO REQUEST FOR ADDITIONAL INFORMATION RE: PROPOSED AMENDMENT TO INCREASE THE SETPOINT OF THE MAIN STEAM SAFETY VALVES

A Request for Additional Information for the review of Calvert Cliffs Technical Specification Changes to Increase Main Steam Safety Valve (MSSV) Setpoints (TAC No. MC1578 and MC1579)

QUESTION 1

In a letter dated May 19, 2004, the licensee provided its response to RAIs [Requests for Additional Information] on the review of Technical Specification (TS) changes related to an increase in the setpoints for the main steam safety valves (MSSVs). The response to RAI 1(3) indicates that the peak pressure is 2686 psia for the loss-of-load (LOL) reanalysis that assumed that the opening pressure of the MSSVs is 1020 psia. In Section 4 of the original submittal dated December 9, 2004, the licensee claimed that system response of the loss-of-non-emergency AC power (LOAC) event is similar to the LOL event, and thus, it did not reanalyze the LOAC event for the TS changes. The staff notes that the peak pressure (shown in Table 14.10-2 of the updated final safety analysis report is 2493 psia for the LOAC analysis that assumed the MSSVs open at 1000 psia. The peak pressure difference (193 psi) of the LOL and LOAC events is significant. However, it is not clear whether the pressure difference (2686 psia vs. 2493 psia) is attributed to the system responses of the two events, or to the different opening pressure assumed for the MSSVs.

The licensee should explain why the LOAC does not need to be reanalyzed with consideration of the effects of the new MSSV setpoint, or reanalyze the LOAC event using the proposed value of the MSSV setpoint including measurement uncertainties and demonstrate that the results of the reanalysis meet the acceptance criteria for the pressure and pressurizer water level limits.

RESPONSE

As noted in the question, the existing peak Reactor Coolant System (RCS) pressure for the LOAC event shown in the Updated Final Safety Analysis Report (UFSAR) Table 14.10-2 and the LOL event (UFSAR Table 14.5-2) differ by 193 psi. Some of the difference is due to the different assumed opening pressures of the steam generator safety valves (1000 psia vs. 1020 psia). However, the difference is predominately due to system response in that the time to reactor trip for the LOAC event is 1.65 seconds and for the LOL event is 6.6 seconds, as shown in UFSAR Tables 14.10-2 and 14.5-2, respectively. The quicker reactor trip time in the LOAC event results in a peak RCS pressure that is significantly lower than the LOL event pressure and therefore makes LOL the bounding event.

The LOAC event was reevaluated for an increase in the MSSV lift setpoints. This evaluation considered the response of the nuclear steam supply system to a LOAC and the role that the MSSVs play in mitigating the pressure response of the primary and secondary systems. The change to the MSSV setpoint does not affect the time of reactor trip for this event. The evaluation concluded that, even though the increase in MSSV lift setpoint would result in a later opening of the MSSVs, the delay in opening is of such short duration and there is sufficient margin that RCS pressure and pressurizer level response to a LOAC event remain bounded by the LOL event. Therefore, the LOAC event does not have to be reanalyzed.

QUESTION 2

Question 2 requested the licensee to justify that the proposed MSSVs setpoints will not change the power level-high trip setpoints in TS Table 3.7.1-1. In response the licensee indicated that the analysis of the LOL event, the limiting case resulting in a maximum peak pressure within the pressure safety limit, does not credit the power level-high trip, and thus claimed that the power level-high trip setpoints remain unchanged.

ATTACHMENT (1)

**RESPONSE TO REQUEST FOR ADDITIONAL INFORMATION RE: PROPOSED
AMENDMENT TO INCREASE THE SETPOINT OF THE MAIN STEAM SAFETY VALVES**

As discussed in Table 3.7.1-1, the power level high-trip setpoints at 107, 93, 79, and 66 percent of the rated thermal power (RTP) are applicable to the cases with the maximum power levels at 100, 97, 79, and 66 of the RTP, when the required minimum numbers of operable MSSVs are limited to 8, 7, 6, and 5 per steam generator, respectively. Discuss the design-basis events (DBEs) that were analyzed to determine the power level-high trip setpoints. Provide the results of the analysis to demonstrate that with the proposed MSSV setpoints, the DBEs with the conditions of the maximum power levels at 100, 93, 79, and 66 percent of the RTP specified in Table 3.7.1-1, will not increase the reactor coolant system pressure, the main steam system pressure and the pressurizer water level to exceed the acceptable limits.

RESPONSE

All UFSAR Chapter 14 events were considered in determining the power level-high trip setpoints associated with inoperable MSSVs. However, it is the LOL event that is the most limiting and is addressed in a detailed analysis of the intermediate power levels.

Results of the detailed loss of load analyses are presented in Tables 1 and 2, including the results from the full power case that were previously provided. As shown in the tables, the peak RCS pressure remains below the bounding value of 2750 psia, the peak steam generator pressure remains below the bounding value of 1116.5^{*} psia, and the pressurizer does not fill. Therefore, all acceptance criteria have been satisfied.

Table 1

| Summary of Limiting Event Parameters Hot Full Power Initial Conditions | | |
|---|---------------------------------------|---------------------------------------|
| | Loss of Load | Feed Line Break |
| Peak RCS Pressure | 2686 psia ^(1, 2) | 2749.9 psia ^(6, 2) |
| Peak Steam Generator Pressure | 1106 psia ^(3, 4) | 1057.7 psia ^(6, 4) |
| Peak Pressurizer Level | < 1100 ft ³ ⁽⁵⁾ | < 1200 ft ³ ⁽⁷⁾ |

- (1) Table 14.5-2, "Sequence of Events for Loss of Load Event to Maximize Calculated RCS Peak Pressure"
- (2) RCS Pressure Includes Elevation Head
- (3) Table 14.5-4, "Sequence of Events for Loss of Load Event to Maximize Calculated Secondary Peak Pressure"
- (4) Steam Generator Pressure includes Downcomer Liquid Head
- (5) Figure 14.5-6, "Loss of Load Event – Pressurizer Water Volume vs. Time"
- (6) Table 14.26-3, "Sequence of Events for Feedwater Line Break with LOAC Following Reactor Trip"
- (7) Figure 14.26-11, "Feedline Break Event with LOAC Following Reactor Trip – Pressurizer Water Volume vs. Time"

^{*} This maximum allowable steam generator pressure differs slightly from that presented in Reference 1. In reexamining the acceptance criteria, we found that the pressure of 1115 psia was derived by a calculational method converting from gauge pressure to absolute pressure that was overly conservative. The specified design pressure of the steam generators is 1015 psia. Calculating 110% of 1015 psia results in 1116.5 psia. Therefore, the maximum allowable steam generator pressure is 1116.5 psia.

ATTACHMENT (1)

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Table 2

| Summary of Limiting Event Parameters (Loss of Load With Inoperable MSSVs) | | | |
|--|---|--|--|
| Number of Inoperable MSSVs, with Power Level - High Trip Setpoint | | | |
| | 1 Inoperable MSSV, (93% RTP) | 2 Inoperable MSSVs, (79% RTP) | 3 Inoperable MSSVs, (66% RTP) |
| Peak RCS Pressure | 2539 psia ⁽¹⁾ | 2540 psia ⁽¹⁾ | 2539 psia ⁽¹⁾ |
| Peak Steam Generator Pressure | 1115 psia ⁽²⁾ | 1112 psia ⁽²⁾ | 1107 psia ⁽²⁾ |
| Peak Pressurizer Level | < 580 ft ³ | < 590 ft ³ | < 590 ft ³ |

(1) RCS Pressure Includes Elevation Head

(2) Steam Generator Pressure Includes Downcomer Liquid Head

REFERENCE

1. Letter from G. Vanderheyden (CCNPP) to Document Control Desk (NRC), dated May 19, 2004, "Request for Additional Information: Proposed Amendment to Increase the Setpoint of the Main Steam Safety Valves (TAC Nos. MC1578 and MC1579)"