BALTIMORE
GAS AND
ELECTRIC

CHARLES CENTER · P. O. BOX 1475 · BALTIMORE, MARYLAND 21203

ARTHUR E. LUNDVALL, JR.
VICE PRESIDENT
SUPPLY

August 9, 1985

Director of Nuclear Reactor Regulation
Attention: Mr. E. J. Butcher, Jr., Chief
Operating Reactors Branch #3
Division of Licensing
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555

Subject: Calvert Cliffs Nuclear Power Plant
Units Nos. 1 & 2; Dockets Nos. 50-317 and 50-318
Containment Vent System

Reference: NRC letter from J. R. Miller to A. E. Lundvall, Jr. (BG&E)
dated April 22, 1985.

Gentlemen:

By the referenced letter, you requested additional information concerning the design and operation of our proposed containment vent system. Your specific concerns and questions were subsequently discussed with members of your staff in a meeting held at the Phillips Building on June 21, 1985. The purpose of this letter is to formally respond to your letter of April 22 in view of the agreements reached at that meeting.

Our responses are attached for your information and review. In addition, a revised mark-up of technical specification page 3/4 6-25 is provided to supplement our letters dated December 22, 1983, March 26, 1984, and March 21, 1985. The subject change constitutes a further restriction or limitation than previously proposed and thus does not require prior approval by our safety review committees.

If you should have any questions, please do not hesitate to contact us.

Very truly yours,

A. E. Lundvall, Jr.

AEL/BSM/vd

Attachments

cc: D. A. Brune, Esq.
G. F. Trowbridge, Esq.
Mr. D. H. Jaffe, NRC
Mr. T. Foley, NRC

A001
1/1

RESPONSE TO NRC REQUEST FOR
ADDITIONAL INFORMATION (4/22/85)

1. It is the Containment Systems Branch (CSB) position that venting shall be done only for pre-established safety reasons, and these safety reasons must appear in the Tech Specs. We will accept containment pressure control and containment radioactivity control as safety reasons for venting. We will not accept temperature and humidity control as safety reasons. If the containment is uninhabitable because of temperature or humidity problems, then more air conditioning should be uninstalled.

   Response:

   The containment vent system will only be used for pressure control and containment radioactivity control purposes; however, the vent isolation valves may also be opened for surveillance testing. A footnote is proposed for Technical Specification Table 3.6-1 (attached) to reflect these limitations.

2. For the 4-inch vent line CSB has no problem with allowing an unlimited amount of venting. The 90 hour/year restriction will not be imposed on the 4-inch vent line.

   Response:

   No response required.

3. Tech Spec Table 3.6-1 indicates that the 4-inch vent line isolates on a SIAS. This table should be modified to indicate that the vent line isolates on SIAS and CRS.

   Response:

   We disagree that Technical Specification Table 3.6-1 needs to reflect the presence of CRS. CRS has been added to the design of the containment vent isolation scheme to comply with NUREG-0737, Item II.E.4.2 and will be reflected in the next update to the FSAR as a design requirement. However, we are not aware of any regulatory requirement to include this isolation signal in the technical specifications.

4. The submittal of December 22, 1983 talks of having a blind flange on the 4-inch air inlet line. What is the present status of this blind flange on the two Calvert Cliffs units, and how does this affect compliance with CFR 50.44 (e)?

   Response:

   The subject flange was removed in 1982. The configuration of the hydrogen purge system complies with CFR 50.44(e).

5. Please clearly identify the components of valve closure time. As closely as we can tell, the total closure time should be made up as follows:

   a) Time for containment pressure to build up to 4.75 psig or pressurizer pressure to decay to 1578 psig.

   b) Time it takes pressure transducer to respond once the pressure setpoint is reached.

   c) Electronic time to generate SIAS.

d) Electronic time to initiate valve stroking.

e) Diesel startup time if offsite power is lost.

f) Would it be appropriate to assume failure of the first diesel as the single failure? If so, startup time for the second diesel should be included here.

g) Valve Stroking time.

h) Margin for error.

Response:

The maximum total time of 30 seconds for valve closure is based on 2.4 seconds for containment pressure buildup, instrument response and SIAS delay, 10 seconds for emergency diesel generator startup, and 15 seconds for valve stroke time. An additional margin of 2.6 seconds is included for conservatism/margin.

The failure of one diesel generator would not affect the results of this analysis because both diesel generators will start on SIAS. If one diesel fails the other automatically picks up the load with no significant delay.

6. In some previous calculation of total valve closure time a value of 2.4 seconds was used for containment pressure buildup time. In Figure 14.20-11 of the FSAR it appears that the containment pressure buildup time would be more like 2.1 seconds. Is the difference between 2.4 seconds and 2.1 seconds due to an inaccuracy in Figure 14.20-11, or is this difference due to electronic delay time?

Response:

Instrument response and SIAS delay are included in the 2.4 seconds.

7. If a TID source term is used, then this source must be considered to be available for release from containment from time = 0, not time = 10 seconds.

Response:

We believe this assumption is overly conservative; however, we performed the calculation using an instantaneously available TID source term.

8. Is the 2 square foot LOCA which you used in your release computation the appropriate one to use? In the FSAR it appears that a LOCA with a bigger break builds to a peak pressure faster, and thus may be more limiting from a release standpoint, even though the peak pressure reached is lower.

Response:

We selected this break size because it yields the highest peak containment pressure.

9. Please recompute the containment volume release and radioactivity release considering your responses to Questions 5 thru 8.

Response:

The LOCA-while-venting accident analysis was revised assuming a 30-second release period commencing at time = 0. This reanalysis considered realistic flow losses due to pipe friction, elbows, valves and the moisture separator. The resultant site boundary doses were 30.9 rem thyroid and 0.8 rem whole body. When these doses are added to the LOCA site boundary doses (Chapter 14 of the Updated FSAR), the total doses are 124.9 rem thyroid and 3.0 rem whole body.

10. In computing the release to the environment, do you integrate in time using FSAR Figures 14.20.11 and 14.20.13? In the February 4, 1985 submittal only Figure 14.20-18 (containment pressure profile) is indicated.

Response:

The flow rate was calculated using an average containment pressure for three time intervals from 0 to 30 seconds in Figure 14.20-18.

11. From the Tech Specs on the penetration room charcoal filters, it appears that satisfactory operation of the filters depends on the humidity of the effluent air being 90% or less. With just a moisture separator in the vent line, we would expect the humidity of the air being vented during a large break LOCA to be 100%. The bases to the Tech Specs do not indicate whether or not the vent system is intended to be able to stand up to a large break LOCA. Please clarify this matter.

Response:

Even if containment atmosphere introduced to the vent line is saturated, condensation on piping surfaces and mixing with air in the line would result in humidity below saturation at the filters during the time period of interest.

12. An effluent humidity of less than 100% could be achieved by having a cooler and heater in the vent system. We have no indication that such a system, or any other dehumidifying system exists. Is there, in fact, some dehumidifying feature in the 4-inch vent line of which we are not aware?

Response:

No response necessary. See item 11, above.

13. In the February 4, 1985 submittal it is stated that a 1 psi drop in ECCS backpressure will not adversely affect the results of the ECCS calculation. What is the bases for this statement? Do you have a sensitivity figure for Peak Clad Temperature versus Backpressure?

Response:

Our NSSS vendor has determined by analysis that the resultant pressure drop will be 0.06 psi. This pressure drop will not adversely affect the results of ECCS calculations. Peak clad temperature oxidation and local clad oxidation calculations reman valid.

14. How much venting is expected to be done per year if the Tech Spec allowing the use of the 4-inch vent line is approved?

Response:

Testing must be performed following completion of planned system modifications to establish a basis for an estimate of the duration and frequency of venting.

TABLE 3.6-1 (Continued)

CONTAINMENT ISOLATION VALVES

PENETRATION NO.	ISOLATION CHANNEL	ISOLATION VALVE IDENTIFICATION NO.	FUNCTION	ISOLATION TIME (SECONDS)
61	NA	76Y-1	Refueling Pool Outlet	NA
	NA	293M-1		NA
	NA	293M-1		NA
	NA	293M-1		NA
62	SIAS A	MOV-6579	Containment Heating Outlet	≤13
64	NA	238-1	Containment Heating Inlet	NA

(1) Manual or remote manual valve which is closed during plant operation.

(2) May be opened below 300°F to establish shutdown cooling flow.

(3) Containment purge ~~and containment vent isolation~~ valves will be shut in MODES 1, 2, 3 and 4 per TS 3/4 6.1.7 ~~and TS 3/4 6.1.8, respectively~~.

* May be open on an intermittent basis under administrative control.

** Containment purge isolation valves isolation times will only apply for MODES 5 and 6 during which time these valves may be opened. Isolation time for containment purge ~~and containment vent~~ isolation valves is NA for MODES 1, 2, 3 and 4 per TS 3/4 6.1.7 ~~and TS 3/4 6.1.8, respectively~~, during which time these valves must remain closed.

(4) Containment vent isolation valves shall be opened for containment pressure control, airborne radioactivity control, and surveillance testing purposes only.

TABLE 3.6-1 (Continued)

CONTAINMENT ISOLATION VALVES

PENETRATION NO.	ISOLATION CHANNEL	ISOLATION VALVE IDENTIFICATION NO.	FUNCTION	ISOLATION TIME (SECONDS)
61	NA	SFP-184	Refueling Pool Outlet	NA
	NA	SFP-182		NA
	NA	SFP-180		NA
	NA	SFP-186		NA
62	SIAS A	PH-6579-MOV	Containment Heating Outlet	≤13
64	NA	PH-387	Containment Heating Inlet	NA

(1) Manual or remote manual valve which is closed during plant operation.

(2) May be opened below 300°F to establish shutdown cooling flow.

(3) Containment purge ~~and containment vent isolation~~ valves will be shut in MODES 1, 2, 3 and 4 per TS 3/4 6.1.7. ~~and TS 3/4 6.1.8, respectively~~.

* May be open on an intermittent basis under administrative control.

** Containment purge isolation valves isolation times will only apply for MODES 5 and 6 during which time these valves may be opened. Isolation time for containment purge ~~and containment vent~~ isolation valves is NA for MODES 1, 2, 3 and 4 per TS 3/4 6.1.7 ~~and TS 3/4 6.1.8, respectively~~, during which time these valves must remain closed.

(4) Containment vent isolation valves shall be opened for containment pressure control, airborne radioactivity control, and surveillance testing purposes only.