

CALVERT CLIFFS NUCLEAR POWER UNITS NUMBERS 1 AND 2  
BALTIMORE GAS AND ELECTRIC COMPANY  
DRAFT SAFETY EVALUATION  
RCS HIGH POINT VENT SYSTEM

INTRODUCTION

By Generic Letter No. 83-37 dated November 1, 1983 (ref. 1) the licensee was required to provide technical specifications for the RCS high point vents systems, and for this purpose, a guide was provided which currently forms part of the STS for Combustion Engineering facilities. The licensee responded to reference 1 by a request for amendment dated December 22, 1983. The staff has discussed various items through the project manager, with the licensee.

In proposing to meet the NRC TS requirement, the licensee has identified a small number of changes from the STS guide and provided the safety analysis reports required by 10 CFR 50.59. These have been evaluated by the staff.

Also, in proposing to meet the NRC TS requirements, the licensee has made a number of changes for which no analysis has been provided as required by 10 CFR 50.90. These changes have also been evaluated by the staff, but without the benefit of any information provided by the licensee to justify or explain the changes.

The basis for our evaluation is conformity with the requirements of 10 CFR 50.44 paragraph (c)(3)(iii), the guidelines of NUREG-0737 Item II.B.1, NUREG-0800 section 5.4.12, the related Safety Evaluation Report from R. W. Houston to G. C. Lainas dated May 27, 1983, (ref. 3) and, conformance with the STS proposed by the NRC as a guideline in Ref. 1.

#### EVALUATION

- (1) The licensee has proposed to deviate from the NRC STS guideline by deleting the underlined passage in the following item 3.4.11 of Ref. 3, enclosure 3, page 5:

"At least one reactor coolant system vent path consisting of at least two valves in series powered from emergency busses shall be operable."

Power from emergency buses is a regulatory requirement deriving from 10 CFR 50.44(c)(3)(iii) which requires that "... the design of the vents and associated controls instruments and power sources must conform to the requirements of Appendix A and Appendix B of this part [10 CFR Part 50] ..."

In addition, the guidance given under NUREG-0737, Item II.B.I, Clarification A(8) states that "Each vent must have its power supplied from an emergency bus." The staff has considered this to be an acceptable implementation of 10 CFR 50.44. The licensee has not provided any justification as to why this should not be so and we therefore find this proposed deviation unacceptable.

- (2) The NRC guidance on NUREG-0737 tech specs (ref. 1, enclosure 3, page 5) states that the RCS vents system should be operable in Modes 1, 2, 3, and 4. The licensee proposes to delete the requirement for operability in Modes 3 and 4.

In its submittal (ref. 2), the licensee proposes that: "It is our position that MODES 1 and 2 should be the applicable MODES of concern for this system, since the postulated accidents which could lead to generation of noncondensable gases of sufficient volume to hamper natural circulation will be of greatest concern in these MODES. This is additionally supported by the MODE APPLICABILITY of the C-E standard technical specifications for combustible gas control in the containment and its associated bases."

The RCS high point vent valves constitute the reactor coolant pressure boundary [RCPB] and as such are required to be capable of effectively enforcing isolation of that boundary down through Mode 4 (ref. Calvert Cliffs TS 3/4.4.10 and 3/4.0). An indication of NON-OPERABILITY of the RCS high point vent valves is a potential infringement of that isolation capability. On this basis we therefore find the proposal unacceptable.

- (3) In Ref. 2, under T.S. section 3.4.1.3, Action statement, the licensee proposes to use at least one PORV and its associated flow path as an alternate vent path for either the reactor vessel head vent or the pressurizer vapor space vent in a manner which would mean its use effectively as another RCS vent system.

In its original proposals for the design, installation and operation of the RCS high point vents system, the licensee did not propose the PORV system for this requirement; therefore it was not evaluated in the related SER, (Ref. 3) for this purpose. Furthermore, for this particular proposal the licensee has not provided a detailed evaluation of the PORV system, as an RCS vent system, by evaluating its conformity to the regulatory requirements of 10CFR50.44 paragraph (c)(3)(iii) and the guidelines of NUREG 0737 Item II.B.1 and NUREG-0800 Section 5.4.12. These requirements were all discussed in the original high point vent SER (ref. 3). We therefore, consider this proposal unacceptable at this time.

We do, however, recommend that the licensee give attention to this matter, but in doing so present sufficient information as required by 10 CFR 50.90.

In this same proposal, under T.S. Section 3.4.1.3, Action statement, the licensee effectively intends to replace an INOPERABLE reactor vessel head vent system with the pressurizer vent system. This would be a change from the regulation which specifically requires "high point vents -----, for the reactor vessel head," reference 10 CFR 50.44(c)(3)(iii). The licensee has not proposed any safety analysis or time limit for inoperability to justify what is effectively an exemption from a regulatory requirement, by showing that a pressurizer vent will work as effectively as a head vent for this system. On this basis, the staff finds the proposal unacceptable.

For all of the above reasons, the NRC staff finds the complete Action statement proposed by the licensee under T.S. Section 3.4.1.3 to be unacceptable.

- (4) The licensee has proposed in T.S. 4.4.13.1 that: "Each reactor coolant system vent path shall be demonstrated OPERABLE, by testing each valve in the vent path per Specification 4.0.5. This would require ASME Code Testing over frequencies of at least once per 7 days to at least once per 366 days (Ref. Calvert Cliffs T.S. pages 3/4 0-2 and 3/4 0-3).

This proposal is unacceptable as it does not restrict inservice testing to the cold shutdown and refueling modes as required by the S.T.S. guidelines (ref. 1); the staff considers this guideline a necessary condition to prevent possible challenges to integrity of the RCPB during inservice testing in the more severe Modes 1, 2, 3 and 4, which could occur with fuel cycles of greater length than 366 days. Therefore we conclude that the licensee's proposal in this matter to be unacceptable and require that they effectively use the guidance in ref. 1:

"Each reactor coolant system vent path shall be demonstrated OPERABLE at least once per 18 months by: Cycling each valve in the vent path through at least one complete cycle of full travel from the control room during COLD SHUTDOWN or REFUELING."

- (5) The licensee proposes in T.S. page 4.4.3.2.b that: "Each reactor coolant system vent path shall be demonstrated OPERABLE at least once per 18 months by:

Verifying flow through the reactor coolant system vent paths during venting."

The STS guidance (ref. 1) provides that flow be verified during venting during COLD SHUTDOWN or REFUELING. This provides additional flexibility to the licensee if there is flow testing capability during Mode 6. The licensee's proposal is more limiting than the STS guidance and is therefore acceptable.

- (6) On page 3/4.4-32 of the proposed T.S., the licensee states that, in Modes 1 and 2 [3 and 4]:

The solenoid valves in the vent path for the Pressurizer Vapor Space may be opened for short periods of time under administrative control."

The licensee has not provided a description of the constraining circumstances under which this is expected to occur, nor have . . . provided any acceptable Safety Analysis to support this request. We therefore find this new proposal unacceptable.

- (7) Under T.S. Basis 3/4 4.13, Reactor Coolant System Vents, the licensee proposes:

- (7.1) "The function, capabilities, and testing requirements of the reactor coolant system vent systems are consistent with the requirements of Item II.B.1 of NUREG-0737, "Clarification of TMI Action Plan Requirements," November 1980."

This paragraph should be altered to read as:

" ... vent systems are consistent with the requirements of 10 CFR 50.44 paragraph (c)(3)(iii) and the guidelines of NUREG-0737 Item II.B.1, and NUREG-0800 section 5.4.12."

However, as concluded in item (1) of this SER, we do not believe this statement is factually correct and is not approved for inclusion in the technical specification until item (1) of this SER is acceptably resolved.

(7.2) In its first paragraph the licensee has changed the description "pressurizer steam space" to "pressurizer vapor space." This is acceptable.

#### CONCLUSION

As a result of our evaluation, we find most of the request for amendment proposed by the licensee to be unacceptable, as described above. In cases of items 3, 6 and 7 of this SER, the licensee should address those items as requiring additional information. A further evaluation can then be made after the information is submitted.

The basis for this finding is the lack of an acceptable safety analyses from the licensee to support the amendment requests and a lack of conformance to regulatory guidance with no justification for deviation.

We therefore suggest that the licensee implement an acceptable highpoint vent system, in conformance with the design proposals reviewed and found acceptable by the staff in our original SER on this subject (Reference 3). If not, we

point out that the schedular requirements of 10 CFR 50.44(3)(iii), i.e., "by the end of the first scheduled outage beginning after July 1, 1982, and of sufficient duration to meet required modifications," may not be met.

We recommend that if the licensee wishes to consider the use of the PORV system as a redundant flow path for his current Pressurizer Vent System, then, as a separate licensing action, they should provide another submittal to show conformity to the regulatory requirements of 10 CFR 50.44 (c)(3)(iii) and the guidelines of NUREG-0737 Item II.B.1 and NUREG-0800, Section 5.4.12.



## REFERENCES

1. Letter from D. G. Eisenhut (NRC) to All Pressurized Water Reactor Licensees on Subject: NUREG-0737 Technical Specifications (Generic Letter No. 83-37), dated November 1, 1983.
2. Letter from RCL Olson, BG&E, to Director of NRR, Attention: Mr. R. J. Clark, Chief, OMB #3, Subject: Calvert Cliffs Nuclear Power Plant, NUREG-0737 Item II.B.1: Reactor Coolant System Vents; Dated December 22, 1983.
3. Memo from R. Wayne Houston to G. C. Lainas on Subject: Safety Evaluation for RCS High Point Vents, Calvert Cliffs 1 and 2, dated May 27, 1983.