January 23, 1991

Docket No. 50-271

Mr. L. A. Tremblay Licensing Engineer Vermont Yankee Nuclear Power Corporation 580 Main Street Bolton, Massachusetts 01740-1398

Dear Mr. Tremblay:

SUBJECT: TORUS TO REACTOR BUILDING VACUUM BREAKER SYSTEM AT VERMONT YANKEE NUCLEAR POWER STATION (TAC NO. 75994)

REFERENCES: Vermont Yankee Nuclear Power Corporation letter dated 1. February 15, 1990

GE Reactor Containment Design Specification 22A1265 2.

GE Atmosphere Control-Primary Containment Design Specification 22A2856

By letter dated February 15, 1990, (Ref. 1), you submitted your operability determination for the subject cystem. Your findings were based on certain GE Design Specifications, (References 2 and 3). We have reviewed your February 15, 1990, letter and the two GE Design Specifications. Based on our review we have concluded that your evaluation of the original design documents is incorrect. Our evaluation found that both the check valves and the air operated valves should be containment isolation valves. As containment isolation valves, they should be fully safety 'mad' this would involve fully qualified electrical and air supplies, where use for entrol or motive force. Our evaluation is enclosed.

Kindly respond within 60s of receipt of this letter regarding your accessment of our evaluation. If you agree with our finding: ... will negotiate a schedule, through your NRC Project Manager, for any needed pice modifications.

Sincerely.

ORIGINAL SIGNED BY:

Morton B. Fairtile, Project Manager Project Directorate I-3 Division of Reactor Projects I/II Office of Nuclear Reactor Regulation

Enclosure: As stated

cc w/enclosure: See next page

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Morton B. Fairtile, Project Manager Project Directorate 1-3 Division of Reactor Projects I/II Office of Nuclear Reactor Regulation

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

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month B. Fairtile

Morton B. Fairtile, Project Manager Project Directorate I-3 Division of Reactor Projects I/II Office of Nuclear Reactor Regulation

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cc w/enclosure: See next page

Mr. L. A. Tremblay, Senior Licensing Engineer

Vermont Yankee

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Vermont Yankee Nuclear Power Station Vernon, Vermont 05354

John Traficonte, Esq. Chief Safety Unit Office of the Attorney General One Ashburton Place, 19th Floor Boston, Massachusetts 02108

Adjuicatory File (2) Atomic Safety and Licensing Board Panel Docket U.S. Nuclear Regulatory Commission Washington, D.C. 20555

Robert M. Lazo, Chairman Atomic Safety and Licensing Board U.S. Nuclear Regulatory Commission Washington, D.C. 20555

Mr. L. A. Tremblay

Vermont Yankee

cc:

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Frederick J. Shon Administrative Judge Atomic Safety and Licensing Board U.S. Nuclear Regulatory Commission Washington, D.C. 20555

Jerry R. Kline Administrative Judge Atomic Safety and Licensing Board U. S. Nuclear Regulatory Commission Washington, D.C. 20555

EVALUATION

The function of the torus-to-reactor building vacuum breakers is to limit the negative pressure in the containment during post-accident conditions and normal operations. However, since these lines penetrate the containment, they must also fulfill the containment isolation function. Recognizing the dual function of these lines, the fail-open position of the air operated valves should be maintained. This ensures that in the event of loss of air supply to the valves that the vacuum relief function can still be met and that containment isolation is still provided through the check valve. However, since both functions are significant to the public health and safety, the possibility of failure of the air operated valves should be minimized and therefore, the air supply should be fully safety grade.

The referenced GE design documents show that the torus-to-reactor building vacuum breakers are supposed to have two containment isolation valves in series. Furthermore, the licensee relies on GE Design Specification 22A2856 and states that it "reiterates the requirement of providing a single isolation valve for this type of line." However, this original design document describes the primary containment atmosphere control systems for inerting, exhausting, and purging the containment and the above referenced line is explicitly stated to pertain to the purge supply and exhaust lines and in no way references the torus-to-reactor building vacuum breakers.

1. Did the licensee have sufficient technical basis for exiting the action statement for containment isolation?

No. The original design basis documents state that the isolation valves for the suppression chamber vacuum relief lines shall utilize self-actuated and power operated valves in series. This would correspond to the check valves (V16-19-12A&B) and the air operated butterfly valve (V16-19-11A&B). In addition, Technical Specification Table 4.7.2.a, Primary Containment Isolation Valves - Valves Subject to Type C Leakage Tests, includes both the butterfly valves and the check valves, and Technical Specification 3.7.D.1 requires that all the valves listed in that table be operable during power operation.

Are the licensee's actions acceptable for meeting GDC 56 requirements for containment isolation?

No. GDC 56 requires two containment isolation valves on all lines that connect directly to the containment atmosphere and penetrate primary reactor containment.

3. Should the butterfly valve air supply be "backfitted" to be safety grade to assure reliable closure of the isolation valves?

The license is not in conformance with their design basis, and therefore must make modificatic is to ensure a reliable source of air to the valves. Either providing the succerfly valves with safety grade accumulators or upgrading the air supply to safety grade would enable these valves to perform their intended function during all design basis accidents. A "backfit" is not required since the modification to the system is not the result of a new or amended provision in the Commission rules or the imposition or a new regulatory staff position. The licensee is required to make modifications to come in compliance with their design basis.

4. Should a generic backfit determination be performed, in conjunction with GL 88-14, to evaluate the cost benefit of providing a safety grade air supply to the upstream containment isolation valves? (Region I has several other BWRs with the same design features for the vacuum breaker system. In addition, one BWR has installed a seismically qualified safety grade air supply in order to ensure a reliable safety function.)

No. Generic Letter 88-14 required licensees to perform a design verification of all air-operated safety related components to ensure that they will perform as expected in accordance with all design-bases events. A loss-ofinstrument air would render the air operated upstream containment isolation valve inoperable. The staff believes that all Mark I plants licensed in the same time period as Vermont Yankee would be designed according to GE Design Specification 22A1265. This design document states that the airoperated valve is a containment isolation valve. Therefore, all plants licensed to this document are required to provide a safety grade air supply or an air supply with the same level of confidence to these valves. This is not a backfit since the licensee is not in conformance with the original design basis.

5. Should the butterfly valves (11A and B) be deleted from the TS Table for containment isolation valve surveillance or otherwise not considered to be containment isolation valves?

No. The butterfly valves are containment isolation valves and are required to remain in Technical Specifications.

DISTRIBUTION: Docket File 50-271 NRC PDR Local PDR PDI-3 Reading S. Varga E. Greenman M. Rushbrook M. Fairtile R. Wessman OGC - 15 G18 E. Jordan - MNBB 3701 C. McCracken ACRS (10) - P1 35 J. Johnson, Region I A. Dromerick - PDI-4 D. Jaffe - PDI-4 M. Boyle - PDI-4

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