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FVY-81-79
2.C.2.1

May 15, 1981

United States Nuclear Regulatory Commission
Washington, D. C. 20555

Attention: Office of Nuclear Reactor Regulation
Mr. D. G. Eisenhut, Director
Division of Licensing

References: (a) License No. DPR-28 (Docket No. 50-271)
(b) Letter, USNRC to All Licensees of Operating Plants, dated October 31, 1980
(c) Letter, USNRC to VYNPC dated January 14, 1980
(d) Letter, VYNPC to USNRC, WVY 80-14, dated January 18, 1980
(e) Letter, VYNPC to USNRC, WVY 80-19, dated January 25, 1980
(f) Letter, VYNPC to USNRC, FVY 81-48, dated March 23, 1981

Subject: NUREG-0737, Item II.K.3.28 "Verify Qualification of Accumulators on Automatic Depressurization System Valves"

Dear Sir:

Vermont Yankee has reviewed the original design basis for the Automatic Depressurization System (ADS) and has concluded that it has been and remains satisfied. The Vermont Yankee Final Safety Analysis Report (FSAR) does not contain the criteria given in Reference (b) as part of the design basis for the ADS accumulators. The subject NUREG item is therefore inconsistent with the original plant design bases, and compliance with the new position would constitute a backfit. If it is the NRC's intent to require a backfit, evidence of a substantial improvement in plant safety will be necessary to provide a basis for such a requirement.

The information presented in the following discussion documents our review of the original design basis for the ADS and verifies the acceptability of the accumulators at our facility to perform their intended function.

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Original Design Basis

Section 6.5 of the FSAR states:

> "Automatic depressurization is provided to automatically reduce nuclear system pressure if a break has occurred and vessel water level is not maintained by the HPCIS and the other water addition systems. Rapid depressurization of the nuclear system is desirable to permit flow from the core spray system and LPCIS to enter the vessel, so that the temperature rise in the core is limited."

After 10 minutes, operator action to place RHR into torus cooling (and shutdown cooling as needed) is assumed. After this, ADS valves need not remain open to keep the vessel from repressurizing, as temperature will be kept low enough by RHR cooling. Therefore, for these breaks, accumulators should provide operability for 10 minutes.

In the FSAR analysis, the ADS valves need to be actuated only once - when the automatic control signal calls for it. The original design basis for the accumulators was to provide for two operations of each ADS valve when the containment atmosphere is at accident pressure. Thus, there is a 100% conservatism in accumulator design basis. Since the Target Rock SRVs require about 28 psi difference above drywell back pressure to operate, a test done with atmospheric pressure in the drywell must show capability by an increased number of lifts (calculated as 5) to be equivalent to 2 lifts under accident drywell back pressure conditions. The 5 lift criteria shows up in many FSAR's but, according to General Electric, it should be interpreted as the criteria for an atmospheric test of ADS accumulator size.

In addition, there is a 25% conservatism in ADS design basis to allow for single failure in that each relief valve provides 33 1/3% of the necessary capacity and four valves and accumulators are provided.

Extended Design Basis

For non-LOCA accident situations, ADS may be useful, but is not required.

Requirements of NUREG-0737, Item II.K.3.28

Based on the original design and present needs, the ADS accumulators need only provide for one valve operation within the first 10 minutes of an accident. Providing for two valve operations provides a 100% design conservatism. Only long-term cooling equipment (RHR) is required to be available for 100 days.

Present Plant Status

As a result of the investigation performed for I&E Bulletin 80-01, the check valves isolating the accumulators from the air header were changed to soft seated valves to insure leak tightness. (See References (c), (d), (e) and (f).)

A surveillance test program has been implemented to perform leak rate testing of the check valves, solenoid valves, accumulators and air piping associated with each ADS relief valve. This program provides assurance that, for three hours (minimum), following a line break in the air supply, sufficient air capacity will remain for the required two valve operations.

Vermont Yankee believes that the response presented above meets the intent of the subject NUREG Item and plans no further action on this item. Should you have any questions, please contact us.

Very truly yours,

VERMONT YANKEE NUCLEAR POWER CORPORATION

R. L. Smith
Licensing Engineer

RLS/kab