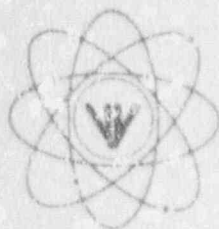


# VERMONT YANKEE NUCLEAR POWER CORPORATION



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March 6, 1992  
BVY 92-25

United States Nuclear Regulatory Commission  
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Washington, DC 20555

References: a. License No. DPR-28 (Docket No. 50-271)  
b. Letter, NRC to [All Licensees], Information Notice 92-02, dated 1/3/92.  
c. Letter, NRC to [All Licensees], Information Notice 92-02, Supplement 1, dated 2/18/92.  
d. Letter, VYNPC to USNRC, FVY 86-61, dated 6/27/86.

Subject: RELAP5/MOD3 Computer Code Error Associated with the Conservation of Energy Equation

Dear Sir:

Information Notice 92-02 [Reference (b)] was issued by NRC to alert licensees to an error in the RELAP5/MOD3 computer code associated with the conservation of energy equation. The error was considered to be present in all the computer codes in the RELAP5 series. Supplement 1 to Information Notice 92-02 [Reference (c)] provided additional information which concluded that the error identified in Reference (b) was caused primarily due to application of RELAP5/MOD3 to a situation for which the code was not intended. References (b) and (c) requested licensees to review the information for applicability to their facilities and consider actions, as appropriate, to avoid similar problems. However, no specific action or written response was required by the information notice or the supplement.

Vermont Yankee currently has topical report RELAP5YA in review at NRC. Since review of RELAP5YA is essentially complete, NRC verbally requested Vermont Yankee to address the impact of References (b) and (c) on RELAP5YA in writing, prior to issuance of the Safety Evaluation and topical report approval by NRC. The purpose of this letter is to comply with NRC's verbal request.

Our review has shown that the conservation of energy equation in RELAP5YA is fundamentally correct. However, similar to RELAP5/MOD3, the finite difference form of the equation involves approximations, unavoidable in any numerical scheme, that can give erroneous results if not understood and mitigated by the code user. The numerical approximation can result in underestimation of energy in a downstream volume if the fluid is predominantly in the gas phase and undergoes a very steep pressure gradient between adjacent cells. These circumstances are possible if the code is used for containment analysis applications, as in the example provided in Reference (b).

RELAP5YA will be used to evaluate the nuclear steam supply system (NSSS) response to LOCA scenarios for Vermont Yankee as described in the application method provided in Reference (d). In this application, the numerical approximation of the energy equation has negligible impact

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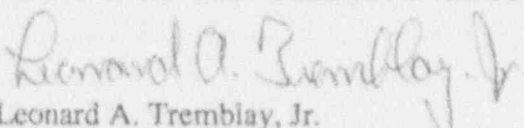
on the system response. This is consistent with the USNRC conclusions provided in References (b) and (c) and is also supported by the code assessment calculations performed to justify RELAP5YA application for Vermont Yankee LOCA licensing analysis.

Details of our review have been summarized and provided to code users at YAEC to prevent possible misuse of the code. The review information is on file and available to you on request.

We trust that this information satisfactorily addresses the subject issue as it pertains to RELAP5YA, and leads to an expeditious issuance of the Safety Evaluation Report for this topical report by NRC. If, however, you require additional information, please contact this office.

Very truly yours,

VERMONT YANKEE NUCLEAR POWER CORPORATION

  
Leonard A. Tremblay, Jr.  
Senior Licensing Engineer

cc: USNRC Region I Administrator  
USNRC Resident Inspector - VYNPS  
USNRC Project Manager - VYNPS