Docket No. 50-271

December 5, 1990

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

Dear Mr. Tremblay:

SUBJECT: REQUEST FOR ADDITIONAL INFORMATION ON THE USE OF RELAP5YA (TAC NO. 66375)

By letter dated August 28, 1990, you provided answers to our June 7, 1990, request for information needed in order to review your RELAP5YA methodology. On November 14, 1990, we discussed with you our review schedule and additional information needs. We have enclosed a second request for additional information. Please contact your Project Manager if you need any clarification. A response to the enclosed request should be provided within 30 days of receipt of this letter.

The reporting and/or record keeping requirements contained in this letter affect fewer than ten respondents; therefore, OMB clearance is not required under P.L. 96-511.

Sincerely,

Original signed by:

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

Enclosures:
As stated

cc w/enclosures:
See next page

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Adjudicatory 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

cc:

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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

Enclosure

REQUEST FOR ADDITIONAL INFORMATION

USE OF RELAP5YA AS AN EVALUATION MODEL

VERMONT YANKEE NUCLEAR POWER STATION

DOCKET NO. 50-271

LICENSE NO. DPR-28

The following data will be needed to evaluate adequacy of the heat transfer modeling used in RELAP5YA during the entire period of transient.

1. The RELAP5YA heat transfer coefficients are not conservative for Gr/Re**2 less than 0.01 (See Figures A1.2 and A1.3 responses to June 7, 1990, NRC requests). What modifications does YA intend to make to assure conservatism in that range?

2. Demonstrate that the FLECHT, TFTH, and TLTA tests cover the entire range of fluid mechanic (flow regime) and heat transfer regimes expected during a worst LOCA in the BWR.

3. Provide plots to describe void and pressure vs. time in the core (each of the nine nodes), upper plenum/head volumes and lower plenum/head volumes.

4. Provide plots to show flow velocities across boundaries of (i) core inlet/lower core node, (ii) core outlet/top core node, (iii) core nodes 9/8, (iv) core nodes 8/7, (v) core nodes 7/6, (vi) core nodes 6/5, (vii) core nodes 5/4, and (viii) upper head/upper plenum.

5. Provide plots similar to item 4, above, from a computer analysis using 20 nodes in the core to assure nodalization convergence. This is particularly important since use of 9 nodes in the core is not generally adequate for this type of transient using a node like RELAP.

6. Provide plots to show axial distribution of initially assumed and computed centerline fuel temperatures, assumed and computed linear heat generation rates, and initial core coolant temperatures.

7. Justify using the chopped cosine power profile for the EM calculation (while for the best-estimate calculation a bottom peaked shape was used) since its impact on PCT may be non-conservative when top quenching is expected during the spray cooling mode.

8. Discuss contributions of the heat transfer processes and their associated heat transfer coefficients for (i) post-CHF conditions, (ii) spray and quenching, and (iii) radiation.

DISTRIBUTION:
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