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VERMONT YANKEE NUCLEAR POWER CORPORATION

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B.4.2.1
WVY 79-71

REPLY TO:
ENGINEERING OFFICE
TURNPIKE ROAD
WESTBORO, MASSACHUSETTS 01581
TELEPHONE 617-366-9011

June 25, 1979

United States Nuclear Regulatory Commission
Region 1
631 Park Avenue
King of Prussia, Pennsylvania 19406

Attention: Mr. Boyce H. Grier, Director

References: (a) License No. DPR-28 (Docket No. 50-271).
(b) USNRC Letter to VYNPC dated April 14, 1979;
I & E Bulletin No. 79-07.
(c) VYNPC Letter to USNRC dated April 27, 1979 (WVY 79-50).
(d) VYNPC Letter to USNRC dated May 4, 1979;
Seismic Stress Analysis and Safety Related Piping.

Dear Sir:

Subject: Seismic Stress Analysis of Safety Related Piping

Information outstanding from our original responses to I & E Bulletin 79-07 (References (c) and (d)) related to an understanding of the programs employed by General Electric's subcontractor and the techniques they employed in benchmarking and verifying their programs used in seismic piping analysis. We have recently received information from General Electric giving us sufficient knowledge to complete our response to Item 3 of Bulletin 79-07.

The subcontractor who conducted the seismic analyses for the Vermont Yankee piping systems supplied by General Electric was EDS Nuclear, Inc. The computer programs used in these analyses were PISOL and SUPERPIPE. These programs combine both modal and directional responses by the square-root-of-the-squares method or an absolute summation. Verification of these programs has been accomplished by comparing the results of these programs with results from other established and proven seismic analysis programs. The following successful comparisons have been made:

1. PISOL and SUPERPIPE against ANSYS and WESTDYN using the ASME Benchmark Problem #1.

2. Formal benchmarking was also done against Bechtel Power Corporation ME-101, PIPESD and ADLPIPE.

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These, and other informal and successful comparisons (with hand calculations, with PISOL versus SUPERPIPE, and with one version of a program compared to another which evaluated efficiency of program modifications) have convinced us that their programs are sufficiently verified.

Since the programs used in the seismic analysis of the General Electric supplied piping did not use invalid summing techniques, are sufficiently verified against programs known to produce valid results and we have identified these to you, we have now responded to all items of I & E Bulletin 79-07.

We trust the information supplied is suffient for your purposes, however, if you have further questions, please contact us.

Sincerely,

VERMONT YANKEE NUCLEAR POWER CORPORATION

D. E. Moody
Manager of Operations

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