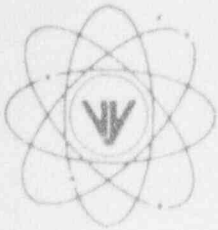


# VERMONT YANKEE NUCLEAR POWER CORPORATION



Ferry Road, Brattleboro, VT 05301-7002

REPLY TO  
ENGINEERING OFFICE  
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April 13, 1994  
BVY 94 - 38

United States Nuclear Regulatory Commission  
ATTN: Document Control Desk  
Washington, DC 20555

- References:
- a. License No. DPR-28 (Docket No. 50-271)
  - b. Letter, D.H. Dorman (USNRC) to Distribution, NVY 94-01, dated 1/6/94
  - c. Letter, VYNPC to USNRC, BVY 94-10, dated 1/25/94
  - d. Letter, VYNPC to USNRC, BVY 92-112, dated 9/18/92
  - e. Letter, VYNPC to USNRC, BVY 92-111, dated 9/18/92
  - f. Letter, J.M. Taylor (USNRC) to Commissioners, SECY 93-118, dated 5/3/93

Subject: Individual Plant Examination of External Events (IPEEE) for Vermont Yankee  
(Generic Letter 88-20, Supplement 4)

The purpose of this letter is to provide revised commitments with respect to those currently identified in Reference (e) for the Vermont Yankee IPEEE effort. Specifically, the changes being made in this letter will affect: (1) the scope/method to be utilized in performing the seismic examination, and (2) the schedule for submittal of the IPEEE. To summarize, Reference (e) stated that "seismic events will be analyzed using a walkdown-based approach that takes maximum advantage of recognized industry experts". This method was deemed to satisfy Staff guidance in NUREG-1407 (see Executive Summary and Section 3.3) as an *Alternate* or *Optional Method*. In addition, Reference (e) provided for submittal of the IPEEE on June 30, 1995. It is emphasized that these commitments were made using the best information available at the time and included consideration of Vermont Yankee's assignment as a 0.3g focused scope plant.

Vermont Yankee now plans to perform a reduced scope seismic examination to satisfy the NRC objectives for the seismic portion of the IPEEE. The method of examination will be in accordance with NUREG-1407 utilizing the EPRI-developed seismic margins method (SMM) contained in EPRI-NP-6041. As previously discussed, Vermont Yankee recognizes the benefit of integrating our seismic IPEEE examination with other seismic-related programs and with examinations related to other aspects of the IPEEE. We intend to integrate activities which are common to the IPEEE and USI A-46 processes so as to maximize our utilization of resources. This will be achieved, in part, by selection of team members from our staff dedicated to implement both programs. Therefore, Vermont Yankee plans to implement our IPEEE consistent with the schedule for resolution of USI A-46 which is December 31, 1995 [Reference (d)]. This is consistent with the NRC-accepted utility responses as contained in Reference (f) for reasons of resource levelization and integration with USI A-46 resolution.

The technical basis to support Vermont Yankee's revised commitments was developed as a result of the recent draft of NUREG-1488, "Revised Livermore Seismic Hazard Estimates for 69 Nuclear Power Plant Sites East of the Rocky Mountains", which provides significant new information relative to large reductions in the seismic hazard at Eastern U.S. sites. Specifically, these revised Livermore results show that the mean seismic hazard at Vermont Yankee is low, lower in fact than the 1989 Livermore mean seismic hazard estimates for the group of plants which were originally designated for the reduced scope level of effort to address the seismic IPEEE.

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United States Nuclear Regulatory Commission  
 April 13, 1994  
 Page 2

In light of this significant new information, we believe that the current understanding of seismic hazards no longer justifies the focused scope level of effort at Vermont Yankee to satisfy the seismic IPEEE. Adoption of the reduced scope program is not a reduction in the level of safety. The walkdown requirements for a reduced scope program are the same rigorous requirements used for full or focused scope reviews. A competent review team will identify the same potentially weak elements independent of the type of seismic review that is conducted.

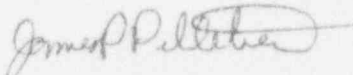
Attached to this letter is a summary of a recently issued Nuclear Energy Institute (NEI, formerly NUMARC) White Paper on this issue, entitled "Justifications for Reduction in IPEEE Program Based on Revised LLNL Seismic Hazard Results". The NEI technical position is consistent with Vermont Yankee's technical basis as provided to the Staff in our December 14, 1993 meeting, summarized in References (b) and (c).

As stated in Reference (e), Vermont Yankee committed to supplying the Staff with the details of the seismic examination method as they were developed, but no later than three months prior to the plant walkdowns. The revised commitments contained herein supply the Staff with those details in that Vermont Yankee now commits to performing the seismic examination in accordance with a previously reviewed and accepted methodology (i.e. reduced scope in accordance with NUREG-1407 utilizing the EPRI-developed SMM in EPRI-NP-6041). Therefore, the previous commitment relative to seismic examination details is considered closed.

Should you have further questions with regard to this issue, please contact this office.

Sincerely,

VERMONT YANKEE NUCLEAR POWER CORPORATION

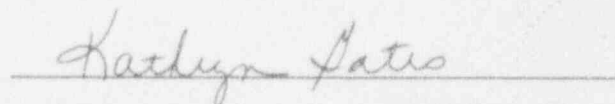


James P. Pelletier  
 Vice President - Engineering

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

COMMONWEALTH OF MASSACHUSETTS )  
 ) ss  
 COUNTY OF WORCESTER )

Then personally appeared before me, James P. Pelletier, who, being duly sworn, did state that he is Vice President - Engineering of Vermont Yankee Nuclear Power Corporation, that he is duly authorized to execute and file the foregoing document in the name and on the behalf of Vermont Yankee Nuclear Power Corporation and that the statements therein are true to the best of his knowledge and belief.



Kathryn Gates Notary Public  
 My Commission Expires January 24, 1997

## ATTACHMENT

### Scope Reduction for Generic Letter 88-20, Supplement 4

#### Background

The NRC issued Generic Letter 88-20, Supplement 4, "Individual Plant Examination of External Events (IPEEE) for Severe Accident Vulnerabilities - 10CFR50.54(f)" on June 29, 1991, along with NUREG-1407, "Procedural and Submittal Guidance for the Individual Plant Examination of External Events (IPEEE) for Severe Accident Vulnerabilities". For the seismic portion of the IPEEE, these documents binned plants in the Eastern United States (EUS) as Reduced Scope, 0.3g Focused Scope, 0.3g Full Scope, and Seismic Probabilistic Risk Assessment (SPRA). The NRC binning process was done on a relative basis, mainly because of large differences in hazard estimates between the Lawrence Livermore National Laboratory (LLNL) and the Electric Power Research Institute (EPRI) seismic hazard studies which existed at that time. This process resulted in binning of plants with similar hazard levels, regardless of an absolute level of hazard; i.e. sites that fell into a group that had the lowest likelihood of exceeding the 0.3g NUREG/CR-0098 5% damped spectrum were assigned to the reduced scope bin.

#### Evaluation of NUREG-1488

In 1993 the NRC issued draft NUREG-1488, "Revised Livermore Seismic Hazard Estimates for 69 Nuclear Power Plant Sites East of the Rocky Mountains". This document provides significant new information relative to large reductions in seismic hazard at all EUS sites. The revised LLNL results now corroborate the earlier EPRI seismic hazard analyses and confirm that the seismic hazard at most EUS plants is low, lower in fact than the 1989 LLNL seismic hazard estimates for the grouping of plants which were originally designated as reduced scope.

The Nuclear Energy Institute (NEI, formerly NUMARC) has recently developed a White Paper entitled, "Justification for Reduction in IPEEE Program Based on Revised LLNL Seismic Hazard Results", which provides a detailed evaluation on the impact of the new LLNL results. This paper provides the technical basis for placement of all but a handful of plants into the reduced scope bin. Vermont Yankee believes that this paper provides the necessary justification for reclassification of the Vermont Yankee Nuclear Power Station as a reduced scope plant.

#### Impact of Reduced Scope Level of Effort

As discussed in the White Paper, the reduction in the level of effort for a reduced scope program is in no way associated with a reduction in the level of safety. There is a consensus among the industry seismic experts that the most important aspect of any seismic review is the plant walkdown performed by a competent review team consisting of seismic and systems engineers guided by plant operation personnel. The walkdown requirements for a reduced scope program are the same rigorous requirements applied to full or focused scope reviews. A competent review team will identify the same potentially weak elements independent of the type of seismic review that is conducted. Industry experience of the past 15 years shows that seismic review teams have successfully identified the weak elements at the time of the walkdowns which are subsequently modified or repaired, and in no cases were weak components determined to require modification based solely on the analyses which are mandated under the full and focused scope programs.

The White Paper also discusses the inherent margins beyond the Safe Shutdown Earthquake (SSE) level which exist in the current vintage of nuclear plants. Typically, the median capacity for core damage from seismic events is in the range of 3 to 6 times the SSE level for plants in the EUS. Both SPRA and Seismic Margin Assessment (SMA) studies have shown that the vast

## ATTACHMENT

### Scope Reduction for Generic Letter 88-20, Supplement 4 (continued)

majority of safety-related equipment and structures have high seismic capacity. This information provides the level of assurance needed to justify reductions in the analyses requested by the focused scope program.

#### Justification for Reduction in the IPEEE Program

In light of the revised LLNL results, the White Paper discusses the need for acceptance criteria to judge the level of effort needed to address the seismic IPEEE. If one compares the estimated Mean Core Damage Frequency (MCDF) using the 1993 LLNL results, then Vermont Yankee has a lower MCDF than all of the original reduced scope plants (using the 1989 LLNL results).

The White Paper provides additional detail on hazard comparisons which are summarized as follows: (1) all but a few plants have a median probability of exceeding the SSE that is less than  $1 \times 10^{-4}$ ; (2) the mean probability of exceeding the SSE at Vermont Yankee using the 1993 LLNL results is less than the mean probability of exceeding the 0.3g Review Level Earthquake (RLE) spectrum using the 1989 LLNL results (i.e. a seismic review to the SSE in 1994 is equivalent to a review to the 0.3g spectrum based upon the 1989 LLNL mean results); (3) conservative bounding MCDF calculations have been performed given that the SSE is insured by the reduced scope program (i.e. after detailed walkdowns have been completed and any modifications that may be identified have been implemented, there is assurance that the plant has capacity beyond the SSE). These White Paper calculations show the MCDF for Vermont Yankee, given the reduced scope program, is about  $2 \times 10^{-5}$ , which is lower than what has typically been accepted by the Staff in published PRAs. It is likely that the actual plant High Confidence Low Probability Failure (HCLPF) would likely be higher than that used in these calculations resulting in a lower MCDF value. However, it is not believed to be cost beneficial to expend significant resources in order to obtain the plant HCLPF.

#### Cost/Benefit Discussion and Conclusion

Vermont Yankee has evaluated the cost savings and agrees with the White Paper estimate of approximately \$250,000 achieved by changing the level of effort from focused scope to reduced scope. Details of this cost estimate are provided in the White Paper. Based on previous SPRAs and SMAs, experience shows that there is little value gained through the additional analyses required by a focused scope program. The analyses have produced no adverse findings not previously identified by the seismic walkdown/review teams.

Vermont Yankee has also reviewed the Cost Beneficial Licensing Action (CBLA) definitions and criteria for determining if relief from a utility commitment is warranted. Vermont Yankee supports the White Paper position that the additional studies required by the focused scope program are not cost justified and have been shown to add no safety benefits/enhancements to the plant.

Lastly, in light of the revised LLNL hazard results, Vermont Yankee now believes that the reduced scope program satisfies the request for information under 10CFR50.54(f) and that the focused scope program imposes an unnecessary burden which is no longer cost-justified in view of the decreased potential safety significance of the issue. We believe that the prudent actions are to conduct the program at a level of effort which will produce the desired results; i.e. to conduct detailed plant walkdowns under a reduced scope program.