UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D. C. 20555

ENCLOSURE 1

SAFETY EVALUATION REPORT
VERMONT YANKEE NUCLEAR POWER CORPORATION
VERMONT YANKEE STATION
DOCKET NO. 50-271
CONFORMANCE TO REGULATORY GUIDE 1.97

1.0 INTRODUCTION

Vermont Yankee Nuclear Power Corporation was requested by Generic Letter 82-33 to provide a report to NRC describing how the post-accident monitoring instrumentation meets the guidelines of Regulatory Guide (R.G.) 1.97 as applie to emergency response facilities. The licensee responded to Item 6.2 of the generic letter on October 30, 1984. Additional information was provided by letters dated October 25, 1985, August 11, 1987, July 28, 1988, and September 1, 1989.

A detailed review and technical evaluation of the licensee's submittals was performed by EG&G Idaho, Inc., under a contract to the NRC, with general supervision by the NRC staff. This work was reported by EG&G in Technical Evaluation Report (TER), "Conformance to Regulatory Guide 1.97: Vermont Yankee," dated May 1990 (attached). We have reviewed this report and concur with the conclusion that the licensee either conforms to, or has adequately justified deviations from, the guidance of R.G. 1.97 for each post-accident monitoring variable except for the variables neutron flux and cooling water temperature to ESF system components.

2.0 EVALUATION CRITERIA

Subsequent to the issuance of the generic letter, the NRC held regional meetings in February and March 1983 to answer licensee and applicant questions and concerns regarding the NRC policy or R.G. 1.97. At these meetings, it was established that the NRC review would only address exceptions taken to the guidance of R.G. 1.97. Further, where licensees or applicants explicitly state that instrument systems conform to provisions of the regulatory guide, no further staff review would be necessary for those items. Therefore, the review performed and reported by EG&G only addresses exceptions to the guidance of R.G. 1.97. This safety evaluation addresses the licensee's submittals based on the review policy described in the NRC regional meetings and the conclusions of the review as reported by EG&G.

3.0 EVALUATION

We have reviewed the evaluation performed by EG&G contained in the attached TER and concur with its bases and findings. The licensee either conforms to, or has provided an acceptable justification for deviations from the guidance of R.G. 1.97 for each post-accident monitoring variable except for the variables (a) neutron flux and (b) cooling water temperature to ESF system components.

(a) R.G. 1.97 recommends Category 1 neutron flux monitoring instrumentation to monitor reactivity control. The licensee has provided local power range monitors (LPRMs) which conform to the R.G. 1.97 Category 1 criteria. The licensee however has not provided qualified neutron flux monitoring instrumentation that monitors the full range specified in R.G. 1.97. R.G. 1.97 recommends that all Category 1 instruments located in a harsh environment be environmentally qualified in accordance with 10 CFR 50.49.

The justification provided by the licensee for not providing qualified neutron flux monitoring instrumentation, over the full range specified in R.G. 1.97, is that the variable is only needed for long term use in the event of an anticipated transient without scram (ATWS), which does not result in an environment that is more severe than a normal operating environment. Additionally, the licensee states that with a control rod shutdown, inadvertent reactivity additions are not possible. However, it is the staff's position that neutron flux instrumentation is required for monitoring purposes as related to the mitigation of any inadvertent boron dilution event or any other reactivity addition situation resulting from accidents. The licensee's existing instrumentation has not been shown to provide reliable neutron flux data in a post-accident situation. Thus, the staff finds the licensee's justification unacceptable.

The staff has been informed that industry has developed wide range neutron flux monitoring systems that satisfy the Category 1 criteria of R.G. 1.97. Therefore, it is the staff's position that the licensee should evaluate the newly developed neutron flux monitoring systems and install neutron flux monitoring instrumentation which complies with the Category 1 criteria, of R.G. 1.97 and 10 CFR 50.49. It has been concluded by the staff that the existing neutron flux monitoring instrumentation is acceptable for interim operation until implementation of a fully qualified indication system is completed.

b) R.G. 1.97 recommends Category 2 temperature instrumentation for cooling water to ESF system components, with a range of 40°F to 200°F, to monitor operation of the cooling water system. The licensee has provided instrumentation which conforms to the Category 2 criteria of R.G. 1.97 except for range. The range of the licensee's instrumentation is zero to 150°F. The licensee did not provide a justification for this deviation. Therefore, this range deviation is not acceptable. The licensee should provide the range recommended by R.G. 1.97.

4.0 CONCLUSION

Based on the staff's review of the enclosed TER and the licensee's submittals, we find that the Vermont Yankee Station design, is acceptable with respect to conformance to R.G. 1.97, Revision 3, except for the instrumentation associated with the variables a) neutron flux and b) cooling water temperature to ESF system components.

a) It is the staff's position that the licensee should install and have operational neutron flux monitoring instrumentation which fully conforms to the Category 1 criteria of R.G. 1.97. The staff finds acceptable the existing neutron flux instrumentation for interim operation until implementation of a fully qualified indicating system is completed.

b) It is the staff's position that information on cooling water temperature to ESF system components is valuable to the operator in monitoring cooling water system operation. It is also the staff's position that the licensee should install and have operational monitoring instrumentation for the variable cooling water temperature to ESF system components which meets the range recommendations of R.G. 1.97.

An appropriate implementation schedule will be developed by the project manager via discussion with the licensee. Once the schedule is established, the licensee is required to inform the Commission, in writing, of any significant changes in the estimated schedule identified in the staff's safety evaluation and when the action has actually been completed.