UNITED STATES
NUCLEAR REGULATORY COMMISSION
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SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

VERMONT YANKEE NUCLEAR POWER CORPORATION

VERMONT YANKEE NUCLEAR POWER STATION

DOCKET NO. 50-271

MONITORING OF ELECTRIC POWER TO THE REACTOR PROTECTION SYSTEM (RPS)

Introduction

Our concern regarding the deficiencies in the existing design of RPS power monitoring in BWRs was transmitted to Vermont Yankee Nuclear Power Corporation (VYNPC) by NRC generic letter dated September 24, 1980. In response to this, by letters dated January 27, 1981, February 25, 1983, August 5, 1983 and December 14, 1983, VYNPC proposed design modifications and changes to the Technical Specifications. A detailed review and technical evaluation of these proposed modifications and changes to the Technical Specifications were performed by Lawrence Livermore Laboratory (LLL) under contract to the NRC, and with general supervision by NRC staff. This work is reported in LLL report UCID-20036 "Technical Evaluation of the Monitoring of Electric Power to the Reactor Protection System," dated March 1984 (enclosed). We have reviewed this Technical Evaluation Report and concur in its conclusion that the proposed design modifications with the continued surveillance program in accordance with our letter dated August 7, 1978 in conjunction with the administratively controlled interim setpoints of the protective relays is acceptable.

Proposed Changes and Evaluation Criteria

The following design modifications and Technical Specification changes were proposed by VYNPC.

1. Installation of GE designed protection assemblies, two in each of the three sources of power to the RPS (RPS M-G sets A and B and the one alternate source). Each assembly includes a circuit breaker and a monitoring module consisting of an undervoltage, an overvoltage and an underfrequency relay.

2. VYNPC also proposed Technical Specification changes which did not include relay setpoints, the LCOs and the surveillance requirements as required by the Standard Technical Specifications for the BWRs. The protective relays of the modification assemblies have been set to trip at the same setpoints that were used for the non-Class 1E relays before the modification. The licensee has proposed to change these setpoints in the interim to more conservative values during the next refueling outage in June 1984. These interim setpoints will be procedurally administered until a final setpoint is determined based

on the study which is scheduled to be completed during the last quarter of 1984. After determination of the final setpoints, the licensee will propose Technical Specification changes in February 1985 which will include the final relay setpoints, the LCOs and surveillance requirements for NRC approval. During the interim period, the RPS power supply output shall be checked once per operating shift as required by the existing plant procedures and the NRC letter dated August 7, 1978.

The criteria used by LLL in its technical evaluation of the proposed changes include GDC-2, "Design Basis for Protection Against Natural Phenomenon," and GDC-21, "Protection System Reliability and Testability," of Appendix A to 10 CFR 50; IEEE-279-1971, "Criteria for Protection Systems for Nuclear Power Generating Stations;" and NRC Memorandum from F. Rosa to J. Stolz, T. Ippolito and G. Lainas dated February 19, 1979.

Conclusions

We have reviewed the LLL Technical Evaluation Report and concur in its findings that (1) the interim setpoints are conservatively chosen and the proposed modifications will provide automatic protection to the RPS components from sustained abnormal power supply, and (2) the continuation of once per shift check of RPS power supplies in conjunction with the administratively controlled interim setpoints is a satisfactory interim surveillance until the finalization and approval of the required Technical Specifications.

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