YANKEE ATOMIC ELECTRIC COMPANY

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BYR 90-157

United State Nuclear Regulatory Commission
Document Control Desk
Washington, DC 20555

Attention: Director, Office of Enforcement

References: (a) License No. DPR-3 (Docket No. 50-29)
(b) Letter USNRC to YAEC "Region I Inspection Report No. 50-29/90-18"

Subject: Reply to Notice of Violation

Dear Sir:

Reference (b) documents a special inspection conducted by NRC Region I staff of the YNPS Emergency Diesel Generator replacement on September 24 through 28, 1990. Appendix A to Reference (b) contains a Notice of Violation resulting from this inspection, identified as Severity Level IV. The violation is as follows:

> 10CFR50 Appendix B, Criterion XI, requires in part that tests be performed in accordance with written procedures which incorporate the requirements and acceptance limits contained in applicable design documents. Criterion XI further requires that test results be documented and evaluated to assure that requirements have been satisfied.
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> YAEC Operational Quality Assurance Program (YOQAP-1-A, Revision 18) Section XI, "Test Control," requires that written test documents incorporate requirements and acceptance limits contained in design and procurement documents as well as acceptance and rejection criteria.
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> Contrary to the above,
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> 1) Procedure OP-5000.312, "Pre-Operational and Reliability Test," which was used to perform the EDG 1 Pre-Operational Test, did not have appropriate acceptance criteria in that there were no

acceptable limits established for the EDG no-load or running frequency to verify that the EDG units operated in accordance with design requirements.

2) The test results for the EDG 1 Reliability Test were not adequately reviewed in that the acceptance criteria specified in Procedure OP-5000.312 was determined to have been met even though the running EDG frequency differed from the no-load governor setting by more than the +/- 2% acceptable limit specified in the procedure.

In accordance with 10CF 2.201, we hereby submit the following information:

1. Admission or Denial of the Alleged Violation

We concur with the Notice of Violation as described above and in Reference (b).

2. The Reasons for the Violations if Admitted

On September 9, 1990, No. 1 Emergency Diesel Generator (EDG) was declared operable at the Yankee Nuclear Power Station (YNPS). The declaration of the operability of this unit was based in part upon the completion of a successful test program conducted by Yankee and successful completion of Technical Specification required surveillance testing.

Review of the on-site EDG qualification test procedure indicates that the no-load speed adjustment was not adequately controlled during all phases of testing. This assessment is evidenced by the inadvertent placement of the no-load setting between 63 and 66 Hz at different times during performance of EDG No. 1 testing.

The no-load frequency was initially established by Procedure 5000.312 in accordance with the design document EDCR 90-305. This initial setting was based on the inherent droop characteristics of the governor and a design requirement that the EDG operate within an acceptable frequency range from the no-load condition up to the rating of the machine. Since the inherent droop characteristic results in a decrease in operating frequency as load increases, the initial frequency was established such that the loaded frequency of the EDG was compatible with that of the supplied loads.

Although the no-load frequency was established based on the above criterion, no range of acceptable frequencies was explicitly provided in the procedure. Alternatively, the procedure called for setting the no-load frequency on the basis of an engineering evaluation of the observed droop over the design power output range.

The omission of the appropriate discussion of the basis for the no-load setting, including the associated acceptable range, within the body of the procedure, contributed to loss of no-load frequency

control during the test because the responsible test engineers were not adequately made aware of its basis and significance. Additionally, the pretest indoctrination of the test engineers has been determined to have been inadequate in the area of acceptable frequency response of the EDGs.

The test procedure was structured such that only the first of the 30 reliability start and load run tests required explicit sign-offs for the successful completion of each step including no-load frequency. The remaining 29 test runs were documented on data sheets which did not require verification of the no-load frequency prior to application of load.

Interviews with the No. 1 EDG test engineers indicate that lack of clear procedure guidance combined with inadequate test engineer training contributed to the lack of control and verification of the no-load frequency setting.

3. The Corrective Steps that Have Been Taken and the Results Achieved

Following initial identification of higher than desired operating frequency, a series of tests were conducted on No. 1 EDG to verify the stability of the no-load frequency. Results of the tests indicated that the no-load frequency response was stable and the EDG operated satisfactorily.

A detailed engineering review of the entire EDG test program which was underway at the time of the NRC inspection, has subsequently been completed. The results of this review indicate in part, that although a significant portion of the test program for No. 1 EDG was conducted at 1-3 Hz above the desired frequency range, the qualification program test results remain valid. This conclusion is based on the fact that the EDG's ability to accept and carry single step loads in excess of those anticipated during all design basis loading scenarios was observed to be independent of the no-load frequency setting.

Additionally, existing plant procedures require that the EDG no-load frequency be returned to the required setting following surveillance testing to ensure optimum starting and running frequency.

4. The Corrective Steps That Will Be Taken to Avoid Further Violations

Review of the circumstances surrounding this violation indicate that the root cause may be attributed to lack of specific test procedure guidance and acceptance criteria for critical test parameters and inadequate test engineer pretest indoctrination. A review of existing plant administrative procedures which govern preparation and implementation of test procedures confirmed the adequacy of procedural guidance in the areas of pretest briefings as well as the importance of clear and concise limits and acceptance criteria.

To adequately address this issue and to stress the importance of clear and accurate acceptance criteria, specific training will be given to all corporate personnel engaged in preparation or implementation of similar pre-operational testing procedures for new or replacement plant equipment.

5. The Date When Full Compliance Will Be Achieved

The training referred to above will be completed by March 29, 1991.

If you have any questions or require further information, please contact us.

Very truly yours,

YANKEE ATOMIC ELECTRIC COMPANY

J. K. Thayer
Vice President and Manager of Operations

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cc: USNRC Region I
USNRC Resident Inspector, YNPS