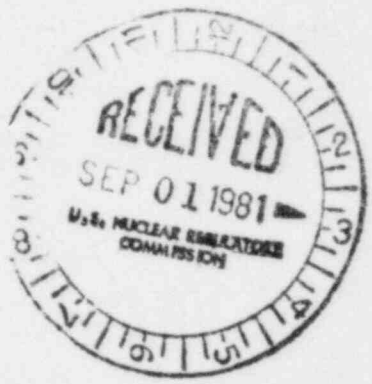
August 28, 1981

Docket No. 50-29
LS05-81-08-072



Mr. James A. Kay
Senior Engineer - Licensing
Yankee Atomic Electric Company
1617 Worcester Road
Framingham, Massachusetts 01701

Dear Mr. Kay:

SUBJECT: SEP TOPIC VII-6, FREQUENCY DECAY SAFETY EVALUATION FOR YANKEE ROWE

The enclosed staff safety evaluation is based on a contractor document that has been made available to you previously. This evaluation is the staff's position regarding design of your facility in the subject area. With regard to the referenced topic, the staff has concluded your facility meets current licensing criteria.

Sincerely,

Dennis M. Crutchfield, Chief
Operating Reactors Branch No. 5
Division of Licensing

ENclosures:
As stated

cc w/enclosures:
See next page

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cc
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Greenfield, Massachusetts 01301

Chairman
Board of Selectmen
Town of Rowe
Rowe, Massachusetts 01367

Energy Facilities Siting Council
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U. S. Environmental Protection
Agency
Region I Office
ATTN: EIS COORDINATOR
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Boston, Massachusetts 02203

Resident Inspector
Yankee Rowe Nuclear Power Station
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Post Office Box 28
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SYSTEMATIC EVALUATION PROGRAM
TOPIC VII-6
YANKEE ROWE

TOPIC VII-6 FREQUENCY DECAY

I. Introduction

Issue 9 of NUREG-0138 states that the staff should require that a postulated rapid decay of the frequency of the offsite power system be included in the accident analysis and that the results be demonstrated to be acceptable. Alternatively, the reactor coolant pump (RCP) circuit breakers should be designed to protection system criteria and tripped to separate the pump motors from the offsite power system because rapid decay of the frequency of offsite power system has the potential for slowing down or braking the RCP thereby reducing the coolant flow rates to levels not considered in previous analyses.

II. Review Criteria

The review criteria for reactor trip systems are presented in Table 7-1 of the Standard Review Plan.

III. Related Safety Topics and Interfaces

Set Points (Topic VII-1.A) and Degraded Grid (Topic VIII-1.A) are related review areas that are outside the scope of this Topic.

Although Topic VIII-1.A is not dependent on the present topic for completion, the conclusions with regard to frequency decay should be compatable.

IV. Review Guidelines

Issue 9 of NUREG-0138, "Staff Discussion of Fifteen Technical Issues Listed in Attachment to November 3, 1976 Memorandum from Director, NRR to NRR Staff," provides suitable guidance for this review.

V. Evaluation

Oak Ridge National Laboratory (ORNL), under a technical assistance program, reviewed the frequency decay rate phenomena and its effects on RCP's. The results of the review are presented in Section 4 of NUREG CR 1464, "Review of Nuclear Power Plant Offsite Power Source Reliability and Related Recommended Changes to the NRC Rules and Regulations." In summary, the report shows that the conditions required for dynamic braking of reactor coolant pumps are a sustained and rapid decrease in frequency while maintaining bus voltage. These conditions are only realized in a highly capacitive system using large amounts of buried transmission cables (such as Long Island). The Yankee Atomic Electric system does not use large amounts of buried transmission cable.

VI. Conclusion

The conditions necessary for an unacceptable frequency decay rate are not present in the Yankee Rowe offsite electrical distribution system. Accordingly, the staff considers this issue not to be applicable to Yankee Rowe.