

December 17, 1981

Docket No. 50-213
LS05-81-12-051



Mr. W. G. Council, Vice President
Nuclear Engineering and Operations
Connecticut Yankee Atomic Power Company
Post Office Box 270
Hartford, Connecticut 06101

Dear Mr. Council:

SUBJECT: HADDAM NECK - SEP TOPIC XV-4, LOSS OF NON-EMERGENCY A-C
POWER TO THE STATION AUXILIARIES

By letter dated September 30, 1981, you submitted a safety assessment report for the above topic. The staff has reviewed this assessment and our conclusions are presented in the enclosed safety evaluation report, which completes the review of this topic for Haddam Neck.

This evaluation will be a basic input to the integrated assessment for your facility. The evaluation may be revised in the future if your facility design is changed or if NRC criteria relating to this topic are modified before the integrated assessment is completed.

Sincerely,

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

Enclosure:
As stated

cc w/enclosure:
See next page

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Mr. W. G. Council

cc

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HADDAM NECK, SEP TOPIC XV-4 EVALUATION

LOSS OF NON-EMERGENCY A-C POWER TO STATION AUXILIARIES

I. INTRODUCTION

A loss of normal A-C power to the station auxiliaries can occur as a result of malfunctions in the transformer or in the power distribution system. The plant protection system is designed to trip both the turbine and the reactor whenever this power is lost.

The Connecticut Yankee Atomic Power Company (CYAPCO) presented a reason (Reference 1) for the resulting transient being less severe than for loss of feedwater and loss of flow events (SEP Topics XV-5 and XV-7).

II. REVIEW CRITERIA

Section 50.34 of 10 CFR Part 50 requires that each applicant for a construction permit or operating license provide an analysis and evaluation of the design and performance of structures, systems, and components of the facility with the objective of assessing the risk to public health and safety resulting from operation of the facility, including determination of the margins of safety during normal operations and transient conditions anticipated during the life of the facility.

Section 50.36 of 10 CFR Part 50 requires the Technical Specifications to include safety limits which protect the integrity of the physical barriers which guard against the uncontrolled release of radioactivity.

The General Design Criteria (Appendix A to 10 CFR Part 50) establish minimum requirements for the principal design criteria for water-cooled reactors.

GDC 10 "Reactor Design" requires that the core and associated coolant, control and protection systems be designed with appropriate margin to assure that specified acceptable fuel design limits are not exceeded during normal operation, including the effects of anticipated operational occurrence.

GDC 15 "Reactor Coolant System Design" requires that the reactor coolant and associated protection systems be designed with sufficient margin to assure that the design conditions of the reactor coolant pressure boundary are not exceeded during normal operation, including the effects of anticipated operational occurrences.

GDC 26 "Reactivity Control System Redundance and Capability" requires that the reactivity control systems be capable of reliably controlling reactivity changes to assure that under conditions of normal operation, including anticipated operational occurrences, and with appropriate margin for malfunctions such as stuck rods, specified acceptable fuel design limits are not exceeded.

III. RELATED SAFETY TOPICS

Various other SEP topics evaluate such items as the reactor protection system. The effects of single failures on safe shutdown capability are considered under Topic VII-3.

IV. REVIEW GUIDELINES

The review is conducted in accordance with SRP 15.2.6.

The evaluation includes review of the analysis for the event and identification of the features in the plant that mitigate the consequences of the event as well as the ability of these systems to function as required. The extent to which operator action is required is also evaluated. Deviations from the criteria specified in the Standard Review Plan are identified.

V. EVALUATION

CYAPCO in Reference 1 stated that the immediate reactor trip that takes place in the event of a loss of non-emergency A-C power causes this transient to be less severe than for the loss of feedwater and loss of flow events. As noted in Reference 2, in the case of a loss of feedwater event the reactor will not be tripped for 7.2 seconds after the feedwater flow goes to zero. The additional energy generated by the reactor during this 7.2 seconds will make the transient which follows a loss of feedwater flow more severe than that for the loss of non-emergency A-C power.

VI. CONCLUSION

As part of the SEP review of Haddam Neck, the analysis for loss of non-emergency A-C power has been evaluated and we have concluded that the consequences of this event are bounded by a loss of feedwater flow which will be evaluated under SEP topic XV-5.

References

1. Connecticut Yankee Atomic Power Company Report; Systematic Evaluation, Program Safety Assessment Report, Section XV Topics, Haddam Neck Plant; September, 1981; Section 4.1.
2. ibid; Section 2.5