

ADVISORY COMMITTEE ON REACTOR SAFEGUARDS
UNITED STATES ATOMIC ENERGY COMMISSION
WASHINGTON, D.C. 20545

October 21, 1958

Honorable John A. McCone
Chairman, U.S. Atomic Energy Commission
Washington 25, D. C.

Subject: YANKEE ATOMIC ELECTRIC COMPANY

Dear Mr. McCone:

At its tenth meeting on October 15, 1958, the Advisory Committee on Reactor Safeguards reviewed Amendments No. 7 and No. 8 to the application of the Yankee Atomic Electric Company for a license to operate the nuclear power plant the company is constructing at Rowe, Massachusetts. The Committee had available to it the material referenced on the last page.

Amendment No. 7 proposed an alternative to the measures recommended by the Committee in its letter of September 16, 1957, for determining the effects of plutonium buildup on the nuclear characteristics and stability of this reactor. Amendment No. 8 described the waste disposal facilities planned for the Rowe plant.

Amendment No. 7

In Amendment No. 7, Yankee states that determination of the effect of plutonium buildup by measurements on synthetic fuel elements made up of uranium and plutonium in a part-core critical facility, as suggested in the Committee's earlier letter, would be difficult to interpret because of the impossibility of duplicating the temperatures and neutron spectrum of the actual Yankee reactor in this facility. As an alternative and more dependable procedure for determining the effect of plutonium, Yankee proposes an experimental program to measure temperature coefficients, prompt and overall, in the actual power reactor at startup, after 2000 hours of operation, and at intervals while plutonium is growing into the core.

To establish that the reactor can be operated safely while plutonium is building up in the core during the interval between experimental measurements, Yankee described calculations made by Westinghouse and by Nuclear Development Corporation of America which show that the buildup of plutonium during even the entire anticipated fuel lifetime of 10,000 hours will have only a minor effect on the overall temperature coefficient of reactivity.

The Committee concurs with Yankee's proposal to determine these temperature coefficients in the actual reactor rather than in the part-core critical facility and agrees with Yankee's judgment that the effect of plutonium buildup on these coefficients will be small enough to permit these measurements to be made with safety in the actual reactor. In this, the Committee concurs with the determination of the Hazards Evaluation Branch.

The Committee recommends that Yankee be asked to provide a description of the specific experiments which will be made to determine the effects of plutonium buildup on prompt and overall temperature coefficients. It suggests that controlled transient experiments, with known sinusoidal or step changes in reactivity, may be a convenient means of measuring these coefficients.

Amendment No. 8

The Committee heard a detailed description of the facilities planned by Yankee for disposal of gaseous, liquid and combustible solid wastes. It believes that the design of these facilities is conservative and concurs with the conclusion of the Hazard Evaluation Branch that the proposed facilities will permit the disposal of wastes without undue hazard to on-site or off-site personnel.

Sincerely yours,

/s/

C. Rogers McCullough
Chairman

cc: P. F. Foster, GM
H. L. Price, DL&R

References:

- 1) Amendment No. 3 to Preliminary Hazards Summary Report by Yankee Atomic Electric Company, dated April 1957.
- 2) Amendment No. 4 to Preliminary Hazards Summary Report by Yankee Atomic Electric Company, dated July 15, 1957.
- 3) Amendment No. 6 to Preliminary Hazards Summary Report by Yankee Atomic Electric Company, dated March 5, 1958.
- 4) Amendment No. 7 to Preliminary Hazards Summary Report by Yankee Atomic Electric Company, dated July 21, 1958.
- 5) Amendment No. 8 to Preliminary Hazards Summary Report by Yankee Atomic Electric Company, dated July 28, 1958.
- 6) Report to ACRS by Division of Licensing and Regulation, dated September 29, 1958.
- 7) Memorandum from R. C. Dalzell to H. L. Price, subject: Yankee Atomic Electric Company License Application Amendments No. 7 and No. 8, dated September 2, 1958.