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

November 12, 1958

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

Subject: WESTINGHOUSE TESTING REACTOR (WTR)

Dear Mr. McCone:

During its Eleventh Meeting, November 7, 1958, the Advisory Committee on Reactor Safeguards reviewed the Westinghouse Testing Reactor. The WTR is a water moderated and cooled heterogeneous reactor located at Waltz Mills, Pennsylvania, and nearing completion under a construction permit issued by the Commission. The Westinghouse Company is now requesting a license to operate this reactor at a power of 20 megawatts. For its review, the ACRS was furnished Westinghouse report, WCAP-369 (Rev.), and discussed the reactor with the Division of Licensing and Regulation and with Westinghouse personnel.

In many respects the WTR is similar to the Materials Testing Reactor for which eight years of operating experience is available. Thus both the characteristics of this type of reactor and the operating problems associated with its testing function are well known. Like the MTR, the WTR will also be operated in conjunction with a critical facility with which the reactivity of new experiments can be determined with fair precision. In addition, the WTR is housed in a large steel vessel designed to contain, with nominal leakage, the fission products which might be released in a severe reactor accident.

The Advisory Committee on Reactor Safeguards concludes that the Westinghouse Testing Reactor can be operated without undue hazards to the health and safety of the public.

Sincerely yours,

/s/ C. Rogers McCullough

C. Rogers McCullough
Chairman

cc: P. F. Foster, GM
H. L. Price, DLR

References:
WCAP-369 (Rev.)
Amendment No. 8 to License Application, 9/29/58
Amendment No. 9 to License Application, 10/30/58
HEB Staff Analysis, 10/7/58

November 14, 1959

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

Subject: WESTINGHOUSE TESTING REACTOR (WTR)

Dear Mr. McCone:

On November 13, 1959, at its twenty-first meeting the Advisory Committee on Reactor Safeguards reviewed the application of the Westinghouse Testing Reactor (WTR) to increase the power of the reactor from 20 to 60 megawatts thermal power.

The Westinghouse Testing Reactor was originally designed for an ultimate operating power of 60 megawatts (thermal). Initial tests and operation at 20 megawatts indicate that the reactor is capable of this ultimate level. Studies by Westinghouse, concurred in by the Hazards Evaluation Branch, indicate that the hot channel factors, film rise, thermal and hydraulic characteristics and other pertinent features compare favorably with similar ones at the MTR and ETR.

The WTR has demonstrated the effect of bubble formation on the reactor power level fluctuations. They have stated their willingness to retain apparatus and a special detection channel in the reactor during their step-wise rise to 60 Mw (thermal). In this way they can demonstrate the existence of boiling, should it occur. Calculations indicate that oscillations in power may occur when boiling results in 1.8 per cent void by volume.

The Committee recommends that this bubble formation apparatus and detector remain within the reactor until the 60 megawatt level has been reached. The Committee further recommends that the heat flux not be allowed to go above half of that required for burnout and that no more than one percent of the core volume be voided by boiling.

With these reservations the Advisory Committee on Reactor Safeguards believes that this reactor can be operated as proposed at 60 megawatts (thermal) without undue hazard to the health and safety of the general public.

Sincerely yours,
/s/ C. Rogers McCullough

C. Rogers McCullough
Chairman

cc: A. R. Luedecke, GM
H. L. Price, DL&R
ACRS Members & Dr. Duffey - 11/19/59

bc: M. Axelrad, OGC

References

1) WCAP-369 (Rev.) - Final Safety Report for the Westinghouse Testing Reactor, August 7, 1958.

2) Amendment No. 8 to License Application for the Westinghouse Testing Reactor, September 1958.

3) Amendment No. 9 to License Application for the Westinghouse Testing Reactor, October 1958.

4) Amendment No. 11 - Description of a Revised Core Structure for the Westinghouse Testing Reactor, January 1959.

5) Amendment No. 12 to Class 104 License Application for the Westinghouse Testing Reactor, February 5, 1959.

6) Amendment No. 14 to Class 104 License Application for the Westinghouse Testing Reactor, May 1959.

7) Supplementary information to Amendment No. 14 (WTR-22, "Report on Early Operation of the Westinghouse Testing Reactor", September 3, 1959; WTR-23, "Preliminary Report Hydraulic Evaluation Tests"; WTR-21, Appendix II, "Method of Calculating Thermal Performance of WTR at 60 Megawatts," August 7, 1959.

8) WTR-25 - Thermal and Hydraulic Investigation of Testing Reactors with Appendix I (WTR-SS-TA-258), October 1959.

9) U.S. Weather Bureau comments on "Amendment No. 14", June 22, 1959.

10) Division of Licensing and Regulation Report to the ACRS on the Westinghouse Testing Reactor, October 7, 1958.

11) Division of Licensing and Regulation Report to the ACRS on the Westinghouse Testing Reactor, September 23, 1959.