

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

October 15, 1964

Honorable Glenn T. Seaborg
Chairman
U. S. Atomic Energy Commission
Washington, D. C.

Subject: REPORT ON THE NASA PLUM BROOK REACTOR

Dear Dr. Seaborg:

At its fifty-eighth meeting, October 7-10, 1964, the Advisory Committee on Reactor Safeguards considered the request of the National Aeronautics and Space Administration to conduct fueled and unfueled experiments in the In-Pile Helium Cooled Loop Facility of its Plum Brook Reactor. The Committee had the benefit of oral discussions with representatives of the applicant, the AEC Regulatory Staff, and of the documents listed below.

The Plum Brook Reactor has already been considered many times by the Committee, and reports have been written as listed below. Because the reactor is located three miles from Sandusky, Ohio, the Committee stated in the letter of March 14, 1960 "...proposed experiments will have to be carefully reviewed and appropriate limitation may be necessary at this site." The Committee suggests that general criteria for limitations on experiments be developed by the National Aeronautics and Space Administration. Where specific criteria have not been established, it is necessary to review new proposals for "fuel irradiation or loop tests" (See ACRS Report of April 4, 1962).

The In-Pile Helium Cooled Loop is the first fueled loop experiment to be installed at the Plum Brook Reactor. The proposed loop is multiply enclosed so that any fission products which accidentally escape from the fuel elements should not enter the main containment shell." Eight channels of appropriate instrumentation, which can initiate automatic shutdown (partial or total), are to be installed. The instrumentation, particularly its "fail-safe" nature, is to be tested on an electrically heated mock-up of the experiment.

In view of the proposed safety features, including those intended to prevent fuel failure, it is the opinion of the Advisory Committee on

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Reactor Safeguards that the In-Pile Helium Cooled Loop can be operated as proposed in the Plum Brook Reactor without undue risk to the health and safety of the public.

Sincerely yours,

/s/
Herbert Kouts
Chairman

References Attached.

References:

1. Letter from Director, NASA Lewis Research Center, to Director, AEC Division of Reactor Licensing, dated June 25, 1964 with attached Change Report No. 24.
2. Design Manual and Hazards Report, In-Pile Helium Cooled Loop, Exp. No. 62-02, NASA Lewis Research Center, Volume I, Aerojet-General Corporation, dated March 1962, Revised June 1964.
3. Design Manual and Hazards Report for the In-Pile Helium Cooled Loop, Experiment No. 62-02, Appendix A, NASA Lewis Research Center, undated, received August 6, 1964 (C/RD).
4. Letter from Chief, Reactor Division, NASA Lewis Research Center - Plum Brook Station, to Director, AEC Division of Reactor Licensing, dated September 4, 1964, with enclosures.

Previous AGRS Reports

1. Letter from C. Rogers McCullough to Honorable Lewis L. Strauss, dated November 5, 1957.
2. Letter from Leslie Silverman to Honorable John A. McCone, dated March 14, 1960.
3. Letter from Leslie Silverman to Honorable John A. McCone, dated July 25, 1960.
4. Letter from Leslie Silverman to Honorable John A. McCone, dated September 26, 1960.
5. Letter from Leslie Silverman to Honorable John A. McCone, dated November 7, 1960.
6. Letter from F. A. Gifford, Jr. to Honorable Glenn T. Seaborg, dated April 4, 1962.
7. Letter from Herbert Kouts to Honorable Glenn T. Seaborg, dated February 19, 1964.
8. Letter from Herbert Kouts to Honorable Glenn T. Seaborg, dated April 9, 1964.