

ADVISORY COMMITTEE ON REACTOR SAFEGUARDS
United States Atomic Energy Commission
Washington 25, D. C.

September 14, 1959

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

Subject: CAROLINAS VIRGINIA TUBE REACTOR

Dear Mr. McCone:

At its nineteenth meeting on September 10-12, 1959, the Advisory Committee on Reactor Safeguards considered the proposal of the Carolinas Virginia Nuclear Power Associates to construct a power reactor at Parr, South Carolina, on the Broad River.

Information available consisted of reports listed below submitted by the Associates, a written review by the Staff of the Division of Licensing and Regulation and oral presentation by the Associates and Staff.

This 60 MW (thermal) reactor contains a number of features which have not been used in previous power reactors and some of which have not been completely developed. The pressurized heavy water coolant and uranium oxide fuel elements are contained in a number of parallel connected U-tubes, immersed in an atmospheric pressure heavy water moderator tank. The circulating pressurized coolant generates steam in a separate vessel delivering the steam through a conventional separately fired superheater to an existing steam turbine system. Containment is provided by a reinforced concrete tank with a steel lining and dome.

The favorable site is in a sparsely populated area and affords good exclusion distance. A branch line of the railroad passes closer to the reactor location than is desirable, but it has light traffic and can be controlled in an emergency.

The Associates have planned research and development work including study of strength and life of fuel tubes, and critical experiments.

There are a number of details of design and fabrication which have not yet been fully resolved including:

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- a) Suitability of Zircalloy for pressure tubes.
- b) Determination of values of parameters relating nuclear, thermal and hydrodynamic factors of design.

The applicant has not yet proposed alternate solutions using presently known technology which may be substituted in case his research and development program does not confirm his expectations. The Committee, therefore, cannot now conclude that the proposed facility can be constructed and operated at this site without undue hazard to the health and safety of the public.

Sincerely yours,

C. Rogers McCullough
Chairman

cc: A.R.Luedecke, GM
H.L.Price, DI&R

References

- 1) CVNA 27 - Preliminary Hazards Summary Report, Volume I, July 15, 1959.
- 2) CVNA 27 - Preliminary Hazards Summary Report, Volume II, July 15, 1959.
- 3) CVNA 27 - Preliminary Hazards Summary Report, Volume III, July 15, 1959.
- 4) Division of Licensing and Regulation Report to ACRS on the Carolinas Virginia Nuclear Power Associates, Inc., December 2, 1958.
- 5) U. S. Weather Bureau Comments on Preliminary Site Evaluation, Nuclear Power Plant, Parr, South Carolina, December 8, 1958.
- 6) U. S. Weather Bureau Comments on Volumes I, II, and III, "Preliminary Hazards Summary Report, Nuclear Power Reactor, Parr, South Carolina," August 19, 1959.
- 7) Division of Licensing and Regulation Report to ACRS on the Carolinas Virginia Tube Reactor, August 24, 1959.