

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

July 19, 1968

Honorable Glenn T. Seaborg
Chairman
U. S. Atomic Energy Commission
Washington, D. C. 20545

Subject: REPORT ON RANCHO SECO NUCLEAR GENERATING STATION, UNIT NO. 1

Dear Dr. Seaborg:

During its ninety-ninth meeting, July 11-13, 1968, the Advisory Committee on Reactor Safeguards reviewed the proposal of the Sacramento Municipal Utility District to construct the Rancho Seco Nuclear Generating Station, Unit No. 1. This project had been considered previously during Subcommittee meetings on April 23, 1968, at the site, and on June 28, 1968, in Washington, D. C. In the course of its review, the Committee had the benefit of discussions with representatives and consultants of the Sacramento Municipal Utility District, the Babcock and Wilcox Company, Bechtel Corporation, and the AEC Regulatory Staff. The Committee also had available the documents listed below.

This 2452 MWt pressurized water reactor will be located about 25 miles southeast of Sacramento, California, in a sparsely populated area. This region of California is seismically relatively inactive; the largest earthquake of historic record in the vicinity of the site is of Intensity VI, Modified Mercalli (MM) scale. The applicant has agreed to design for safe shutdown following an earthquake during which the maximum horizontal acceleration is 0.25 g (MM VIII), and the design will allow continued operation for an earthquake of about one-half of this acceleration. He plans to install a strong motion accelerometer.

All water needs for this plant will be supplied from the Folsom South Canal, which will pass within five miles of the site. Should completion of this canal be delayed, a separate pipeline from Lake Natoma, about 20 miles north of the site will be constructed. An on-site reservoir will have a capacity of 2500 acre-feet, sufficient for about 35 full power days of operation, and waste heat will be discharged to the atmosphere through use of cooling towers. The plant is unique in that the applicant proposes not to discharge liquid wastes to the environment. The applicant is studying methods to cope with possible build-up of tritium in the reactor coolant water.

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The applicant has proposed using signals from the protection system for control and protection purposes. The Committee reiterates its belief that control and protection instrumentation should be as nearly independent of common failure modes as possible, so that the protection will not be impaired by the same failure that initiates a transient requiring protection. The applicant and the AEC Regulatory Staff should review the proposed design for common failure modes, taking into account the possibility of systematic, non-random, concurrent failures of redundant devices, not considered in the single-failure criterion. In cases where hypothesized control or override failure could lead to the need for action by interconnected protection instrumentation, separate protection instrumentation channels should be provided or some other design approach used to provide equivalent safety.

The Committee suggests that, in view of possible uncertainties in current predictive techniques, further analyses be made of the anticipated integrated fast flux at the pressure vessel wall, and that the adequacy of the proposed pressure vessel material surveillance program be resolved between the applicant and the Regulatory Staff during construction of the station.

This reactor is similar to others designed by this vendor and reviewed previously (see, for example, the ACRS report on the Crystal River plant, May 15, 1968). The Committee continues to call attention to matters that warrant careful consideration by the manufacturers of all large, water-cooled, power reactors. These matters, referred to in the above-mentioned report, apply similarly to the Rancho Seco project.

The Advisory Committee on Reactor Safeguards believes that the items noted above can be resolved during construction, and that the proposed plant can be built at the rancho Seco site with reasonable assurance that it can be operated without undue risk to the health and safety of the public.

Sincerely yours,

/s/

Carroll W. Zabel
Chairman

References attached.

References - Rancho Seco

1. License Application for Construction Permit, Sacramento Municipal Utility District, dated November, 1967; Volumes I, II, III, IV of the Preliminary Safety Analysis Report for Rancho Seco Nuclear Generating Station, Unit No. 1
2. Sacramento Municipal Utility District; Amendment No. 1, dated February 2, 1968
3. Sacramento Municipal Utility District; Amendment No. 2, dated April 15, 1968
4. Sacramento Municipal Utility District; Amendment No. 3, dated May 30, 1968
5. Sacramento Municipal Utility District; Amendment No. 4, dated June 30, 1968