ADVISORY COMMITTEE ON REACTOR SAFEGUARDS
UNITED STATES ATOMIC ENERGY COMMISSION
WASHINGTON, 25, D.C.

July 22, 1966

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

Subject: REPORT ON SITES FOR CALIFORNIA DEPARTMENT OF WATER RESOURCES PROJECT

Dear Dr. Seaborg:

At its seventy-fifth meeting on July 14-16, 1966, the Advisory Committee on Reactor Safeguards reviewed four sites under consideration by the State of California Department of Water Resources (CDWR) for the construction of one or more nuclear power plants. The Committee had the benefit of discussions with representatives of CDWR and the AEC Regulatory Staff and its consultants, as well as the listed documents. In addition, representatives of the Committee visited three of the sites on April 27, 1966 and a Subcommittee of the ACRS met to review these sites on June 8, 1966.

These sites are being considered by CDWR in connection with a project already under construction and scheduled for partial completion about 1972, which will ultimately transfer about four billion gallons of water per day from the northern to the southern parts of the State. To supply power for the major pumping plant near Tehachapi, CDWR is considering construction of two 600 MW(e) nuclear plants, the first to begin operation about 1973 and the second about 1980.

The four sites under review are located at or near Cayucos, Oxnard, Sycamore Canyon, and Tehachapi. Brief evaluations of each of these sites are presented below.

1. Cayucos. Located on a sparsely populated stretch of coastline west of Morro Bay, this site appears to be favorable with respect to foundation, seismic sea waves, landslides, meteorology, and population density. The soil structure should be capable of supporting all anticipated loads. With respect to seismicity, this site appears to be adequate if earthquake engineering design is conservative. The nearest seismically active fault (Nacimiento) is eight miles away and the San Andreas fault is 42 miles distant; however, some further studies will be required to provide adequate evidence regarding the existence and character of faults southwest of the Nacimiento fault in the vicinity of Cayucos.

2. Oxnard. The center of this coastal site on low flat land is situated about two miles SE of Port Hueneme harbor in an area zoned for industry. Geologically and seismologically, the site presents several problems. It is underlain by at least 1800 ft. of unconsolidated, saturated, fine-grained alluvium. In the event of an earthquake, this soil might liquefy, causing structures to sink or slide toward the off-shore submarine canyon. CDWR has been assured by its soil expert that this foundation can be made adequate by removing the top 30 feet and replacing it with firm material or with the same soil properly compacted. However, this unstable foundation and the difficulty of ascertaining the possible existence of faults under the alluvium may lead to difficult design requirements for potential seismic effects. Furthermore, the low elevation of the site (6 to 10 ft. above MSL) will require special protection against seismic sea waves.

   The present population within 15 miles is approximately 200,000 and CDWR estimates that it will be about 500,000 by 1980. The pattern of growth described by CDWR, however, does not include considerable land very desirable for sub-divisions within five miles of the reactor. It is possible, therefore, that the population growth pattern may be more unfavorable than CDWR has estimated.

3. Sycamore Canyon. Insufficient geological information is available at this time to determine the seismic conditions at this site. Landslides represent a possible problem, and protection will be required against seismic sea waves. The low-population distance will not be less than about six miles, owing to the mountainous terrain.

4. Tehachapi. With respect to population distribution, this site is highly favorable because it is unlikely that population within 15 miles will exceed 5000, even by 1980. This site lies within a very active seismic zone. USC&GS estimates that the maximum horizontal acceleration should be 0.9 g for purposes of design. More information is needed concerning the location of faults in the area. Aqueduct water would have to be used for cooling.

On the basis of the limited information presently available to it, the Committee believes that one or two 600 MW(e) boiling water or pressurized water reactors with appropriate engineered safeguards can be constructed and operated at the Cayucos site without undue hazard to the health and safety of the public, provided that additional geological studies confirm current expectations and that proper attention is given to seismic design. The Oxnard and Tehachapi sites present problems, the solution of which would require considerable effort and additional safeguards. In addition, the Oxnard site may soon be surrounded by a large population. Insufficient geological information is available at this time concerning the Sycamore Canyon site.

Sincerely yours,

/s/ David Okrent

David Okrent
Chairman

References:

1. "Investigation of Alternative Sites for Nuclear Powerplant and Sea Water Conversion Plant", dated March 1965.
2. Letter dated February 16, 1966 from California Department of Water Resources to AEC Director of Regulation transmitting "Investigation of Alternative Site for Nuclear Powerplant (Tehachapi Site)", dated February 1966.
3. California Department of Water Resources Memorandum dated May 10, 1966 from K. G. Wilkes to Mr. V. Valantine, Subject: "Geologic Studies for Preliminary Findings of Nuclear Powerplant Investigations".
4. Letter dated May 24, 1966 from California Department of Water Resources to AEC Division of Reactor Licensing, with enclosures.
5. Statements on the geology of the Cayucos Site, Sycamore Canyon Site, Oxnard Site, and Tehachapi Site by the U.S. Geological Survey, dated July 7, 1966.
6. Report on the Seismicity of the Cayucos, Oxnard, Sycamore Canyon, and Tehachapi, California Areas by U.S. Coast and Geodetic Survey dated July 5, 1966.