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

May 15, 1970

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

Subject: REPORT ON THE MILLSTONE NUCLEAR POWER STATION UNIT 2

Dear Dr. Seaborg:

During its 121st meeting, May 7-9, 1970, the Advisory Committee on Reactor Safeguards completed its review of the application by The Connecticut Light and Power Company, The Hartford Electric Light Company, The Millstone Point Company, and Western Massachusetts Electric Company for authorization to construct the Millstone Nuclear Power Station Unit 2. The project was previously considered during an ACRS Subcommittee meeting on May 1, 1970, and the site was visited by an ACRS Subcommittee on November 20, 1969. During its review, the Committee had the benefit of discussions with representatives of the applicant, Combustion Engineering Corporation, Bechtel Corporation, members of the AEC Regulatory Staff, and their consultants. The Committee also had the benefit of the documents listed below.

The Committee reported to you on the Millstone site on July 19, 1965, in regard to the Millstone Nuclear Power Station Unit 1, a 2011 MWt boiling water reactor. Millstone Unit 2, a 2560 MWt pressurized water reactor, will be constructed adjacent to Unit 1. Facilities shared by the two units include the control room, the stack, the switchyard, and fire protection services. During the construction of Unit 2, a security system will be instituted to control access to Unit 1.

The proposed pressurized water reactor is similar in design to the previously reviewed Hutchinson Island, Calvert Cliffs, and Maine Yankee reactors (ACRS reports dated March 12, 1970, March 13, 1969, and July 19, 1968). The power level of Millstone Unit 2, at 2560 MWt, represents an increase of five percent over the 2440 MWt power level of these reactors.

The containment system consists of a steel-lined, prestressed concrete cylindrical structure and a steel-framed enclosure building. The enclosure building provides the capability for collecting the leakage of gases from the concrete structure and for discharging these gases through filters to the existing 375-foot stack. The several emergency core cooling systems are similar to previously reviewed designs.

Further study is required with regard to potential releases of radioactivity in the unlikely event of gross damage to an irradiated fuel assembly in the spent fuel pool. This matter should be resolved in a manner satisfactory to the AEC Regulatory Staff.

The Committee reiterates its interest in active participation by applicants in overall quality assurance programs in order to assure the construction of safer plants.

The Committee has commented in previous reports on the development of systems to control the buildup of hydrogen in the containment which might follow in the unlikely event of a major accident. The applicant proposes to make use of a technique of purging through the enclosure building filters after a suitable time delay subsequent to the accident. However, the Committee recommends that the primary protection in this regard should utilize a hydrogen control method which keeps the hydrogen concentration within safe limits by means other than purging. The capability for purging should also be provided. The hydrogen control system and provisions for containment atmosphere mixing and sampling should have redundancy and instrumentation suitable for an engineered safety feature. The Committee wishes to be kept informed of the resolution of this matter.

The applicant should accelerate completion of his studies of means of preventing common failure modes from negating scram action and of design features to make tolerable the consequences of failure to scram when required during anticipated transients.

The applicant has stated that turbine-generated missile damage shall not preclude the safe shutdown of the plant. Some questions remain with regard to possible effects of turbine-generated missile damage to Millstone Unit 1. This matter, as well as the adequacy of measures to control turbine overspeed, should be resolved in a manner satisfactory to the Regulatory Staff.

Other problems related to large water reactors have been identified by the Regulatory Staff and the ACRS and cited in previous ACRS reports. The Committee feels that resolution of these items should apply equally to Millstone Unit 2.

The Committee believes that the above items can be resolved during construction and that, if due consideration is given to these items, this second nuclear unit proposed for the Millstone site can be constructed with reasonable assurance that it can be operated without undue risk to the health and safety of the public.

Sincerely yours,

/s/

Joseph M. Hendrie
Chairman

References:

1. Letter from Day, Berry and Howard, dated February 26, 1969; License Application: Volumes 1 and 2 of Preliminary Safety Analysis Report

2. Amendments 1 through 8 to the Preliminary Safety Analysis Report