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

December 12, 1968

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

Subject: REPORT ON OYSTER CREEK NUCLEAR POWER PLANT UNIT NO. 1

Dear Dr. Seaborg:

During its 104th meeting, December 5-7, 1968, the Advisory Committee on Reactor Safeguards completed its review of the application by the Jersey Central Power and Light Company for a license to operate the Oyster Creek Nuclear Power Plant Unit No. 1 at power levels up to 1600 MW(t). During this review, the project has been considered at eight Subcommittee meetings (including one at the site) and four full Committee meetings. In the course of these discussions, the Committee has had the benefit of discussions with representatives of the Jersey Central Power and Light Company, the General Electric Company, the AEC Regulatory Staff and with consultants of these organizations. The Committee also had the benefit of the documents listed. The Committee previously discussed this project in a construction permit report dated August 28, 1964.

The Oyster Creek plant is the first of a new generation of boiling water reactors to be reviewed for an operating license; the increase of power level over that of previously licensed boiling water reactors is more than a factor of two. The time for construction of this plant was extended because of defective welds and stress-corrosion cracking in stainless steel portions of the pressure vessel envelope and internals. Items such as control rod stub tubes, nozzle safe-ends, and the core support ring were involved. These cracks were discovered during and after the system hydrostatic test. The causes of the stress-corrosion have not been definitely determined; however, studies to establish the effects of various contaminants are continuing. The Committee is satisfied that the repair procedures should prevent or minimize recurrence of stress-corrosion cracking.

The Committee wishes to emphasize the importance of periodic inspection of the high pressure coolant system in this and other reactors. The in-service inspection requirements for this reactor are stated in the Technical Specifications, and the Committee finds these adequate for initial operation. It is expected that experience with this first large BWR will give useful information regarding the practicality of inspection methods. The Committee endorses the applicant's proposal to review his in-service inspection program with the Regulatory Staff after four years of reactor operation. In view of the difficulties inherent in direct inspection of the bulk of the welds in the Oyster Creek pressure vessel after the reactor is in service, it is recommended that alternative means for assuring continued pressure vessel integrity be studied, and implemented to the degree practical.

It is recommended that supplemental and potentially more sensitive methods of primary system leak detection be studied, evaluated, and implemented if they provide significant improvements in measurement of leak rate, in the time needed to measure leak rate, or in distinguishing the nature of the leak. The study and evaluation should be completed within a year.

The emergency core cooling system will be supplemented in about a year by the addition of a third diesel generator. This extra source of power will allow the use of one feedwater pump (as well as one core spray system) in the case of the loss of off-site power. The Committee has reviewed the design criteria for this emergency Feedwater Coolant Injection System and recommends that the applicant submit the design for review by the Regulatory Staff prior to installation. In this regard, the Committee urges caution to avoid the overloading of cable trays.

The applicant has recently reviewed design and construction criteria in regard to the separation of redundant protection components and circuits. An audit of the Oyster Creek plant revealed some deficiencies in this respect, and the applicant is proceeding with a remedial program.

Studies are continuing on the possible effects of radiolysis of water in the unlikely event of a loss-of-coolant accident. These studies should be evaluated by the Regulatory Staff and appropriate measures taken as deemed necessary.

The applicant stated that instrumentation which senses radioactivity from the steam system can be used to provide early signs of gross failure of fuel elements. The Committee believes that, as operating experience is gained with the facility, the applicant should improve the utilization of this type of instrumentation for this purpose, particularly to provide the reactor operators with direct, early indication.

The Advisory Committee on Reactor Safeguards believes that, if due regard is given to the items mentioned above, the Oyster Creek Unit No. 1 can be operated at power levels up to 1600 MW(t) without undue hazard to the health and safety of the public.

Sincerely yours,

/s/
Carroll W. Zabel
Chairman

References:

1. Jersey Central Power and Light Company Application for Reactor Construction Permit and Operating License for Oyster Creek Unit No. 1, Amendments No. 3 through 5 and 7 through 48.

2. Jersey Central Power and Light Company telegram, dated October 11, 1967, regarding Request for Permit for Fuel Loading and Testing of Oyster Creek Reactor Prior to Completion of Review of Application for Provisional Operating License.

3. Jersey Central Power and Light Company letter, dated February 9, 1968, transmitting General Electric Summary Report, dated February 2, 1968, regarding Reactor Vessel Problems.

4. Jersey Central Power and Light Company letter, dated April 9, 1968, regarding Oyster Creek Pressure Vessel Repair Program.

5. Jersey Central Power and Light Company telegram, dated July 3, 1968, regarding Oyster Creek Reactor Vessel Repair.