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

January 17, 1973

Honorable James R. Schlesinger
Chairman
U. S. Atomic Energy Commission
Washington, D. C. 20545

Subject: REPORT ON BOILING WATER REACTOR MARK III CONTAINMENT CONCEPT

Dear Dr. Schlesinger:

At its 153rd meeting, on January 11-13, 1973, the Advisory Committee on Reactor Safeguards completed its review of the General Electric Boiling Water Reactor Mark III Containment Concept. This design concept was discussed at a Subcommittee meeting held in Washington, D. C., on December 21, 1972. During its review, the Committee had the benefit of discussions with representatives of the General Electric Company and the AEC Regulatory Staff, and of the documents listed below.

The Mark III Containment Concept retains the pressure suppression pool, which is characteristic of boiling water reactor containments, and provides a larger volume than that of the torus-light bulb (Mark I) or the over-under (Mark II) designs. A cylindrical concrete drywell structure is provided within a cylindrical containment. The containment is a steel shell surrounded by a concrete shield building which may also serve as a second barrier. Alternatively, the containment may be of reinforced or prestressed concrete with a steel liner.

The General Electric Company has undertaken an experimental program, including a series of large scale confirmatory tests, to verify the performance of the new features of the pressure suppression design. An analytical program to determine the strength characteristics of the concrete drywell is also being undertaken.

The bases of the Committee's review were that Safety Guide 3 and Safety Guide 7 would be satisfied; that the drywell and containment would not be inerted; and that a BWR/6 nuclear system would be used - this system was the subject of a Committee report to you dated September 21, 1972.

The containment concept will utilize several systems for which the design criteria have not yet been established. The items include the vacuum relief system, the recirculating system between the drywell and the containment, and the system for coping with hydrogen. The Committee believes that the design criteria for these systems as well as for the overall containment design concept can be resolved in connection with the detailed review of a construction permit application.

The Committee believes that, subject to the above comments and to the successful completion of confirmatory tests and analytical studies, the Boiling Water Reactor Mark III Containment Concept can be engineered to provide an acceptable containment system.

Sincerely yours,

H. G. Mangelsdorf

H. G. Mangelsdorf
Chairman

References:

1. General Electric Topical Report NEDO-10571 "General Electric Boiling Water Reactor Mark III Containment Concept"

2. Safety Evaluation by the Directorate of Licensing, U. S. Atomic Energy Commission in the Matter of General Electric Company Mark III Containment Concept dated October 5, 1972