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

May 20, 1965

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

Subject: REPORT ON CONSOLIDATED EDISON INDIAN POINT REACTOR CORE B

Dear Dr. Seaborg:

At its sixty-third meeting, May 13-15, 1965, the Advisory Committee on Reactor Safeguards considered the application of the Consolidated Edison Company of New York, Inc., to replace its present core containing thorium oxide (Core A) with a low-enrichment uranium oxide core (Core B), and to increase the maximum steady state power level of the reactor plant from 585 to 615 Mw(t). The Committee had the benefit of discussions with representatives of the Consolidated Edison Company, the Westinghouse Electric Corporation, and the AEC Staff. The Committee also had the benefit of the documents referenced.

The proposed Core B consists of three concentric regions each containing 40 fuel assemblies. The initial loading will utilize enrichments of 2.86, 3.26 and 4.08 weight per cent respectively in the central, intermediate and outer regions. The UO_2 is in the form of sintered pellets which are contained in cold-worked type 304 stainless steel cladding. The fuel rods are supported within perforated stainless steel box assemblies which are to be installed into the present core structure as modified to reduce by-pass flow.

Reactivity control for Core B will be accomplished by a combination of control rods and chemical shim. New control rods fabricated from stainless steel tubes filled with silver-indium-cadmium alloy and having Zircaloy-2 followers are to be installed in Core B. In addition, boric acid is to be used in the primary coolant to provide for long term reactivity changes. The applicant stated that the boron concentration will be sufficient to maintain a shut-down margin of at least 0.5% delta k/k with the highest worth control rod fully withdrawn.

The applicant stated that the maximum allowable reactivity anomaly in the reactor would be kept below 1.25% delta k/k. The applicant also stated that the void coefficient, over-all and locally, of Core B utilizing borated water would be negative at all times. If boron concentrations leading to local positive void coefficients are contemplated, the Committee recommends that studies of the influence of such coefficients on reactor safety be made prior to their use.

To provide for operation of the reactor at 615 Mw(t) and for utilization of boric acid in the coolant, several changes have to be made in the present plant. Chief among these are the increase of primary and secondary flow, alteration of certain control and safety set points, addition of scram trips to isolate the steam boilers, and installation of independent supply lines from each boron storage tank to the two high pressure boron injection pumps.

In evaluating the safety of the plant when operating with Core B, the applicant used a 1% per day containment leak rate instead of the original design rate of 0.1% per day. In order to show that the higher leak rate would be acceptable, the applicant took credit for the annular space between the containment and the biological shield, which space is exhausted to the 400-foot superheater stack; for purposes of analysis it was assumed that the stack was cold.

The question of contaminating potable water supplies in the unlikely event of a severe accident accompanied by rainout was discussed. The applicant assured the Committee that within ten miles from the reactor there are no water supply reservoirs for which there are no alternates.

The Committee does not wish to consider any increase in containment leakage limits until the results of the continuous leak rate monitor evaluation and the proposed integral leak test, to be conducted at core changeover, are available.

With the above reservations, the ACRS believes that the Consolidated Edison - Indian Point Reactor with Core B can be operated at 615 Mw(t) without creating undue hazard to the health and safety of the public.

Sincerely yours,

/s/

W. D. Manly
Chairman

References Attached.

References (Consolidated Edison)

1. Final Hazards Summary Report for the Consolidated Edison Indian Point Reactor Core B.

2. Supplement to Final Hazards Summary Report for Consolidated Edison Indian Point Reactor Core B (Appendix B).