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

September 11, 1961

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

Subject: REPORT ON NATIONAL BUREAU OF STANDARDS REACTOR

Dear Dr. Seaborg:

At its thirty-sixth meeting, on September 7-9, 1961, the Advisory Committee on Reactor Safeguards considered the National Bureau of Standards Reactor (NBSR) on the basis of the documents referenced below, and discussions with representatives of the National Bureau of Standards and the staff of the AEC.

The NBSR will be a heavy-water moderated, tank-type research reactor with highly enriched MTR-type fuel elements. The design largely follows established precedents. The reactor will be housed in a concrete confinement shell kept at a slightly negative pressure by a filtered-exhaust system. An internal clean-up system will be provided which continuously removes radioactivity from the air inside the confinement shell in case of an emergency. The site will be on the NBS campus one mile from Gaithersburg, Maryland. Approval is being sought for operation up to 10 MW(th).

In the event of a release within the confinement building, the radioactivity exhausted to the atmosphere depends on several factors, the most important of which appear to be:

(a) the volume of air being exhausted to maintain an adequate negative pressure. This volume depends on the building's integrity;

(b) the integrity and efficiency of the filter and clean-up system;

(c) the reliability of the dynamic protection system.

The radioactivity exhausted to the atmosphere must be small enough so that a person located at or beyond the site boundary would not receive excessive radiation exposure, even in the case of a fuel meltdown under adverse meteorological conditions.

The ACRS recommends that the applicant demonstrate experimentally the integrity of the confinement building, the efficiency and adequacy of the exhaust and filter system, and the reliability of the dynamic protection system.

Subject to the above considerations, the ACRS believes that the proposed reactor can be constructed at the proposed location with reasonable assurance that it can be operated at a power up to 10 MW(th) without undue risk to the health and safety of the public.

Sincerely yours,

/s/ T. J. Thompson

T. J. Thompson
Chairman

References:

1. NBSR-7 - Preliminary Hazards Summary Report, dated January 1, 1961.
2. NBSR-7A- Preliminary Hazards Summary Report, Supplement A, dated April 1, 1961.
3. NBSR-7B- Preliminary Hazards Summary Report, Supplement B, dated August 1, 1961.