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 BORAX V

Dear Dr. Seaborg:

At its thirty-sixth meeting on September 7-9, 1961, the Advisory Committee on Reactor Safeguards considered the BORAX V Reactor Facility, construction of which is being completed at the National Reactor Testing Station. The construction at this site of a reactor of this general design was reported by the Committee in its letter of September 26, 1960 to present no undue hazard to the health and safety of the public or the NRTS personnel. Oral information was presented by the AEC staff and by the Argonne National Laboratory staff. Reports available are referenced below.

The proposed operation will involve release to the atmosphere for short periods of about half of the 40 thermal megawatts of steam generated by the boiling water nuclear superheat reactor. The ANL has stated that suitable coordination with the NRTS area monitoring group will guard against exposure of NRTS personnel during operations which are considered normal.

However, there are a number of possible accidents which may require evacuation of the Central Facilities and other NRTS installations. At least two of these accidents appear to have a higher probability of occurrence than the release of 50% of the fission products discussed in the documents referenced.

The two accidents are:

(a) Severe damage to the lower plenum, resulting in a combination of a cold-water and superheater-flooding accident possibly followed by loss of coolant;

(b) A relatively minor incident damaging the somewhat fragile, experimental superheater fuel elements during the time when a great fraction of the steam is vented directly to the atmosphere, releasing a substantial part of the superheater's fission-fragment inventory to the surroundings.

The ACRS recommends that ANL give study to these accidents and others of a similar nature.

In view of the fact that this facility is testing a new concept, it would appear prudent to provide duplicate period circuitry to adequately protect the reactor against any unplanned rapid rise in power, and to provide that the reactor be shut down in the event one of the two power level scrams is inactivated for any reason.

With the addition of the instrumentation suggested above and evacuation plans incorporating the results of accident studies including those suggested above, the Committee is of the opinion that this facility may be operated without undue hazard to the health and safety of the public and site personnel.

Sincerely yours,

/s/ T. J. Thompson

T. J. Thompson
Chairman

References:

1. ANL-6120 - "Preliminary Design and Hazards Report Boiling Reactor Experiment V (BORAX V)," dated February 1960.
2. ANL-6302 - "Design and Hazards Summary Report Boiling Reactor Experiment V (BORAX V)," dated May 1961.