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

January 13, 1966

Honorable Glenn T. Seaborg
Chairman
U. S. Atomic Energy Commission
Washington, D. C. 20545

Subject: REPORT ON THE GROUND TEST REACTOR (GTR)

Dear Dr. Seaborg:

At its sixty-ninth meeting, January 6-8, 1966, the Advisory Committee on Reactor Safeguards reviewed the proposed increase from 3 to 10 MW(t) in the power level of the Ground Test Reactor (GTR). During the review, the Committee had the benefit of the documents listed below and of discussions with representatives of General Dynamics-Fort Worth, and the AEC Regulatory Staff. A visit to the reactor facility was made by a member of the Committee on November 17, 1965. An ACRS Subcommittee meeting was held in Washington, D. C. on December 10, 1965.

The GTR is a light-water moderated and cooled pool-type reactor utilizing MTR-type fuel elements. It is operated by General Dynamics-Fort Worth for the U. S. Air Force as part of the Nuclear Aerospace Research Facility (NARF). The GTR has been used to carry out research programs for the Air Force and Army and, most recently, radiation-effects experiments at cryogenic temperatures in support of NASA's nuclear rocket engine (NERVA) program. Initial operation of the GTR was begun in 1952 with a maximum power level of 10 KW. The maximum power level was progressively increased to its present level of 3 MW(t) during the period from 1952 to 1957.

Modifications to be made to the GTR to accommodate the higher power level include: modifications to accommodate new control rods of increased worth, adjustment of reflector geometry to equalize flux in the three available irradiation positions, increase in cooling system capability, installation of a liner to protect against possible pool leakage in the event of an accident, installation of a test-cell ventilation-and-filter system, and incorporation of an additional start-up channel. In addition, means were described for providing redundancy in the scram circuits of the safety system so that a single line fault could not cause loss of scram capability. The General Dynamics representatives stated that procedures and equipment would be provided for periodic testing to determine that redundant circuits were operating as designed.

General Dynamics presented analyses showing that the proposed operation of GTR would not introduce unacceptable radiation doses to the public under normal or accident conditions including any effects resulting from a possible hydrogen detonation.

The Committee concludes that the GTR can be operated at power levels up to 10 MW(t) as proposed without undue hazard to the health and safety of the public.

Sincerely yours,

/s/

David Okrent
Chairman

References.

1. 10 Mw GTR Hazards Summary, FZK-241, dated April 30, 1965.
2. Supplement to 10-Mw GTR Hazards Summary, dated September 10, 1965.
3. Supplement No. 2 to 10-Mw GTR Hazards Summary, dated September 24, 1965.
4. Supplement No. 3 to 10-Mw GTR Hazards Summary, dated November 29, 1965.
5. Additional Information Concerning 10-Mw GTR Hazards Summary, dated December 22, 1965.
6. General Dynamics Letter to Division of Reactor Licensing, dated September 11, 1965.
7. General Dynamics Letter to Division of Reactor Licensing, dated September 28, 1965.
8. General Dymamics Letter to Division of Reactor Licensing, dated November 30, 1965.
9. Special Safety Study Report on the Operation of the GTR at 10 Megawatts, USAF NRSSG 65-1, dated July 1965.