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

July 18, 1963

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

SUBJECT: REPORT ON LOCKHEED RADIATION EFFECTS REACTOR (RER)

Dear Dr. Seaborg:

At its forty-eighth meeting, at Los Alamos, New Mexico on July 11-13, 1963, the Advisory Committee on Reactor Safeguards considered the request of the Lockheed-Georgia Company to increase the power of the Radiation Effects Reactor from one megawatt to three megawatts thermal. The Committee previously considered the one megawatt operation of this reactor and reported to the Commission following its thirty-second meeting. In the present review, the Committee had the benefit of the documents listed below and discussions with representatives of the Lockheed-Georgia Company and the AEC Staff.

This reactor can be operated either immersed in a deep pool of water or as an unshielded reactor above the pool surface. Operation above the pool surface permits the neutron and gamma irradiation of large samples which can be moved to the unshielded reactor on a movable platform. The licensee does not intend to irradiate samples within the core.

Representatives of the Lockheed-Georgia Company have stated that, to date, there has been no evidence of attempts by the general public to enter the exclusion area. Operations to date have caused no overexposure of operating personnel and no excessive radiation levels have been observed at the inner exclusion fence. The operating group has stated their intention to carry out refueling operations with the reactor immersed in the pool at a depth of approximately twenty feet to minimize the consequences of any postulated refueling accident. The licensee does not now propose to irradiate explosive materials. The Committee has been assured that the licensee will review with the AEC Regulatory Staff any proposal to irradiate potentially explosive materials.

The proposed increase in power to three megawatts places additional emphasis on the reliability of the cooling water supply to the core. Experiments elsewhere have shown that it is highly unlikely that the type of fuel used in this reactor will melt even if all water coolant is lost immediately after steady operation at one megawatt. Some melting may occur if coolant is suddenly lost

immediately after three megawatt operation. The Committee suggests that due attention be given to the reliability and adequacy of coolant supply to the core under all conditions of operation. In addition, the Committee suggests that the available excess reactivity be limited to that required for three megawatt operation and that continuing attention be given to procedural safeguards and environmental surveillance.

With proper consideration given to the comments above, the Committee believes that the licensee can operate the facility at powers up to three megawatts thermal as proposed without undue risk to the health and safety of the general public.

Sincerely yours,

/s/ D. B. Hall

D. B. Hall
Chairman

References:
1. LNP/10331, Amendment No. 6 to License R-86, dated February 8, 1963.

2. LGD/162926, Supplement to Amendment Request to License R-86, dated June 17, 1963.