ATLANTA, GEORGIA 30332
(404) 873-4211

Nuclear and Biological
Sciences Division

June 20, 1972

U. S. Atomic Energy Commission
Division of Reactor Licensing
Washington, D. C. 20545

Reference: Docket 50-160

Subject: Primary Coolant Leakage

Gentlemen:

This letter is to inform you of an incident at the Georgia Tech Research Reactor involving a leak in the D_2O primary coolant system and its subsequent interim repair.

On February 23, 1972, a small pinhole leak was found at a weld on the primary coolant system. This weld is the seal between the reactor coolant outlet line and a 3/4-inch level sensing line that penetrates the reactor outlet line. The aluminum weld was peened and the leak was stopped. The estimated D_2O loss was 75 lbs.

On February 21, 1972, the reactor was not operated. During both the 7 to 3 and the 3-11 shift, the crew were engaged in preventive maintenance work in the reactor containment building. Personnel on the 7-3 shift entered the pipe tunnel and found, on the floor, part of a split packing follower flange from the gasketed seal between the primary coolant outlet line and the graphite space surrounding the vessel. The crew replaced the split flange. Immediately below the flange, a 3/4-inch aluminum pipe penetrates the primary coolant outlet line. The 3/4-inch line runs up inside the outlet line to a point inside and at the bottom of the reactor vessel; it provides the liquid or "high" side signal to a differential pressure transducer for sensing reactor vessel level.

We believe that, during the installation of the split flange, stress was applied to the adjacent 3/4-inch line which subsequently resulted in the opening of a small pinhole leak in the weld.

The pipe tunnel was not entered again until two days later prior to a normal reactor startup. At this time the leak was detected. Several repair alternatives were considered as well as the operating conditions of the system at the location of the leak. System pressure is approximately 7-9 psi and operating temperature is 85-95°F. It was decided that an attempt would be made to carefully peen the soft aluminum and close up the pinhole. This was subsequently done. This repair is not considered to be the final solution to the problem but only an interim measure. After stopping the leak, a special "collection cone" and leak sensing

device was attached to the primary coolant line to detect any leakage. This leak detection system has been tested and shown to work satisfactorily. Initially on a daily basis, the pipe tunnel and weld were visually checked before startup and following shutdown of the reactor. This frequency has now been reduced to a weekly check.

When the conversion of the plant for 5MW operation is done, there is work scheduled to be performed in the pipe tunnel involving the primary coolant lines. Our current plans are to incorporate final repair to the D_2O leak until that time when the fuel is unloaded from the core and the vessel and line are drained. We currently anticipate an ammendment to our license permitting conversion of the reactor to be approved in September, 1972.

Should you require any additional information on the above, please advise me.

Sincerely yours,

R. S. Kirkland
Reactor Supervisor

RSK:bc

cc: Nuclear Safeguards Committee
Control Room File