September 25, 2002

Dr. John A. Bernard, Director
Nuclear Reactor Laboratory
Massachusetts Institute of Technology
138 Albany Street
Cambridge, MA 02139-4296

SUBJECT: REQUEST FOR ADDITIONAL INFORMATION (TAC NO. MB6255)

Dear Dr. Bernard:

We are continuing our review of your amendment request for Amended Facility Operating License No. R-37 for the Massachusetts Institute of Technology Research Reactor which you submitted on August 22, 2002. During our review of your request, questions have arisen for which we require additional information and clarification. Please provide responses to the enclosed request for additional information within 30 days of the date of this letter. In accordance with 10 CFR 50.30(b), your response must be executed in a signed original under oath or affirmation. Following receipt of the additional information, we will continue our evaluation of your amendment request.

If you have any questions regarding this review, please contact me at (301) 415-1127.

Sincerely,

/RA/

Alexander Adams, Jr., Senior Project Manager
Research and Test Reactors Section
Operating Reactor Improvements Program
Division of Regulatory Improvement Programs
Office of Nuclear Reactor Regulation

Docket No. 50-20

Enclosure: As stated

cc w/enclosure: Please see next page

Massachusetts Institute of Technology

Docket No. 50-20

cc:

City Manager
City Hall
Cambridge, MA 02139

Department of Environmental Quality Engineering
100 Cambridge Street
Boston, MA 02202

Test, Research, and Training Reactor Newsletter
University of Florida
202 Nuclear Sciences Center
Gainesville, FL 32611

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ADAMS ACCESSION NO: ML022630644 **TEMPLATE #: NRR-088**

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REQUEST FOR ADDITIONAL INFORMATION
MASSACHUSETTS INSTITUTE OF TECHNOLOGY RESEARCH REACTOR
DOCKET NO. 50-20

1. Your application states that the simultaneous occurrence of the DBA and failure of an in-core fissile material experiment are not considered credible. Please provide a justification for this statement.

2. With regard to the temperature scram:

   a. How is the temperature measured (i.e., thermocouple, etc.)? Is there to be any redundancy?

   b. The proposed TSs do not address test, surveillance, and calibration requirements for this proposed safety channel. Please propose a surveillance TS for this safety channel or justify not having a surveillance.

3. The "High Core Purge Monitor" will alarm if the reading exceeds the setpoint of 100 kcpm. The analysis concludes that a reading of 44 kcpm over background (which is presumably 22 kcpm), i.e., a reading of 66 kcpm, would indicate the escape of fission product gases. Why the large margin between the alarm setpoint and indication of the presence of fission product gases?

4. Proposed Specification 7, Radioactive Releases, states that "releases of radioactivity in excess of the 10 CFR Part 20 annual average concentration limits" will not occur. We assume that you mean the values in Table 2, Column 1, Effluent Concentration in Air. However, a burst of radioactivity can easily exceed these values in the short term. Please clarify if your proposed TS limits are the instantaneous values in Part 20 or the concentration that would result if the radioactive inventory released by the experiment were averaged over a year. Your proposed TS states that "experiments shall be designed so that operation" will not result in unacceptable exposures. Does this include credible malfunctions or accidents? The purpose of TS 6.1.7 is to limit accident releases. Please clarify.

5. You state on page 6 of your evaluation that "there will be no additional thyroid dose because none of the fission product gases affect the thyroid." What happened to the iodine that is present as a fission product gas?