July 21, 2009

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

SUBJECT: MASSACHUSETTS INSTITUTE OF TECHNOLOGY - REQUEST FOR ADDITIONAL INFORMATION CONCERNING APPLICATION FOR LICENSE RENEWAL (TAC NO. MA6084)

Dear Dr. Bernard:

The U.S. Nuclear Regulatory Commission (NRC) is continuing our review of your application for renewal of Facility Operating License No. R-37 for the Massachusetts Institute of Technology Research Reactor dated July 8, 1999, as supplemented by letters dated May 8, 2000, January 29, 2004, and February 22, May 29, August 15, August 21, August 26, October 6, October 7, November 7, and December 1, 2008. During our review, questions have arisen for which we require additional information and clarification. Please provide responses to the enclosed request for additional information no later than August 21, 2009. In accordance with Title 10 *Code of Federal Regulations* (10 CFR) Section 50.30(b), your response must be executed in a signed original under oath or affirmation.

If you have any questions regarding this review, please contact me at 301-415-2784 or by electronic mail at William.Kennedy@nrc.gov.

Sincerely,

/RA/

William B. Kennedy, Project Manager
Research and Test Reactors Branch A
Division of Policy and Rulemaking
Office of Nuclear Reactor Regulation

Docket No. 50-020

Enclosure: As stated
cc w/ enclosure: See next page

cc:

City Manager
City Hall
Cambridge, MA 02139

Department of Environmental Protection
One Winter Street
Boston, MA 02108

Director
Radiation Control Program
Department of Public Health
90 Washington Street
Dorchester, MA 02121

Nuclear Preparedness Manager
Massachusetts Emergency Management Agency
40 Worcester Road
Framingham, MA 01702-5399

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

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DATE	6/15/09	6/15/09	6/15/09	7/21/09

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OFFICE OF NUCLEAR REACTOR REGULATION

REQUEST FOR ADDITIONAL INFORMATION

REGARDING ACCIDENT ANALYSIS FOR LICENSE RENEWAL FOR

MASSACHUSETTS INSTITUTE OF TECHNOLOGY RESEARCH REACTOR

LICENSE NO. R-37

DOCKET NO. 50-020

1. Chapter 13 section 13.2.1, Step Reactivity Insertion – Provide a reactivity transient analysis using a verified and validated analysis method that demonstrates that the worst case credible reactivity transient consistent with the limitations specified in the technical specifications (TS) does not result in exceeding the heat flux and temperature limitations of the fuel as described in the safety analysis report (SAR). The inputs and assumptions used in the analysis should be conservative selections of the ranges of each input parameter and should be able to be determined from information provided in the SAR and TS. The results of the analysis should account for the uncertainties in the input parameters and the analysis methodology.

Enclosure