

April 17, 2017

Mr. Alberto Queirolo, Director
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Nuclear Reactor Laboratory
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138 Albany Street, MS NW12-116A
Cambridge, MA 02139

SUBJECT: MASSACHUSETTS INSTITUTE OF TECHNOLOGY - NON-POWER REACTOR
CLOSEOUT OF GENERIC LETTER 2016-01, "MONITORING OF
NEUTRON-ABSORBING MATERIALS IN SPENT FUEL POOLS," FOR THE
MASSACHUSETTS INSTITUTE OF TECHNOLOGY REACTOR,
DOCKET NO. 50-020 (CAC NO. A11010)

On April 7, 2016, the U.S. Nuclear Regulatory Commission (NRC) issued Generic Letter (GL) 2016-01, "Monitoring of Neutron-Absorbing Materials in Spent Fuel Pools" (Agencywide Documents Access and Management System (ADAMS) Accession No. ML16097A169), to address the degradation of neutron-absorbing materials (NAM) in wet storage systems for reactor fuel at power and non-power reactors.

For the non-power reactors, GL 2016-01 requested that licensees provide facility-specific information related to the use of NAM. This information was needed by the NRC staff to verify continued compliance through licensee implementation of effective methods for monitoring of reactor fuel in wet storage so as to detect and mitigate any degradation or deformation of NAM when credited in the facility licensing or design basis for criticality control of fuel in wet storage.

Unique to three NRC-licensed research reactors is the use cadmium (Cd) plates as NAM in the facility's wet fuel storage. On November 2, 2016, the Massachusetts Institute of Technology submitted a response to GL 2016-01 (ADAMS Accession No. ML16312A049). The NRC staff conducted a review of your response to GL 2016-01 and noted that your facility uses Cd metal as NAM.

The NRC staff development of GL 2016-01 did not assess or otherwise consider the use, degradation, or deformation of Cd NAM. After reviewing your response to GL 2016-01, the NRC staff reviewed the use of Cd plates in research reactor applications. The NRC staff determined that the use of Cd NAM is not known to exhibit the same or a similar susceptibility to the degradation or deformation described in GL 2016-01 for NAM utilizing variations of boron-10. The NRC staff's conclusion is supported in part by nearly 60 years of operational experience. The degradation or deformation of Cd plate NAM has not been observed at any of the three research reactor facilities where Cd is used in wet fuel storage applications. Furthermore, based upon the information reviewed, the NRC staff would not anticipate the onset of degradation or deformation given the physical and chemical properties of Cd and the environment in which the Cd NAM is used.

Based upon the information you submitted in response to GL 2016-01 and the results of the NRC staff review, the NRC staff has determined that the submission addresses the information requested in GL 2016-01. No further information or action is requested regarding this matter.

Sincerely,

/RA/

Alexander Adams Jr., Chief
Research and Test Reactors Licensing Branch
Division of Policy and Rulemaking
Office of Nuclear Reactor Regulation

cc: See next page

Massachusetts Institute of Technology

Docket No. 50-020

cc:

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ADAMS Accession No.: ML17075A156; *concurred via email

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