MIT NUCLEAR REACTOR LABORATORY

AN MIT INTERDEPARTMENTAL CENTER

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U.S. Nuclear Regulatory Commission
Washington, D.C. 20555

Attn.: NRC Licensing Project Manager Patrick Boyle / Document Control Desk

Subject: Technical Specifications Surveillance Frequency Definition Update for Improved Compliance under 10 CFR 50.36(c)(3) for the MIT Research Reactor, Facility Operating License No. R-37

The Massachusetts Institute of Technology (MIT) hereby submits a License Amendment Request (LAR) for its Facility Operating License No. R-37. The requested amendment is for a change in Technical Specification (TS) 1.3.11, adding a third term and condition for surveillance requirements for the definition of "Frequency". The reason for this change, as discussed in the following analysis, is to allow deferral of certain TS-required surveillance, to be performed beyond its mandated interval because the reactor was not operating in a status such that the surveillance could be performed.

As a result of the ongoing COVID-19 public health emergency (PHE), the Massachusetts Institute of Technology Research Reactor (MITR) was shut down on 13 March 2020. Since 18 March, the reactor building and the rest of the MIT Nuclear Reactor Laboratory (NRL) were in lockdown mode, with limited access for essential personnel, only for emergencies and for required, scheduled reactor activities that could be performed with the reactor in a shutdown mode. However, this lockdown precluded performance of two TS-required annual surveillance tests, both of which can be performed only with the reactor operating at power.

Beginning on 15 June, MIT administered a limited reopening of its campus, with research labs at only 25% staffing. Some reactor staff are allowed to return to work, but strictly on a voluntary basis, and lab opening hours will also be restricted, rather than 24/7. The two TS surveillance intervals will expire soon, one on 27 June 2020, and the other on 1 July 2020. With the reactor operation schedule and steps for further MIT campus reopening remaining uncertain, it is anticipated that the two surveillance requirements may not be completed in time. The MIT NRL hereby proposes an additional statement in the TS Section 1.3.11 definition of "Frequency" to allow deferral of certain surveillances that can only be performed with the reactor operating, in the case of the reactor continuing an extended state of shutdown due to circumstances beyond

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licensee control, such as pandemic, social disturbance, extended maintenance outage, etc., per ANSI/ANS-15.1-2007 Section 4 "Surveillance Requirements", and other NRC guidance documents.

The two impacted TS annual surveillances are:

(1) Procedure Manual (PM) 6.1.3.1B Channel Plateau Checks, which can be performed only with the reactor operating at full power. It was last performed on 28 March 2019, and with application of 25% surveillance allowance by TS 1.3.11(a) "Frequency" which states "a maximum allowable extension not to exceed 25% of the specified surveillance interval", it will expire by 27 June 2020. The channels are required by TS 4.2 "Reactor Control and Safety Systems" item 6 to be "... calibrated and trip points verified when initially installed, any time a significant change in indication is noted, and at least annually."

(2) PM 6.5.16.1 and PM 6.5.16.2 Regulating Rod and Shim Blade Calibrations, which can be performed only with the reactor operating at low power. They were last performed on 1 April 2019, and with application of 25% surveillance allowance by TS 1.3.11(a) "Frequency" which states "a maximum allowable extension not to exceed 25% of the specified surveillance interval", they both will expire by 1 July 2020. These procedures are required by TS 4.2 "Reactor Control and Safety Systems" in which item 1 "Reactivity Worth of Control Devices" describes that the "... integral and differential worths of the six shim blades and of the regulating rod shall be measured at least annually."

The NRL considers timely completion of these test and calibration procedures in accordance with the TS surveillance requirements important to safe reactor operation at power. In light of the ongoing COVID-19 pandemic and the resulting prolonged facility shutdown and lockdown, precluding such completion unless the reactor is returned to power operation prior to their expiration dates, it is noted that several regulatory guidance documents provide appropriate relief by allowing surveillance deferment in the case that the reactor operating condition cannot be met for the performance of these procedures. Two such relevant regulatory guidance documents apply as follows:

ANSI/ANS-15.1-2007 Section 4, "Surveillance requirements"

In the 2nd paragraph, it recommends that, "For each surveillance requirement (SR), it should be specified if the surveillance activity can or cannot be deferred during reactor shutdown. It should also be specified for those that can be deferred, which must be performed prior to reactor operations. Further, the technical specifications SRs must specify which activities can only be performed with scheduled surveillances that will become due during planned periods of

operation and should be performed before the operational period. Periodic surveillance activities should be done before maintenance is performed." The existing MITR TS does not have a statement providing applicability and conditions for surveillance deferment.

NUREG-1537 Part 1, Appendix 14.1

On page 29 of Appendix 14.1, it states that, "If a surveillance is not required for safety while the reactor is shutdown, it may be deferred, but must be performed before reactor startup. If the reactor is not to be operated in a particular mode ... for an interval that exceeds the surveillance intervals for that particular mode, surveillances not required for safety ... while the reactor is operated in other modes may be deferred, but must be performed before the reactor is considered operational in the mode in which surveillances were deferred. Scheduled surveillances that cannot be performed while the reactor is operating may be deferred until the next planned reactor shutdown. Surveillances that may be deferred and the reasons for deferment should be clearly stated in the technical specifications, justified in the SAR, and noted in the basis of the specification." The existing MITR TS does not have a statement providing applicability and conditions for surveillance deferment.

The NRL therefore proposes to modify MITR TS Section 1.3.11, "Frequency" by inserting a new definition clause regarding the condition for surveillance deferment:

c) However, scheduled surveillances that cannot be performed while the reactor is shut down may be deferred until the next planned period of reactor operation. Such surveillances shall be performed as soon as practicable when reactor operation resumes.

The enclosed TS page shows how the new statement is arranged on page 1-4 of the MITR TS under Section 1.3.11 "Frequency". The proposed TS surveillance statements comply with ANSI/ANS-15.1-2007 Section 4 and NUREG-1537 Part 1, Appendix 14.1, and the regulatory requirements in 10 CFR 50.36(c)(3) "Technical specifications" in which it states, "*Surveillance requirements*. Surveillance requirements are requirements relating to test, calibration, or inspection to assure that the necessary quality of systems and components is maintained, that facility operation will be within safety limits, and that the limiting conditions for operation will be met."

MIT evaluates reactor safety to be improved by this change, because the safety significance of the equipment being affected by the relevant surveillance requirements (neutron flux channel calibrations and absorber reactivity worth measurements) is fully applicable only when the reactor is operating, and because the change removes an unnecessary source of time

pressure on personnel to operate the reactor in circumstances where other factors may argue against it. This amendment request has been approved by the MIT Reactor Safeguards Committee.

MIT understands that if this proposed new statement in the MITR TS Section 1.3.11 is approved by NRC, the impacted TS surveillance procedures must be performed as soon as practicable once the reactor is returned to power operation.

Sincerely,

Edward S. Lau, NE
Assistant Director of Reactor Operations
MIT Research Reactor

I declare under penalty of perjury that the foregoing is true and correct.

Executed on 6/18/2020
Date

Signature

Enclosure: MITR Technical Specifications page containing 1.3.11 "Frequency" definition

cc: USNRC – Senior Project Manager
Research and Test Reactors Licensing Branch
Division of Licensing Projects
Office of Nuclear Reactor Regulation

USNRC – Senior Reactor Inspector
Research and Test Reactors Oversight Branch
Division of Licensing Projects
Office of Nuclear Reactor Regulation

1.3.11 Frequency

Each required surveillance test or other function shall be performed within the specified time interval with:

a) A maximum allowable extension not to exceed 25% of the specified surveillance interval, unless otherwise stated in these Technical Specifications.

b) A total maximum combined interval time for any three consecutive surveillance intervals not to exceed 3.25 times the specified surveillance interval.

c) However, scheduled surveillances that cannot be performed while the reactor is shut down may be deferred until the next planned period of reactor operation. Such surveillances shall be performed as soon as practicable when reactor operation resumes.

Surveillance tests required for experiments (Section 6) may be waived when an instrument, component, or system is not required to be operable, but any such instrument, component, or system shall be tested prior to being used as a required operable instrument, component, or system.

1.3.12 Immediate

Immediate means that the required action will be initiated without delay in an orderly manner by using written procedures when applicable.

1.3.13 Inadmissible Sample Materials

Those materials defined by the MIT Reactor Safeguards Committee (MITRSC) as either not allowable within the MITR-II or restricted from the reactor containment building. Examples include unapproved amounts of combustible, corrosive, or explosive materials.

1.3.14 Independent Experiments Experiments that are not connected by a mechanical, chemical, or electrical link.

1.3.15 Irradiation

Use of reactor experimental facilities where the primary purpose is the production of activated material such as samples for neutron activation analysis, or materials that exhibit