MIT NUCLEAR REACTOR LABORATORY

AN MIT INTERDEPARTMENTAL CENTER

Edward S. Lau
Assistant Director
Reactor Operations

Mail Stop: NW12-122
138 Albany Street
Cambridge, MA 02139

Phone: 617 253-4211
Fax: 617 324-0042
Email: eslau@mit.edu

27 February 2019

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

Attn.: Document Control Desk

Subject: Further Follow-Up Response Regarding TS 3.2.3 to Request for Additional Information for the License Amendment Request to Upgrade the Nuclear Safety System at the MIT Reactor, License R-37, Docket No. 50-20 (CAC No. MF5003)

The Massachusetts Institute of Technology (MIT) hereby submits a follow-up response to the NRC Request for Additional Information (RAI) dated 12 October 2017 on the License Amendment Request (LAR) to upgrade the Nuclear Safety System at the MIT Reactor (MITR). MIT docketed an initial response to the RAI on 14 December 2017 and a modification on 3 May 2018 specific to the RAI Question #6a response regarding the proposed Technical Specification (TS) 3.2.3 Reactor Protection System. MIT is now providing a further modification to TS 3.2.3.

MIT's 14 December 2017 initial response to Question #6a referenced the response letter's Enclosure S for TS 3.2.3. The modification here to Enclosure S is based on recent discussion with NRC of the proposed TS 3.2.3.

Accordingly, MIT is modifying page 3-20 of TS 3.2.3 as described in the following, which can also be seen in the enclosed document.

a. Item 13 of Table 3.2.3-1, requiring a scram for "nuclear safety channel in test or fault", is restored as a separate item. With the restored item, this section of the Table is similar to the 12 October 2017 version of the Technical Specification. However, the column for minimum number required now has "3" instead of "2", in order to match the other nuclear safety channel requirements (period, neutron flux level, and low count rate), as found in Items 1, 2, and 3 of the Table.

b. The purpose of restoring Item 13 is to match the surveillance requirements in Items 16 and 17 of Table 4.2-1, in accordance with ANSI/ANS 15.1 Section 4 guidance that a Section 3 Limiting Condition for Operation (LCO) will have "a companion Section 4 surveillance requirement". The Item 13 LCO was therefore restored to Table 3.2.3-1.

c. The other Items on page 2 of Table 3.2.3-1 were re-numbered to accommodate the re-insertion of Item 13. There were no other changes to these Items.

A020

d. Footnotes (1) and (5) from page 1 of Table 3.2.3-1 are now duplicated on page 2 of the Table as well, as they are referenced in the restored Line 13. These footnotes continue to be applicable to Item 13:

– Use of a brief but non-zero time limit prevents an instantaneous TS violation, should a malfunction decrease the number of operable nuclear safety channels below three.

– When a trip is present at the Scram Logic Cards, it is visually confirmed by the indicator lights on the LED Scram Display (full name "Safety System Condition LED Scram Display"). The footnote wording was previously clarified so as to avoid reading like a limitation on what types of scrams are included.

– Inoperability of a second channel is explicitly covered, to prevent "rolling 15-minute intervals" from potentially allowing more channels to be inoperable.

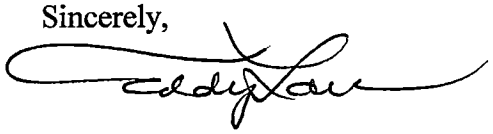
e. None of these changes is expected to have any impact on safety.

The MIT Reactor Safeguards Committee has approved these modifications to the proposed TS 3.2.3.

This RAI response follow-up and material submitted herewith do not contain any proprietary information. The response contains the following Enclosure:

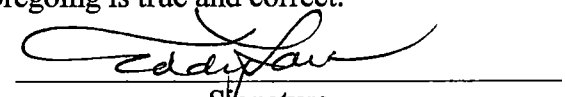
Enclosure: Page 3-20 of Technical Specification 3.2.3 Reactor Protection System, final version and version showing tracked changes from the 3 May 2018 submittal.

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 02/27/2019 
Date Signature

Enclosure: As stated.

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

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

Table 3.2.3-1 (Continued)

Required Safety Channels

	Any Number of Pumps (Two, One, or Zero)			
	Channel / Parameter	Action	Setpoint	Minimum No. Required
13.	Nuclear safety channel in test or fault	Scram	Channel in test or fault condition	3[(1)(5)]
14.	Building overpressure	Scram	< 3" water above atmospheric	1
15.	Main personnel lock gaskets deflated	Scram	Both gaskets deflated	1
16.	Basement personnel lock gaskets deflated	Scram	Both gaskets deflated	1
17.	Hold-down grid unlatched	Scram	Grid unlatched	1
18.	Experiment scrams	(As Required by Experiment Approval)		

1) Nuclear safety scram logic system ensures that reactor scrams when two trips are present simultaneously from any two of the four nuclear safety channels.
5) Within 15 minutes of declaring any nuclear safety system channel inoperable, the channel must be placed into a tripped state, which will be indicated on the Safety System Condition LED Scram Display. If any nuclear safety channel is in a tripped state, and a second nuclear safety channel is declared inoperable, then within 15 minutes at least one of the two must be returned to an operable state or the reactor must be shut down.

Table 3.2.3-1 (Continued)

Required Safety Channels

		Any Number of Pumps (Two, One, or Zero)		
	Channel / Parameter	Action	Setpoint	Minimum No. Required
13.	Nuclear safety channel in test or fault	Scram	Channel in test or fault condition	3(1)(5)
14~~3~~.	Building overpressure	Scram	< 3" water above atmospheric	1
15~~4~~.	Main personnel lock gaskets deflated	Scram	Both gaskets deflated	1
16~~5~~.	Basement personnel lock gaskets deflated	Scram	Both gaskets deflated	1
17~~6~~.	Hold-down grid unlatched	Scram	Grid unlatched	1
18~~7~~.	Experiment scrams	(As Required by Experiment Approval)		

1) Nuclear safety scram logic system ensures that reactor scrams when two trips are present simultaneously from any two of the four nuclear safety channels.
5) Within 15 minutes of declaring any nuclear safety system channel inoperable, the channel must be placed into a tripped state, which will be indicated on the Safety System Condition LED Scram Display. If any nuclear safety channel is in a tripped state, and a second nuclear safety channel is declared inoperable, then within 15 minutes at least one of the two must be returned to an operable state or the reactor must be shut down.