

March 16, 2021

U.S. Nuclear Regulatory Commission
Attention: Document Control Desk
Washington, DC 20555-0001

REFERENCE: Docket No. 50-186
University of Missouri-Columbia Research Reactor
Renewed Facility Operating License No. R-103

SUBJECT: Written communication as specified by 10 CFR § 50.4(b)(1) requesting U.S. Nuclear Regulatory Commission approval to revise the Technical Specifications appended to Renewed Facility Operating License No. R-103 pursuant to 10 CFR § 50.90

Enclosed is an application to amend Renewed Facility Operating License No. R-103 by revising University of Missouri Research Reactor (MURR®) Technical Specifications (TS) 6.2, "Review and Audit," and 6.4, "Procedures." These proposed, requested changes should be considered a permanent change to the MURR TS. Additionally, the proposed, requested changes have been reviewed by the Reactor Safety Subcommittee (RSS), a subcommittee of the Reactor Advisory Committee (RAC), in accordance with MURR TS 6.2.a(4).


Enclosure 1 provides the basis for revising TS 6.2 and 6.4, while Enclosure 2 contains the proposed, revised TS pages with track changes. Enclosure 3 contains the proposed, revised TS pages with changes accepted and revision bars.

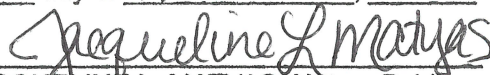
MURR requests that the proposed license amendment be reviewed within 180 days from the date of this letter. If there are any questions regarding this license amendment request, please contact me at (573) 882-5118 or MeffertB@missouri.edu. I declare under penalty of perjury that the foregoing is true and correct.

Sincerely,


Bruce A. Meffert
Reactor Manager

ENDORSEMENT:
Reviewed and Approved


J. David Robertson
Reactor Facility Director

State of Missouri
County of Boone
Subscribed and sworn to before me this
16 day of March, 2021

JACQUELINE L. MATYAS, Notary Public
My Commission Expires: March 26, 2023



JACQUELINE L. MATYAS
My Commission Expires
March 26, 2023
Howard County
Commission #15634308

cc: Reactor Advisory Committee
Reactor Safety Subcommittee
Isotope Use Subcommittee
Dr. Thomas Spencer, Interim Vice Chancellor for Research and Economic Development
Mr. Geoffrey Wertz, U.S. Nuclear Regulatory Commission
Mr. Craig Bassett, U.S. Nuclear Regulatory Commission

Enclosures:

1. Basis for the Requested Changes to Technical Specifications 6.2 and 6.4
2. Proposed, Revised Technical Specification Pages A-69 and A-70 (with track changes)
3. Proposed, Revised Technical Specification Pages A-69 and A-70 (with accepted changes, revision bars)

Enclosure 1 – Basis for the Requested Changes to Technical Specifications 6.2 and 6.4

1.0 Introduction

The University of Missouri Research Reactor (MURR®) is requesting a change to Technical Specifications (TS) 6.2, “Review and Audit,” and 6.4, “Procedures.” These changes will 1) add implementing procedures to the required biennial audit of the MURR Emergency Plan, as specified by the current TS 6.2.e(1)iv, thus providing consistency with the periodicity of the Emergency Plan; and 2) remove the required periodicity of Level 3 staff procedure reviews by the Reactor Manager and the Reactor Health Physics Manager, as specified by Specification 6.4.c, thus greatly reducing the administrative burden of reviewing well-developed, time-tested, and mature MURR TS-required procedures.

The following license amendment request (LAR) provides justification for adding implementing procedures to the required biennial audit of the MURR Emergency Plan, since the annual review was removed from the proposed change to Specification 6.4.c, and removing the Level 3 staff requirement to periodically review procedures for normal operations of the reactor, radiological control procedures, and procedures for the preparation for shipping and the shipping of byproduct material. A list of all MURR Emergency Plan implementing procedures is contained in Appendix B of the MURR Emergency Plan.

2.0 Background

Original Facility Operating License No. R-103, issued on October 11, 1966, contained administrative TS 9.1, which stated:

“Written procedures shall be in effect for normal operations of the reactor, emergencies to the reactor or facility which could result in significant radioactive releases, and for radiological control. Copies of these procedures shall be available in the reactor control room and shall be reviewed and approved annually by the Reactor Supervisor.”

Since original licensing, Amendment Nos. 3, 4, and 30, as well as the relicensing of MURR on January 4, 2017, have changed the wording and numbering of this Specification; however, the essence of an annual review of TS-required procedures by the responsible manager has remained in the TS.

MURR staff take these procedure reviews seriously and exert much effort into conducting thorough annual reviews. However, MURR management could not identify even one (1) time where the annual review initiated a substantive change to the procedures. Changes initiated from annual reviews are normally grammatical, editorial, and/or formatting changes that do not change the technical steps in how a procedure guides the operator or technician to complete a task.

Substantive changes to the procedures are normally initiated by modifications to the facility and equipment, component replacements, or facility corrective actions. MURR administrative procedures AP-RR-015, “Work Control Procedure,” and AP-RO-115, “Modification Records,” direct the organization to ensure maintenance, operating, and other procedures are updated prior to completing and closing a Work Package or Modification Record. Furthermore, the MURR Corrective Action Program (CAP) Review Committee, per administrative procedure AP-RR-001, “Corrective Action Program,” ensures that procedures are revised prior to closing a CAP report where the corrective action depends on a procedure revision.

Enclosure 1 – Basis for the Requested Changes to Technical Specifications 6.2 and 6.4

Should a revision be required that does not fall into one of the three categories mentioned above, MURR administrative procedure AP-DC-100, “Controlled Document Process,” provides the process for initiating changes, preparing drafts, reviewing, and approving MURR controlled documents. All of the procedures listed in TS 6.4.a and 6.4.b, including the Emergency Plan implementing procedures, are MURR controlled documents. Specifically, Section 4.11 of AP-DC-100 states that the Reactor Health Physics Manager “Reviews and approves controlled documents that affect radiological control, shipping, and preparation for shipping of byproduct material, and those associated with a project authorization under MURR Renewed Facility Operating License No. R-103.” Section 4.12 of AP-DC-100 states that the Reactor Manager “Reviews and approves controlled documents that affect reactor operation; emergency or physical security plan implementation; tests or experiments that affect nuclear safety not already addressed in the Safety Analysis Report or Technical Specifications; and documents associated with the Operator Requalification Program.”

3.0 Justification for Changing Technical Specifications 6.2.e and 6.4.c

Section 6.4, “Procedures,” of Appendix 14.1, “Format and Content of Technical Specifications for Non-Power Reactors,” in NUREG-1537 Part 1, “Guidelines for Preparing and Reviewing Applications for the Licensing of Non-Power Reactors,” does not contain any requirement for periodic Level 3 staff reviews of procedures.

American National Standard ANSI/ANS-15.1-2007 (R2013), “The Development of Technical Specifications for Research Reactors,” Section 6.4, “Procedures,” does not contain any requirement for periodic Level 3 staff reviews of procedures. However, it does require a review and audit group to conduct the following audits and reviews of procedures:

ANSI/ANS-15.1-2007 (R2013), Section 6.2.4, “Audit Function,” contains the following criteria:

- “(4) the reactor facility emergency plan and implementing procedures: at least once every other calendar year (interval between audits not to exceed 30 months).”

Additionally, ANSI/ANS-15.1-2007 (R2013), Section 6.2.3, “Review function,” states:

“The following items shall be reviewed:

- (1) determinations that proposed changes in equipment, systems, test, experiments, or procedures are allowed without prior authorization by the responsible authority, for example, 10 CFR 50.59 or 10 CFR 830;
- (2) all new procedures and major revisions thereto having safety significance, proposed changes in reactor facility equipment, or systems having safety significance;...”

A cursory review of 26 other NRC-licensed research reactors’ TS revealed only one (1) facility has a requirement for their staff to review their procedures periodically to ensure the procedures are current, and two (2) facilities have a required annual safety committee audit of existing operating procedures.

Enclosure 1 – Basis for the Requested Changes to Technical Specifications 6.2 and 6.4

Otherwise, most other NRC-licensed research reactors have wording in Section 6.4 of their TS which closely resembles Section 6.4 of ANSI/ANS-15.1-2007 (R2013), which has no requirement to periodically review TS-required procedures.

4.0 Conclusion

Most MURR TS-required procedures have been in place for many years. Due to the maturity of MURR procedures, an annual review is an unnecessary burden on MURR staff. As stated above, the annual review rarely, if ever, reveals any technical weaknesses in the procedures. Reviewing TS-required procedures in accordance with MURR administrative procedures, specifically AP-RR-015 and AP-RO-115, during the system modification process, or as a corrective action using AP-RR-001 is sufficient to assure the continued effectiveness of MURR procedures to safely operate the reactor, work with radioactive materials, and prepare radioactive shipments and ship byproduct material. Should a revision be required that does not fall into a category mentioned above, MURR administrative procedure AP-DC-100 provides the process for initiating changes, preparing drafts, reviewing, and approving MURR controlled documents. Therefore, MURR requests approval for the below revised Specifications 6.2.e and 6.4.c.

5.0 Proposed Revision to Technical Specifications 6.2.e and 6.4.c

Specification 6.2.e currently states:

“e. Audits:

- (1) Audits of the following functions shall be conducted by an individual or group without immediate responsibility in the area to be audited:
 - i. Facility Operations, for conformance to the Technical Specifications and license conditions, at least annually;
 - ii. Operator Requalification Program, for compliance with the approved program, at least every two (2) years;
 - iii. Corrective Action items associated with reactor safety, at least annually; and
 - iv. Emergency Plan, at least every two (2) years.”

Specification 6.2.e will be revised as follows:

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- i. Facility Operations, for conformance to the Technical Specifications and license conditions, at least annually;
- ii. Operator Requalification Program, for compliance with the approved program, at least every two (2) years;
- iii. Corrective Action items associated with reactor safety, at least annually; and
- iv. Emergency Plan and implementing procedures, at least every two (2) years.”

Specification 6.4.c currently states:

- “c. The Reactor Manager shall approve and annually review the procedures for normal operations of the reactor and the Emergency Plan implementing procedures. The Reactor Health Physics Manager shall approve and annually review the radiological control procedures and the procedures for the preparation for shipping and the shipping of byproduct material.”

Specification 6.4.c will be revised as follows:

- “c. The Reactor Manager shall approve the procedures for normal operations of the reactor and the Emergency Plan implementing procedures. The Reactor Health Physics Manager shall approve the radiological control procedures and the procedures for the preparation for shipping and the shipping of byproduct material.”

6.2 Review and Audit - Continued

- iii. Corrective Action items associated with reactor safety, at least annually; and
 - iv. Emergency Plan **and implementing procedures**, at least every two (2) years.
- (2) Audit findings which affect reactor safety shall be immediately reported to the Reactor Facility Director. A written report of the findings shall be submitted to the Reactor Facility Director, the RAC and its subcommittees within three (3) months after the audit has been completed.

6.3 Radiation Safety

- a. The Reactor Health Physics Manager shall be responsible for the implementation of the Radiation Protection Program. The requirements of the Radiation Protection Program are established in 10 CFR 20. The program should use the guidelines of American National Standard “Radiation Protection at Research Reactor Facilities,” ANSI/ANS-15.11-1993 (R2004).

6.4 Procedures

- a. Written procedures shall be in effect for operation of the reactor, including the following:
 - (1) Startup, operation, and shutdown of the reactor;
 - (2) Fuel loading, unloading and movement within the reactor;
 - (3) Maintenance of major components of systems that could have an effect on reactor safety;
 - (4) Surveillance checks, calibrations and inspections that may affect reactor safety;
 - (5) Administrative controls for operations and maintenance and for the conduct of irradiations and experiments that could affect reactor safety or core reactivity; and
 - (6) Implementation of the Emergency and Physical Security Plans.
- b. Written procedures shall be in effect for radiological control, and the preparation for shipping and the shipping of byproduct material produced under the facility operating license.

6.4 Procedures - Continued

- c. The Reactor Manager shall approve ~~and annually review~~ the procedures for normal operations of the reactor and the Emergency Plan implementing procedures. The Reactor Health Physics Manager shall approve ~~and annually review~~ the radiological control procedures and the procedures for the preparation for shipping and the shipping of byproduct material.
- d. Deviations from procedures required by this Specification may be enacted by a Senior Reactor Operator or member of Reactor Health Physics, as applicable. Such deviations shall be documented, reviewed pursuant to 10 CFR 50.59, and reported within 24 hours or the next working day to the Reactor Manager or Reactor Health Physics Manager or designated alternate.

6.5 Experiment Review and Approval

- a. Approved experiments shall be carried out in accordance with established and approved procedures. Procedures related to experiment review and approval shall include the following:
 - (1) All new experiments or class of experiments shall be reviewed by the RAC and approved in writing by the Reactor Manager.
 - (2) Substantive changes to previously approved experiments shall be made only after review by the RAC and approved in writing by the Reactor Manager.

6.6 Reportable Events and Required Actions

- a. Safety Limit Violation - In the event of a safety limit violation, the following actions shall be taken:
 - (1) The reactor shall be shut down and reactor operation shall not be resumed until authorized by the NRC pursuant to 10 CFR 50.36(c)(1);
 - (2) The safety limit violation shall be promptly reported to the Reactor Manager and Reactor Facility Director, or designated alternates;
 - (3) The safety limit violation shall be promptly reported to the NRC. Prompt reporting of the violation shall be made by MU, by telephone and subsequently confirmed in writing or email, to the NRC Operations Center no later than the following working day;
 - (4) A detailed follow-up report shall be prepared. The report shall include the following:

6.2 Review and Audit - Continued

- iii. Corrective Action items associated with reactor safety, at least annually; and
 - iv. Emergency Plan and implementing procedures, at least every two (2) years.
- (2) Audit findings which affect reactor safety shall be immediately reported to the Reactor Facility Director. A written report of the findings shall be submitted to the Reactor Facility Director, the RAC and its subcommittees within three (3) months after the audit has been completed.

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- b. Written procedures shall be in effect for radiological control, and the preparation for shipping and the shipping of byproduct material produced under the facility operating license.

6.4 Procedures - Continued

- c. The Reactor Manager shall approve the procedures for normal operations of the reactor and the Emergency Plan implementing procedures. The Reactor Health Physics Manager shall approve the radiological control procedures and the procedures for the preparation for shipping and the shipping of byproduct material.
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