

December 12, 2011

Dr. Tatjana Jevremovic
Director, Utah Nuclear Engineering Program
Joseph Merrill Engineering Building
50 Central Campus Drive, Room 2298
University of Utah
Salt Lake City, UT 84112

SUBJECT: UNIVERSITY OF UTAH – ISSUANCE OF AMENDMENT NO. 9 TO FACILITY
OPERATING LICENSE NO. R-126, RE: TECHNICAL SPECIFICATIONS 3.5
AND 4.4 (TAC NO. ME7554)

Dear Dr. Jevremovic:

The U.S. Nuclear Regulatory Commission (NRC) has issued the enclosed Amendment No. 9 to Facility Operating License No. R-126 for the University of Utah TRIGA Reactor. The amendment consists of changes to the technical specifications (TSs) in response to your application dated November 17, 2011, as supplemented on November 29, 2011. The amendment changes the TS value of the pressure difference between the reactor room and the outside of the Merrill Engineering Building.

The safety evaluation supporting Amendment No. 9 is enclosed.

Sincerely,

/RA/

Geoffrey A. Wertz, Project Manager
Research and Test Reactors Licensing Branch
Division of Policy and Rulemaking
Office of Nuclear Reactor Regulation

Docket No. 50-407

Enclosures:

1. Amendment No. 9
2. Safety Evaluation

cc w/encls: See next page

University of Utah

Docket No. 50-407

cc:

Mayor of Salt Lake City
451 South State
Room 306
Salt Lake City, UT 84111

Dr. Thomas Parks
Vice President for Research
201 S. Presidents Circle, Room 210
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Salt Lake City, UT 84112

Ms. Karen Langley
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Dr. Cynthia Furse
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201 President's Circle, Room 210
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Test, Research, and Training
Reactor Newsletter
Universities of Florida
202 Nuclear Sciences Center
Gainesville, FL 32611

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Director, Utah Nuclear Engineering Program
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University of Utah
Salt Lake City, UT 84112

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OPERATING LICENSE NO. R-126, RE: TECHNICAL SPECIFICATIONS 3.5
AND 4.4 (TAC NO. ME7554)

Dear Dr. Jevremovic:

The U.S. Nuclear Regulatory Commission (NRC) has issued the enclosed Amendment No. 1 to Facility Operating License No. R-126 for the University of Utah TRIGA Reactor. The amendment consists of changes to the technical specifications (TSs) in response to your application dated November 17, 2011, as supplemented on November 29, 2011. The amendment changes the TS value of the pressure difference between the reactor room and the outside of the Merrill Engineering Building.

The safety evaluation supporting Amendment No. 9 is enclosed.

Sincerely,

/RA/

Geoffrey A. Wertz, Project Manager
Research and Test Reactors Licensing Branch
Division of Policy and Rulemaking
Office of Nuclear Reactor Regulation

Docket No. 50-407

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GLappert, NRR

ADAMS Accession No: ML113350316

*concurrence via e-mail

NRR-058

OFFICE	PRLB:PM*	PRPB:LA	OGC	PRLB:BC	PRLB:PM
NAME	GWertz	GLappert, CMH for	BMizuno, NLO	JQuichocho	GWertz
DATE	12/1/2011	12/1/2011	12/5/2011	12/9/2011	12/12/2011

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UNIVERSITY OF UTAH

DOCKET NO. 50-407

AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. 9
License No. R-126

1. The U.S. Nuclear Regulatory Commission (“the Commission”) has found that:
 - A. The application for amendment to Facility Operating License No. R-126 filed by the University of Utah (“the licensee”), dated November 17, 2011, as supplemented on November 29, 2011, conforms to the standards and requirements of the Atomic Energy Act of 1954, as amended (“the Act”), and the Commission’s rules and regulations set forth in Title 10, Chapter I, of the *Code of Federal Regulations* (10 CFR);
 - B. The facility will operate in conformity with the application, the provisions of the Act, and the rules and regulations of the Commission;
 - C. There is reasonable assurance that (i) the activities authorized by this amendment can be conducted without endangering the health and safety of the public, and (ii) that such activities will be conducted in compliance with the Commission’s regulations;
 - D. The issuance of this amendment will not be inimical to the common defense and security or to the health and safety of the public;
 - E. This amendment is issued in accordance with the regulations of the Commission as stated in 10 CFR Part 51, and all applicable requirements have been satisfied; and;
 - F. Prior notice of this amendment was not required by 10 CFR 2.105 and publication of a notice for this amendment is not required by 10 CFR 2.106.

2. Accordingly, the license is amended by changes to the Technical Specifications as indicated in the enclosure to this license amendment, and paragraph 2.C(2) of Facility Operating License No. R-126 is hereby amended to read as follows:

- (2) Technical Specifications

- The Technical Specifications contained in Appendix A, as revised by Amendment No. 9, are hereby incorporated in the license. The licensee shall operate the reactor in accordance with these Technical Specifications.

3. This license amendment is effective as of the date of issuance.

FOR THE NUCLEAR REGULATORY COMMISSION

/RA/

Jessie F. Quichocho, Chief
Research and Test Reactors Licensing Branch
Division of Policy and Rulemaking
Office of Nuclear Reactor Regulation

Enclosure:

Changes to Facility Operating License and
Technical Specifications

Date of Issuance: December 12, 2011

UNIVERSITY OF UTAH

FACILITY OPERATING LICENSE NO. R-126

DOCKET NO. 50-407

AMENDMENT TO LICENSE OPERATING LICENSE

Replace the following pages of the Facility Operating License No. R-126, and Appendix A Technical Specifications, with the attached revised pages. The revised pages are identified by amendment number and contain marginal lines indicating the areas of change.

Facility Operating License

Remove

Insert

Page 3

Page 3

Technical Specifications

Page 26

Page 26

Page 42

Page 42

- a. to receive, possess, and use in connection with operation of the facility, up to 240 grams of plutonium in the form of a plutonium-beryllium neutron source; and
 - b. to receive, possess, use, but not separate, in connection with operation of the facility, such special nuclear material as may be produced by the operation of the facility.
- (2) Pursuant to the Act and 10 CFR Part 30, to receive, possess, and use, in connection with operation of the facility, such byproduct material as may be produced by operation of the reactor, which cannot be separated except for byproduct material produced in non-fueled experiments.
- B. This license shall be deemed to contain and is subject to the conditions specified in 10 CFR Parts 20, 30, 50, 51, 55, 70 and 73 of the Commission's regulations; subject to all applicable provisions of the Act, and to the rules, regulations, and orders of the Commission now or hereafter in effect; and is subject to the additional conditions specified or incorporated below:
- (1) Maximum Power Level

The licensee is authorized to operate the facility at a steady-state power level not in excess of 100 kilowatts (thermal) as specified in the Technical Specifications.
 - (2) Technical Specification

The Technical Specifications contained in Appendix A, as revised through Amendment No. 9, are hereby incorporated in the license. The licensee shall operate the facility in accordance with the Technical Specifications.
 - (3) Physical Security Plan

The licensee shall fully implement and maintain in effect all provisions of the physical security plan approved by the Commission and all amendments and changes made pursuant to the authority of 10 CFR 50.90 and 10 CFR 50.54(p), respectively. The approved plan, which is exempt from public disclosure pursuant to the provisions of 10 CFR 73.21, is entitled, "University of Utah Physical Security Plan for the Protection of SNM of Low Strategic Significance under Licenses R-25 and R-126," Revision 1, dated July 28, 1980.

3.5 Ventilation System

Applicability

This specification applies to the operation of the reactor area ventilation system.

Objective

The objective is to assure that the ventilation system shall be in operation to mitigate the consequences of possible releases of radioactive materials resulting from reactor operation.

Specifications

The reactor shall not be operated unless the ventilation system is fully operable which is when:

1. The pressure difference between the reactor room and outside of the Merrill Engineering Building is larger than 0.01 inches-of-water.
2. In the event of a substantial release of airborne radioactivity within the reactor area, the ventilation system will be secured or operated in the limited intake mode to prevent the release of a significant quantity of airborne radioactivity from the reactor area.

Basis

In the operational mode of the ventilation system, the air in the controlled access area (reactor room area) is constantly being exchanged. The air leaving the facility has a volumetric flow rate of more than 100 CFM per each of the two fume hoods. The result of this is a negative pressure of greater than 0.01 inches of water in the reactor room.

The worst-case maximum total effective dose equivalent is well below the applicable annual limit for individual members of the public and building residents during the maximum hypothetical accident (MHA) (**SAR 13.2.1**).

4.4 Confinement

Applicability

This specification applies to the reactor confinement.

Objective

The objective is to assure that air is swept out of confinement and exhausted through a monitored release point (two fume hood systems located at Fuel Inspection area).

Specification

The ventilation system shall be verified operable in accordance with **TS 4.5** monthly.

Basis

Because the ventilation system is the only equipment required to achieve confinement, operability checks of the ventilation system meet the functional testing requirements for confinement. The pressure difference between the reactor room and outside of the Merrill Engineering Building should be larger than 0.01 inches-of-water. To keep this pressure difference, two fume hoods should be operated with the flow rate of 90 CFM or higher. Current flow rate for two fume hoods are >100 CFM.

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

SUPPORTING AMENDMENT NO. 9 TO

FACILITY OPERATING LICENSE NO. R-126

UNIVERSITY OF UTAH

DOCKET NO. 50-407

1.0 INTRODUCTION

By letter dated November 17, 2011, as supplemented on November 29, 2011 (Agencywide Documents Access and Management System (ADAMS) Accession Nos. ML11326A171 and ML11342A053, respectively), the University of Utah (the licensee) submitted to the U.S. Nuclear Regulatory Commission (NRC) a request for amendment to the Technical Specifications (TSs) in Appendix A, to Facility Operating License No. R-126, for the University of Utah TRIGA (Training, Research, Isotopes, General Atomics) Reactor (UUTR). The requested amendment would correct a typographical error in the TSs associated with the value for the pressure difference between the reactor facility and the Merrill Engineering Building.

2.0 EVALUATION

The UUTR is a 100 kilowatt thermal power steady state operation pool-type research reactor, housed within the Merrill Engineering Building located on the University of Utah campus in Salt Lake City, Utah. The UUTR Facility Operating License, R-126, was renewed on October 31, 2011 (ADAMS Accession No. ML112500321) and the renewal license included the issuance of updated TSs (ADAMS Accession No. ML112500333). By letter dated November 17, 2011, as supplemented on November 29, 2011, the licensee indicated that UUTR TS 3.5, "Ventilation System," and the Basis in UUTR TS 4.4 "Confinement," contained a typographical error with respect to the value provided for the pressure difference between the reactor facility and the Merrill Engineering Building.

The licensee indicated in their letter that the TS value of 0.1 inches-of-water was incorrectly stated and that the correct value should be 0.01 inches-of-water. The licensee has requested that the TS value of 0.1 inches-of-water be replaced with 0.01 inches-of-water in UUTR TS 3.5 and in the Basis of UUTR TS 4.4. Furthermore, the licensee stated that the UUTR Updated Safety Analysis Report (SAR) (ADAMS Accession No. ML111720666) provide a description of the UUTR Ventilation System in Section 9.1.4.1, in which the pressure difference was correctly specified as 0.01 inches-of-water.

The current UUTR TS 3.5, Specification 1, states the following:

1. The pressure difference between the reactor room and outside of the Merrill Engineering Building is larger than 0.1 inches-of-water.

Similarly, the current Basis of UUTR TS 4.4, states the following:

Because the ventilation system is the only equipment required to achieve confinement, operability checks of the ventilation system meet the functional testing requirements for confinement. The pressure difference between the reactor room and outside of the Merrill Engineering Building should be larger than 0.1 inches-of-water. To keep this pressure difference, two fume hoods should be operated with the flow rate of 90 CFM or higher. Current flow rate for two fume hoods are >100 CFM.

In the licensee's letter dated November 17, 2011, as supplemented on November 29, 2011, the licensee has requested that the 0.1 inches-of-water pressure difference value be changed to 0.01 inches-of-water, and that the proposed UUTR TSs read as follows:

UUTR TS 3.5, Specification 1:

1. The pressure difference between the reactor room and outside of the Merrill Engineering Building is larger than 0.01 inches-of-water.

UUTR TS 4.4, Basis:

Because the ventilation system is the only equipment required to achieve confinement, operability checks of the ventilation system meet the functional testing requirements for confinement. The pressure difference between the reactor room and outside of the Merrill Engineering Building should be larger than 0.01 inches-of-water. To keep this pressure difference, two fume hoods should be operated with the flow rate of 90 CFM or higher. Current flow rate for two fume hoods are >100 CFM.

The NRC staff discussed the circumstances surrounding the amendment request with the licensee during a telephone call conducted on November 10, 2011, and reviewed the information provided in the licensee's amendment request. The NRC staff reviewed the description of the ventilation system provided in the UUTR Updated SAR and noted that the UUTR Updated SAR Section 9.1.4.1 provided the value of 0.01 inches-of-water, which was consistent with the licensee's requested TS change.

The NRC staff also reviewed the results of the licensee's Maximum Hypothetical Accident (MHA) described in the UUTR SAR, Chapter 13, "Accident Analyses." The radiological doses associated with the MHA were analyzed with the ventilation system in the normal operational mode (elevated release) and with that the ventilation system shutdown (ground level release). The MHA doses to members of the public located outside the Merrill Engineering Building met the requirements of 10 CFR Part 20 in both cases with the ventilation system operating and shutdown. Additionally, there are no specific assumptions provided in the SAR MHA analysis

for the pressure difference between the reactor facility and outside the Merrill Engineering Building. The ventilation system is either operating in the normal mode, or it is shutdown.

Therefore, based on the pressure difference value provided in the UUTR Updated SAR, Section 9.1.4.1, and a review of the results of the UUTR MHA analysis as provided in the UUTR Updated SAR, the NRC staff concluded that a value of 0.01 inches-of-water was the correct TS value to establish the operability of the ventilation system and should be the value specified in UUTR TSs 3.5 and the Basis for UUTR TS 4.4.

4.0 ENVIRONMENTAL CONSIDERATION

This amendment involves changes in the installation or use of a facility component located within the restricted area as defined in 10 CFR Part 20 or changes in inspection and surveillance requirements. The NRC staff has determined that this amendment involves no significant hazards consideration, no significant increase in the amounts, and no significant change in the types, of any effluents that may be released off site, and no significant increase in individual or cumulative occupational radiation exposure. Accordingly, this amendment meets the eligibility criteria for categorical exclusion set forth in 10 CFR 51.22(c) (9). Pursuant to 10 CFR 51.22(b), no environmental impact statement or environmental assessment need be prepared in connection with the issuance of this amendment.

5.0 CONCLUSION

The NRC staff concludes, on the basis of the considerations discussed above, that (1) the amendment does not involve a significant hazards consideration because the amendment does not involve a significant increase in the probability or consequences of accidents previously evaluated, create the possibility of a new kind of accident or a different kind of accident from any accident previously evaluated, or involve a significant reduction in a margin of safety; (2) there is reasonable assurance that the health and safety of the public will not be endangered by the proposed activities; and (3) such activities will be conducted in compliance with the Commission's regulations and the issuance of this amendment will not be inimical to the common defense and security or the health and safety of the public.

Principal Contributor: G. Wertz, NRR

Dated: December 12, 2011