October 17, 2016

Mr. Vito Nuccio
Reactor Administrator
U.S. Geological Survey
Denver Federal Center
PO Box 25046 MS 911
Denver, CO 80225-0046

SUBJECT: U.S. GEOLOGICAL SURVEY – ISSUANCE OF RENEWED FACILITY OPERATING LICENSE NO. R-113 FOR THE U.S. GEOLOGICAL SURVEY TRIGA RESEARCH REACTOR (TAC NO. ME1593)

Dear Mr. Nuccio:

The U.S. Nuclear Regulatory Commission (NRC) has issued the enclosed Renewed Facility Operating License No. R-113 for the U.S. Geological Survey TRIGA Research Reactor in response to the application for license renewal by letter dated January 5, 2009, as supplemented on November 24, 2010; February 11, March 28, May 12, June 29, July 27, August 30, September 26, October 31, and November 30, 2011; January 3, January 27, March 28, April 27, May 18, May 31, June 29, July 31, August 30, and November 16, 2012; February 8, May 17, and October 31, 2013; February 19, November 3, and November 24, 2014; September 8, 2015; and January 22, April 1, September 12, and September 22, 2016. The renewed facility operating license is effective on date of issuance, and shall expire at midnight, 20 years from the date of issuance, unless terminated sooner.

In accordance with agency practice, the renewed license issued by the NRC restates the license in its entirety, incorporating all changes and amendments made since the issuance of the original license as appropriate. Also enclosed with the renewed facility operating license is the safety evaluation report associated with the license renewal. A Notice of Issuance of Renewed Facility Operating License No. R-113 has been sent to the Office of the Federal Register for publication. The environmental assessment for this renewal was published in the *Federal Register* on June 14, 2016 (81 FR 38739-38745) and was sent to you under separate cover dated June 1, 2016.

If you have any questions, please contact me at 301-415-0893 or by electronic mail at Geoffrey.Wertz@nrc.gov.

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. 50-274

Enclosures:
1. Facility Operating License No. R-113
2. Safety Evaluation Report

cc: See next page

cc:

Environmental Services Manager
480 S. Allison Pkwy.
Lakewood, CO 80226

State of Colorado
Radiation Program
HMWM-RM-B2
4300 Cherry Creek Drive South
Denver, CO 80246

Brycen Roy, Reactor Supervisor
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Test, Research, and Training
Reactor Newsletter
University of Florida
202 Nuclear Sciences Center
Gainesville, FL 32611

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DATE	9/20/2016	9/20/2016	9/30/2016	9/20/2016
OFFICE	NRR/DPR/D	NRR/D	NRR/DPR/PRLB/PM	
NAME	LLund (MGavrilas for)	WDean	GWertz	
DATE	10/4/2016	10/14/2016	10/17/2016	

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U.S. GEOLOGICAL SURVEY

DOCKET NO. 50-274

RENEWED FACILITY OPERATING LICENSE

License No. R-113

1. The U.S. Nuclear Regulatory Commission ("the Commission") has found that:

   A. The application for renewal of Facility Operating License No. R-113 filed by the U.S. Geological Survey ("the licensee"), dated January 5, 2009, as supplemented on November 24, 2010; February 11, March 28, May 12, June 29, July 27, August 30, September 26, October 31, and November 30, 2011; January 3, January 27, March 28, April 27, May 18, May 31, June 29, July 31, August 30, and November 16, 2012; February 8, May 17, and October 31, 2013; February 19, November 3, and November 24, 2014; September 8, 2015; and January 22, April 1, September 12, and September 22, 2016, ("the application"), complies with 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, of the *Code of Federal Regulations* (10 CFR), Chapter I;

   B. Construction of the U.S. Geological Survey TRIGA Research Reactor ("the facility") was completed in substantial conformity with the Construction Permit No. CPRR-102, issued on October 10, 1967, and the application, as amended; the provisions of the Act; and the rules and regulations of the Commission;

   C. The facility will operate in conformity with the application, as supplemented, the provisions of the Act, and the rules and regulations of the Commission;

   D. There is reasonable assurance that: (i) the activities authorized by this license can be conducted without endangering the health and safety of the public, and (ii) such activities will be conducted in compliance with the Commission's regulations;

   E. The licensee is technically and financially qualified to engage in the activities authorized by this license in accordance with the rules and regulations of the Commission;

   F. The applicable provisions of 10 CFR Part 140, "Financial Protection Requirements and Indemnity Agreements," have been satisfied;

   G. The issuance of this license will not be inimical to the common defense and security or to the health and safety of the public;

H. The issuance of this license is in accordance with 10 CFR Part 51, "Environmental Protection Regulations for Domestic Licensing and Related Regulatory Functions," of the Commission's regulations and all applicable requirements have been satisfied; and

I. The receipt, possession and use of byproduct and special nuclear materials as authorized by this facility operating license will be in accordance with the Commission's regulations in 10 CFR Part 30, "Rules of General Applicability to Domestic Licensing of Byproduct Material," and 10 CFR Part 70, "Domestic Licensing of Special Nuclear Material."

2. Accordingly, Facility Operating License No. R-113 is hereby renewed in its entirety to read as follows:

A. This license applies to the U.S. Geological Survey TRIGA Research Reactor (herein "the facility") owned by the U.S. Geological Survey, Department of the Interior, (herein "the licensee"). The facility is located on the U.S. Denver Federal Center in Lakewood, Colorado, and described in the licensee's application for license renewal, dated January 5, 2009, as supplemented.

B. Subject to the conditions and requirements incorporated herein, the Commission hereby licenses the U.S. Geological Survey as follows:

1. Pursuant to subsection 104c of the Act and 10 CFR Part 50, "Domestic Licensing of Production and Utilization Facilities," to possess, use, and operate the facility as a utilization facility at the designated location in accordance with the procedures and limitations described in the application and set forth in this license.

2. Pursuant to the Act and 10 CFR Part 70, the following activities are included:

a. to receive, possess, and use, but not separate, in connection with the operation of the facility, up to 9 kilograms of contained uranium-235 enriched to less than 20 percent in the form of TRIGA-type reactor fuel;

b. to receive, possess, and use, but not separate, in connection with the operation of the facility, up to 15 grams total of special nuclear material, of any enrichment, in the form of neutron detectors;

c. to receive, possess, and use, but not separate, in connection with the operation of the facility, up to 2 grams of special nuclear material of any enrichment in reactor-based experiments, in sources for calibration of radiation detectors, and reference sources for reactor based programs;

d. to receive, possess, and use, but not separate, in connection with the operation of the facility, such special nuclear material as may be produced by the operation of the facility.

e. to receive, possess, and use, but not separate, in connection with the operation of the facility, such special nuclear material as may be received in TRIGA-type fuel elements that are transferred to license R-113 after use in other reactor facilities.

3. Pursuant to the Act and 10 CFR Part 30, the following activities are included:

a. to receive, possess, and use, in connection with the operation of the facility, up to 3 curies of sealed americium-beryllium in a single neutron source for reactor startup use;

b. to receive, possess, and use, in connection with the operation of the facility, up to 10 curies of sealed polonium-beryllium in a single neutron source for reactor startup use;

c. to receive, possess, and use, in connection with the operation of the facility, up to 10 millicuries of byproduct material (atomic numbers 1-88) that will be irradiated in the reactor after receipt;

d. to receive, possess, and use, in connection with the operation of the facility, up to 5 curies of byproduct material used in reactor-based experiments, in sources for calibration of radiation detectors, and reference sources for use in reactor-based analytic techniques;

e. to receive, possess, and use, in connection with the operation of the facility, up to 50 millicuries of byproduct material contained in (non-fuel) research reactor parts and components received for use under this facility operating license, No. R-113 from other research facilities;

f. to receive, possess, and use, but not to separate, in connection with operation of the facility, such byproduct material as may be produced by operation of the reactor, except for byproduct material produced in non-fueled reactor experiments which is permitted to be separated; and

g. to receive, possess, and use, but not to separate, any amount of byproduct material contained in TRIGA fuel elements transferred to USGS Facility Operating License No. R-113 after use in other reactor facilities.

4. Pursuant to the Act and Title 10 CFR, Chapter 1, Part 40, “Domestic Licensing of Source Material,” in connection with the operation of the facility, to receive, possess, and use, up to 1 millicurie of source material for reactor-based experiments, sources for calibration of detectors, and reference sources for use in reactor-based analytical techniques.

C. This license shall be deemed to contain, and is subject to the conditions specified 10 CFR Parts 20, 30, 40, 50, 51, 55, 70, and 73 of the Commission's regulations; is subject to all 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 may operate the reactor at steady-state power levels not in excess of 1,000 kilowatts (thermal) and to pulse the reactor in accordance with the limitations in the Technical Specifications.

2. Technical Specifications

The Technical Specifications contained in Appendix A are hereby incorporated in their entirety in the license. The licensee shall operate the facility in accordance with the Technical Specifications.

3. Physical Security Plan

The licensee shall maintain and fully implement all provisions of the Commission-approved physical security plan, including changes made pursuant to the authority of 10 CFR 50.54(p). The approved physical security plan, entitled "Security Plan for the DFC Reactor Facility, Revision XVII," dated August 2016, consists of documents withheld from public disclosure pursuant to 10 CFR 73.21.

This license is effective as of the date of issuance and shall expire at midnight, 20 years from the date of issuance.

For the Nuclear Regulatory Commission

/RA/

William M. Dean, Director
Office of Nuclear Reactor Regulation

Attachment:
Appendix A, Technical Specifications

Date of Issuance: October 14, 2016