



WALKER DEPARTMENT OF MECHANICAL ENGINEERING  
Nuclear Engineering Teaching Laboratory

Pickle Research Campus R-9000 • Austin, Texas 78758 • 512-232-5380 • FAX 512-471-4589  
nuclear.engr.utexas.edu • wcharlton@austin.utexas.edu

09/09/2022

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

Geoffrey Wertz, P.E.  
Non-Power Production and Utilization Facility Licensing Branch (UNPL)  
Division of Advanced Reactors and Non-Power Production and Utilization Facilities (DANU)  
Office of Nuclear Reactor Regulation

SUBJECT: Docket No. 50-602, Request for Revision of Uranium and Plutonium forms in  
License R-129

Sir:

We respectfully request an amendment to facility license R-129, paragraph 2.B.(2)(a)(iii) and (iv) revising the specification of plutonium isotopes. The possession limits for plutonium are not changed in this request, only deleting the specification of specific plutonium isotopes and revising the material form for plutonium and uranium.

A pending research program needs a specific mixed plutonium reference material which is available in the form of wire, while the current license possession limits allow only the plutonium isotope 239 in the form of reference material in section (iv) and plutonium isotopes 239, 240, and 241 in the form of foil in section (iii).

The proposed revisions and rationale for each are:

- In (2)(a)(iii): The words "1.0 gram of plutonium-240, 1.0 gram of plutonium-239, and 1.0 gram of plutonium-241, in the form of foils;" are revised to "up to: 1.0 gram of uranium-233, 40.0 grams of contained uranium-235 of any enrichment, and 4.0 grams of plutonium, in the form of foils or reference materials;"

This change combines sections (iii) and (iv) to permit the use of plutonium, uranium-233, and uranium-235 as either reference materials or foils. This does not change the possession limits for plutonium, uranium-233, or uranium-235.

- Remove (2)(a)(iv)

Section (iv) is combined with (iii) as indicated above.

AD 20  
NRR

- Renumber (2)(a)(v) as (2)(a)(iv)
- Renumber (2)(a)(vi) as (2)(a)(v)

The proposed change reads as follows:

- (2) Pursuant to the Act and 10 CFR Part 70, "Domestic Licensing of Special Nuclear Material," in connection with the operation of the facility:
- (a) to receive, possess and use:
- (i) but not separate, up to 9.5 kilograms of contained uranium-235 enriched to less than 20 percent in the form of TRIGA reactor fuel;
  - (ii) up to 20 grams of contained uranium-235 of any enrichment in the form of fission chambers;
  - (iii) up to: 1.0 gram of uranium-233, 40.0 grams of contained uranium-235 of any enrichment, and 4.0 grams of plutonium, in the form of foils or reference materials;
  - (iv) but not separate, up to 150 grams of plutonium in the form of mixed oxide pellets contained in stainless steel pins for experimental purposes; and
  - (v) but not separate, up to 147 grams of plutonium in the form of sealed plutonium-beryllium neutron sources.
- (b) to receive, possess and use, but not separate, any amount of special nuclear materials produced by the operation of other facilities, contained in TRIGA fuel transferred from other facilities,
- (c) to possess, use, but not separate, such special nuclear material as may be produced by the operation of the facility,

Small quantities of special nuclear material (uranium-233, uranium-235 or plutonium) are currently, routinely used in research programs at the University of Texas TRIGA II nuclear research reactor. These materials are commercially available. In the quantities purchased for the NETL shipments are typically made to the facility as fissile-excepted in appropriate packaging. The University of Texas at Austin broad scope radioactive materials license specifically authorizes the University to receive radioactive waste from the NETL. Ultimate disposal of special nuclear material waste streams other than TRIGA fuel is accomplished by the University.

The current Radiological Protection Program (RPP) provides radiological management of uranium-233, uranium-235 and plutonium used in research programs, and no changes are required to implement the proposed amendment. The Emergency Plan is not affected by this

change. No facility changes (physical or procedural) are required for this proposed amendment.

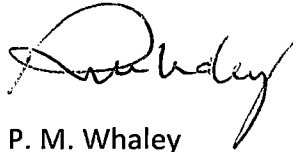
The University of Texas Safety Analyses Report (Chapter 11) analyzes reactivity accidents, loss of reactor coolant, and fission product release from clad rupture. These accidents are not affected by the proposed change. The consequences of a radiological release of irradiated material from fueled experiments are limited by allowable production of radioiodine and strontium inventory identified in Technical Specifications. This change does not require a revision to the Safety Analysis Report or the Technical Specifications.

The security classification/categorization of 10 CFR Part 73 (Category I, *Special nuclear material of low strategic significance*) is unchanged. The possession limits for combined quantity of contained U-235, U-233 and plutonium is not changed remaining well below the threshold for a *special nuclear material of moderate significance*. Therefore, the Physical Security Plan is not affected by this change. Current practices for control of SNM in storage and use are adequate, and unaffected by the proposed change.

The proposed amendment does not change possession limits, does not require any changes to current procedures and practices, and there is reasonable assurance that the health and safety of the public will not be endangered by this proposed amendment.

If there are any questions, please feel free to contact P. M. Whaley at [whaley@mail.utexas.edu](mailto:whaley@mail.utexas.edu) or 512-232-5374.

Sincerely,



P. M. Whaley

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



---

W. S. Charlton

Att: Attachment 1, Facility Operating License R-129 Excerpt  
Attachment 2, Markup for Proposed Facility Operating License R-129  
Attachment 3, Incorporation of Proposed Amendment

## Attachment 1, Facility Operating License R-129 Excerpt

- 2 -

- I. The receipt, possession, and use of the byproduct and special nuclear materials as authorized by this license will be in accordance with the Commission's regulations in 10 CFR Parts 30 and 70, including Sections 30.33, 70.23 and 70.31.
2. Facility License No. R-129 is hereby issued to the University of Texas at Austin as follows:
  - A. The license applies to the TRIGA Mark II nuclear reactor (the facility) owned by the University of Texas at Austin (the licensee). The facility is located on the licensee's site in Austin, Texas, and is described in the licensee's application for license of November 9, 1984, as supplemented.
  - B. Subject to the conditions and requirements incorporated herein, the Commission hereby licenses the University of Texas at Austin:
    - (1) Pursuant to Section 104c of the Act and 10 CFR Part 50, "Domestic Licensing of Production and Utilization Facilities," to possess, use, and operate the facility at the designated location in Austin, Texas, in accordance with the procedures and limitations set forth in this license;
    - (2) Pursuant to the Act and 10 CFR Part 70, "Domestic Licensing of Special Nuclear Material," in connection with the operation of the facility:
      - (a) to receive, possess and use:
        - (i) but not separate, up to 9.5 kilograms of contained uranium-235 enriched to less than 20 percent in the form of TRIGA reactor fuel;
        - (ii) up to 20 grams of contained uranium-235 of any enrichment in the form of fission chambers;
        - (iii) up to: 1.0 gram of uranium-233, 30.0 grams of contained uranium-235 of any enrichment, 1.0 gram of plutonium-240, 1.0 gram of plutonium-239, and 1.0 gram of plutonium-241, in the form of foils;
        - (iv) up to: 1.0 gram of plutonium-239, and 10 grams of contained uranium-235 of any enrichment, in the form of reference materials;
        - (v) but not separate, up to 150 grams of plutonium in the form of mixed oxide pellets contained in stainless steel pins for experimental purposes; and,
        - (vi) but not separate, up to 147 grams of plutonium in the form of sealed plutonium-beryllium neutron sources.
      - (b) to receive, possess and use, but not separate, any amount of special nuclear materials produced by the operation of other facilities, contained in TRIGA fuel transferred from other facilities, and
      - (c) to possess, use, but not separate, such special nuclear material as may be produced by the operation of the facility.

Amendment No. 7  
September 5, 2019

**Attachment 2, Markup for Proposed Facility Operating License R-129**

- 2 -

- I. The receipt, possession, and use of the byproduct and special nuclear materials as authorized by this license will be in accordance with the Commission's regulations in 10 CFR Parts 30 and 70, including Sections 30.33, 70.23 and 70.31.
  
2. Facility License No. R-129 is hereby issued to the University of Texas at Austin as follows:
  - A. The license applies to the TRIGA Mark II nuclear reactor (the facility) owned by the University of Texas at Austin (the licensee). The facility is located on the licensee's site in Austin, Texas, and is described in the licensee's application for license of November 9, 1984, as supplemented.
  
  - B. Subject to the conditions and requirements incorporated herein, the Commission hereby licenses the University of Texas at Austin:
    - (1) Pursuant to Section 104c of the Act and 10 CFR Part 50, "Domestic Licensing of Production and Utilization Facilities," to possess, use, and operate the facility at the designated location in Austin, Texas, in accordance with the procedures and limitations set forth in this license;
  
    - (2) Pursuant to the Act and 10 CFR Part 70, "Domestic Licensing of Special Nuclear Material," in connection with the operation of the facility:
      - (a) to receive, possess and use:
        - (i) but not separate, up to 9.5 kilograms of contained uranium-235 enriched to less than 20 percent in the form of TRIGA reactor fuel;
  
        - (ii) up to 20 grams of contained uranium-235 of any enrichment in the form of fission chambers;
  
        - ~~(iii) up to: 1.0 gram of uranium-233, 30.0 grams of contained uranium-235 of any enrichment, 1.0 gram of plutonium-240, 1.0 gram of plutonium-239, and 1.0 gram of plutonium-241, in the form of foils;~~
  
        - ~~(iv) up to: 1.0 gram of plutonium-239, and 10 grams of contained uranium-235 of any enrichment, in the form of reference materials;~~

(iii) up to: 1.0 gram of uranium-233, 40.0 grams of contained uranium-235 of any enrichment, and 4.0 grams of plutonium, in the form of foils or reference materials;

~~(iv)~~ (iv) but not separate, up to 150 grams of plutonium in the form of mixed oxide pellets contained in stainless steel pins for experimental purposes; and,

~~(v)~~ (v) but not separate, up to 147 grams of plutonium in the form of sealed plutonium-beryllium neutron sources.

(b) to receive, possess and use, but not separate, any amount of special nuclear materials produced by the operation of other facilities, contained in TRIGA fuel transferred from other facilities, and

(c) to possess, use, but not separate, such special nuclear material as may be produced by the operation of the facility.

### Attachment 3, Incorporation of Proposed Amendment

- 2 -

- I. The receipt, possession, and use of the byproduct and special nuclear materials as authorized by this license will be in accordance with the Commission's regulations in 10 CFR Parts 30 and 70, including Sections 30.33, 70.23 and 70.31.
3. Facility License No. R-129 is hereby issued to the University of Texas at Austin as follows:
    - A. The license applies to the TRIGA Mark II nuclear reactor (the facility) owned by the University of Texas at Austin (the licensee). The facility is located on the licensee's site in Austin, Texas, and is described in the licensee's application for license of November 9, 1984, as supplemented.
    - B. Subject to the conditions and requirements incorporated herein, the Commission hereby licenses the University of Texas at Austin:
      - (1) Pursuant to Section 104c of the Act and 10 CFR Part 50, "Domestic Licensing of Production and Utilization Facilities," to possess, use, and operate the facility at the designated location in Austin, Texas, in accordance with the procedures and limitations set forth in this license;
      - (2) Pursuant to the Act and 10 CFR Part 70, "Domestic Licensing of Special Nuclear Material," in connection with the operation of the facility:
        - (a) to receive, possess and use:
          - (i) but not separate, up to 9.5 kilograms of contained uranium-235 enriched to less than 20 percent in the form of TRIGA reactor fuel;
          - (ii) up to 20 grams of contained uranium-235 of any enrichment in the form of fission chambers;
          - (iii) up to: 1.0 gram of uranium-233, 40.0 grams of contained uranium-235 of any enrichment, and 4.0 grams of plutonium, in the form of foils or reference materials;
          - (iv) but not separate, up to 150 grams of plutonium in the form of mixed oxide pellets contained in stainless steel pins for experimental purposes; and,

(v) but not separate, up to 147 grams of plutonium in the form of sealed plutonium-beryllium neutron sources.

- (b) to receive, possess and use, but not separate, any amount of special nuclear materials produced by the operation of other facilities, contained in TRIGA fuel transferred from other facilities, and
- (c) to possess, use, but not separate, such special nuclear material as may be produced by the operation of the facility.