

March 26, 2002

Dr. Robert U. Mulder, Director
Nuclear Reactor Facility
University of Virginia
P.O. Box 400322
Charlottesville, VA 22904-4322

SUBJECT: UNIVERSITY OF VIRGINIA RESEARCH REACTOR - AMENDMENT RE:
MATERIAL POSSESSION LIMITS AND PHYSICAL SECURITY PLAN
(TAC NO. MB3020)

Dear Dr. Mulder:

The U.S. Nuclear Regulatory Commission has issued the enclosed Amendment No. 27 to Amended Facility Operating License No. R-66 for the University of Virginia Research Reactor (UVARR). This amendment modifies the facility operating license in response to your application of September 17, 2001, as supplemented on December 19, 2001.

The amendment decreases the limits for possession of special nuclear material and removes the requirement to implement and maintain a physical security plan.

A copy of the safety evaluation supporting Amendment No. 27 is also enclosed.

Sincerely,

/RA/

Alexander Adams, Jr., Senior Project Manager
Research and Test Reactors Section
Operating Reactor Improvements Program
Division of Regulatory Improvement Programs
Office of Nuclear Reactor Regulation

Docket No. 50-62

Enclosures:

1. Amendment No. 27
2. Safety Evaluation

cc w/enclosures: Please see next page

University of Virginia

Docket Nos. 50-62/396

cc:

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UNIVERSITY OF VIRGINIA

DOCKET NO. 50-62

AMENDMENT TO AMENDED FACILITY OPERATING LICENSE

Amendment No. 27
License No. R-66

1. The U.S. Nuclear Regulatory Commission (the Commission) has found that
 - A. The application for an amendment to Amended Facility Operating License No. R-66, filed by the University of Virginia (the licensee) on September 17, 2001, as supplemented on December 19, 2001, conforms to the standards and requirements of the Atomic Energy Act of 1954, as amended (the Act), and the regulations of the Commission as stated in Chapter I of Title 10 of the *Code of Federal Regulations* (10 CFR);
 - B. The facility will be possessed 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) such activities will be conducted in compliance with the regulations of the Commission;
 - D. The issuance of this amendment will not be inimical to the common defense and security or 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, paragraph II.B.(2) of Amended Facility Operating License No. R-66 is hereby amended to read as follows:

(2) Pursuant to the Act and 10 CFR Part 70, "Domestic Licensing of Special Nuclear Material," the maximum U-235 possession limits are as follows:

<u>Maximum U-235 Kilograms</u>	<u>%Enrichment</u>	<u>Form</u>
0.4	≥20%	Chambers, foils, plates, powders and other forms
0.1	<20%	Foils, powders and other forms

3. Facility Operating License No. R-66 is also hereby amended by deleting paragraph II.C.(3).

4. This license amendment is effective as of the date of its issuance.

FOR THE U.S. NUCLEAR REGULATORY COMMISSION

/RA/

Patrick M. Madden, Section Chief
Research and Test Reactors Section
Operating Reactor Improvements Program
Division of Regulatory Improvement Programs
Office of Nuclear Reactor Regulation

Date of Issuance: March 26, 2002

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

SUPPORTING AMENDMENT NO. 27 TO

AMENDED FACILITY OPERATING LICENSE NO. R-66

THE UNIVERSITY OF VIRGINIA

DOCKET NO. 50-62

1.0 INTRODUCTION

By letter dated September 17, 2001, as supplemented by letter dated December 19, 2001, the University of Virginia (UVA or licensee) requested that the U.S. Nuclear Regulatory Commission (NRC) amend Amended Facility Operating License No. R-66 for the UVA Research Reactor (UVARR). The requested changes would decrease the limits for possession of special nuclear material and remove the requirement to implement and maintain a physical security plan.

2.0 EVALUATION

The UVARR is a pool-type, light-water moderated and cooled research reactor, which was permanently shut down on July 1, 1998. All reactor fuel elements have been removed from the reactor pool and returned to the U.S. Department of Energy (DOE). With Amendment No. 25 to the UVARR Facility Operating License, issued on February 9, 2000, the NRC changed the licensee's authority to possession-only of the residual radioactive materials. The licensee has since requested approval of its decommissioning plan for the UVARR.

In its current request, the licensee proposed that the NRC decrease the limits for possession of special nuclear material to reflect the amount of material that the licensee currently possesses. As part of the preparation for decommissioning, the licensee has returned the majority of the special nuclear material in its possession to DOE. The licensee has also transferred special nuclear material to the UVA materials license for other use by the University.

License condition II.B.(2), which contains the possession limits for special nuclear material, currently reads as follows:

- (2) Pursuant to the Act and 10 CFR Part 70, "Domestic Licensing of Special Nuclear Material," the maximum U-235 possession limits are as follows:

<u>Maximum U-235 Kilograms</u>	<u>%Enrichment</u>	<u>Form</u>
4	<20%	Materials testing reactor (MTR)-type fuel
1	any	Fission chambers, flux foils, and other forms used in connection with the reactor

The licensee has proposed that the NRC change this license condition to read as follows:

- (2) Pursuant to the Act and 10 CFR Part 70, "Domestic Licensing of Special Nuclear Material," the maximum U-235 possession limits are as follows:

<u>Maximum U-235 Kilograms</u>	<u>%Enrichment</u>	<u>Form</u>
0.4	≥20%	Chambers, foils, plates, powders and other forms
0.1	<20%	Foils, powders and other forms

The proposed possession limits will allow for possession of the remaining special nuclear material from the UVARR and any material transferred from the license of the CAVALIER, a second research reactor also in the process of decommissioning.

During a telephone conversation between the UVA reactor facility director and the NRC project manager on February 13, 2002, the licensee stated that it intended to distinguish the possession of special nuclear material as high-enriched uranium (greater than or equal to 20 percent uranium-235 enrichment) and low-enriched uranium (less than 20 percent uranium-235 enrichment), and that the original application contained a typographical error as to the placement of the equal sign. (That is, the application indicated that the 0.4 kilogram of material was at an enrichment of greater than 20 percent, while the 0.1 kilogram of material was at an enrichment of less than or equal to 20 percent.)

Because the possession limits proposed by the licensee reflect the amount of material currently possessed by the licensee, the proposed changes to license condition 11.B.(2) are acceptable to the staff.

The licensee has also requested that the NRC delete license condition II.C.(3), "Physical Security Plan," from the license. That license condition currently reads as follows:

- (3) Physical Security Plan

The licensee shall maintain and fully implement all provisions of the Commission's approved physical security plan, including amendments and changes made pursuant to the authority of 10 CFR 50.54 (p). The approved security plan consists of documents withheld from public disclosure pursuant to 10 CFR 2.790, entitled "University of Virginia Nuclear Reactor Facility Physical Security Plan (July 1980)," submitted by letter dated July 15, 1980, as revised by letters dated February 26, 1981 and July 29, 1981.

The regulations in 10 CFR 73.67 (c)(1) require facilities to maintain a physical security plan when they possess special nuclear material of moderate strategic significance or 10 kg or more of special nuclear material of low strategic significance. The licensee's requested possession

limits are less than these amounts. Nonetheless, because the reactor license authorizes possession of special nuclear material of low strategic significance, the licensee must maintain security in accordance with the provisions of 10 CFR 73.67(f), "Fixed Site Requirements for Special Nuclear Material of Low Strategic Significance."

The amended special nuclear material possession limits requested by the licensee would authorize possession of up to 100 grams of uranium-235 enriched to less than 20 percent of the isotope uranium-235 in the form of foils, powders, and other forms, and up to 400 grams of uranium-235 enriched to 20 percent or greater of the isotope uranium-235 in the form of chambers, foils, plates, powders, and other forms.

The definition of "special nuclear material of low strategic significance" in 10 CFR 73.2 is less than an amount of special nuclear material of moderate strategic significance. Special nuclear material of moderate strategic significance is defined as (1) more than 1,000 grams of uranium-235 contained in uranium enriched to 20 percent or more of the uranium-235 isotope, or more than 500 grams of uranium-233 or plutonium, or in a combined quantity of more than 1,000 grams when computed by the equation, $\text{grams} = (\text{grams contained U-235}) + 2 (\text{grams U-233} + \text{grams plutonium})$ or (2) 10 kilograms or more of uranium-235 contained in uranium enriched to 10 percent or more but less than 20 percent of the uranium-235 isotope.

The licensee's possession limits fall within the definition of special nuclear material of low strategic significance. The 100 grams of contained uranium-235 enriched to less than 20 percent of the isotope uranium-235 is less than the 10-kilogram limit and the 400 grams of contained uranium-235 enriched to 20 percent or more is less than the 1,000 gram limit.

The regulations in 10 CFR 73.67(f) require licensees to (1) store or use material only within a controlled access area, (2) monitor with an intrusion alarm or other device or procedures the controlled access areas to detect unauthorized penetrations or activities, (3) assure that a watchman or offsite response force will respond to all unauthorized penetrations or activities, and (4) establish and maintain response procedures for dealing with threats of thefts or thefts of this material. The licensee shall retain a copy of the current response procedures as a record for 3 years after the close of the period for which the licensee possesses the special nuclear material under each license for which the procedures were established. Copies of superseded material must be retained for 3 years after each change.

The licensee acknowledges these requirements in its application and is, therefore, aware of these requirements. NRC's inspection program will verify that these requirements are met. The regulations in 10 CFR Part 20, Subpart I, "Storage and Control of Licensed Material," are applicable to the remaining byproduct material possessed by the licensee.

Because the licensee's possession limits are for less special nuclear material than is required by 10 CFR 73.67 (c)(1) for a physical security plan, the amount of material to be authorized under the license meets the definition for special nuclear material of low strategic significance, and the licensee has shown that it is aware of its responsibilities under the regulations in 10 CFR 73.67(f), the staff concludes that the special nuclear material in the licensee's possession will be adequately protected and that the license condition to maintain and implement a physical security plan can be deleted from the facility license.

3.0 ENVIRONMENTAL CONSIDERATION

Parts of this amendment involve 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 staff has determined that this amendment involves 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.

Parts of this amendment involve changes relating solely to safeguards matters (i.e., protection against sabotage or loss or diversion of special nuclear material) or issuance of an approval of a safeguards plan. The staff has determined that the amendment or approval does not involve any significant construction impacts. The amendment or approval is confined to (i) organizational and procedural matters, (ii) modifications to systems used for security and/or materials accountability, (iii) administrative changes, and (iv) review and approval of transportation routes pursuant to 10 CFR 73.37. Accordingly, this amendment meets the eligibility criteria for categorical exclusion set forth in 10 CFR 51.22(c)(12). 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.

4.0 CONCLUSION

The staff has concluded, on the basis of the considerations discussed above, that (1) because the amendment does not involve a significant increase in the probability or consequences of accidents previously evaluated, or create the possibility of a new or different kind of accident from any accident previously evaluated, and does not involve a significant reduction in a margin of safety, the amendment does not involve a significant hazards consideration; (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: A. Adams, Jr.

Date: March 26, 2002