

December 30, 2003

Dr. Barry M. Klein  
Vice Chancellor for Research  
University of California, Davis  
One Shields Avenue  
Davis, CA 95616-8558

SUBJECT: ISSUANCE OF AMENDMENT NO. 7 TO AMENDED FACILITY OPERATING  
LICENSE NO. R-130 - REGENTS OF THE UNIVERSITY OF CALIFORNIA  
(TAC NO. MB5598)

Dear Dr. Klein:

The U.S. Nuclear Regulatory Commission has issued the enclosed Amendment No. 7 to Facility Operating License No. R-130 for the McClellan Nuclear Radiation Center (MNRC) TRIGA Research Reactor. The amendment consists of changes to the Facility Operating License in response to your submittals of October 21, 2003 and November 6, 2003, and is discussed in the enclosed Safety Evaluation Report.

Sincerely,

**/RA/**

Warren J. Eresian, Project Manager  
Research and Test Reactors Section  
New, Research and Test Reactors Program  
Division of Regulatory Improvement Programs  
Office of Nuclear Reactor Regulation

Docket No. 50-607

Enclosures: 1. Amendment No. 7  
2. Safety Evaluation Report

University of California - Davis/McClellan MNRC

Docket No. 50-607

cc:

Dr. Wade J. Richards  
5335 Price Avenue, Bldg. 258  
McClellan AFB, CA 95652-2504

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

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REGENTS OF THE UNIVERSITY OF CALIFORNIA AT

McCLELLAN NUCLEAR RADIATION CENTER

DOCKET NO. 50-607

AMENDMENT TO AMENDED FACILITY OPERATING LICENSE

Amendment No. 7  
License No. R-130

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-130 filed by the Regents of the University of California at McClellan Nuclear Radiation Center (the licensee) on October 21, 2003 and November 6, 2003, 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 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) 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 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 notice for this amendment is not required by 10 CFR 2.106.

2. Accordingly, the license is amended by changes to the Facility Operating License as indicated below, and paragraph 2.B of Amended Facility Operating License No. R-130 is hereby amended to read as follows:

- 2.B.(4) In addition to those items specified in 2.B.(1), 2.B.(2) and 2.B.(3) the following radioactive materials may be received, possessed, and used at the facility.

Radioactive Material (element and mass number)	Chemical and/or Physical Form	Maximum Quantity Licensee May Possess at Any One Time
A. Any radioactive material between atomic number 1 through 83, inclusive	A. Any	A. 20 Curies (1 Curie each, except as provided below)
B. Any radioactive material with atomic numbers 84 and above	A. Any	A. 4 Curies (100 millicuries each, except as provided below) or up to 20 micrograms
C. Iodine-125	C. Iodide/Liquid	C. 40 Curies
D. Source material (but only trace amounts of Th-234)	D. Any	D. 4 grams per radionuclide, not to exceed 10 grams total
E. Special nuclear material	E. Any	E. 2 grams per radionuclide, not to exceed 5 grams total

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

FOR THE NUCLEAR REGULATORY COMMISSION

*/RA/*

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

Date of Issuance: December 30, 2003

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

SUPPORTING AMENDMENT NO. 7 TO

AMENDED FACILITY OPERATING LICENSE NO. R-130

REGENTS OF THE UNIVERSITY OF CALIFORNIA AT

McCLELLAN NUCLEAR RADIATION CENTER

DOCKET NO. 50-607

1.0 INTRODUCTION

By letter dated October 21, 2003, the Regents of the University of California (the licensee) submitted a request for amendment of the Facility Operating License No. R-130 for the McClellan Nuclear Radiation Center (MNRC) TRIGA research reactor. The request provides for the allowance of radioactive materials not produced by the reactor to be received, possessed and used on the facility site. In particular, it is requested that Section 2.B of the Facility Operating License be amended to include an additional Section 2.B.(4) as follows:

- 2.B.(4) In addition to those items specified in 2.B.(1), 2.B.(2) and 2.B.(3) the following radioactive materials may be received, possessed, and used at the facility.

Radioactive Material (element and mass number)	Chemical and/or Physical Form	Maximum Quantity Licensee May Possess at Any One Time
A. Any radioactive material between atomic number 1 through 83, inclusive	A. Any	A. 20 Curies (1 Curie each, except as provided below)
B. Any radioactive material with atomic numbers 84 and above	A. Any	A. 4 Curies (100 millicuries each, except as provided below) or up to 20 micrograms
C. Iodine-125	C. Iodide/Liquid	C. 40 Curies
D. Source material (but only trace amounts of Th-234)	D. Any	D. 4 grams per radionuclide, not to exceed 10 grams total
E. Special nuclear material	E. Any	E. 2 grams per radionuclide, not to exceed 5 grams total



This request is discussed below.

## 2.0 EVALUATION

All of the radioactive materials to be received, possessed and handled in accordance with this amendment request will be located in the reactor room glove box. In November of 2002, the NRC approved Amendment No. 5 of the Technical Specifications for the McClellan Nuclear Radiation Center. The safety concern addressed in that amendment was related to the ability of the reactor room glove box and its associated exhaust system to mitigate the consequences associated with the complete volatilization of the maximum radioactive material inventory contained in the box, a total of 61 curies of Iodine-125. The analysis showed that the CEDE to the thyroid for a 10-minute exposure in the unrestricted area would be about 3 millirem. For those exposed in the reactor room for the maximum assumed occupancy time of 5 minutes the CEDE to the thyroid would be about 205 millirem. These doses were compared to the expected doses (CEDE) resulting from the Maximum Hypothetical Accident (MHA), which serves as the bounding accident for radiological consequences. The resulting doses from the MHA are 53 millirem in the unrestricted area and 360 millirem in the reactor room. The staff concluded that the consequences of the complete volatilization of 61 curies of Iodine-125 were less than the bounding MHA and therefore there was not a significant reduction of the margin of safety with respect to the MHA.

This amendment request will increase the total allowable activity in the reactor room glove box from 61 curies to 64.4 curies. (The total activity in categories A, B, and C in the above table is 64 curies. The maximum activity in category D corresponds to 10 grams of Uranium-233, or about 0.1 curie. The maximum activity in category E corresponds to 5 grams of Plutonium-239, or about 0.3 curie.) For the complete volatilization of 64.4 curies, doses in the unrestricted area and in the reactor room will scale up proportionally from 61 curies, resulting in a dose in the unrestricted area of 3.2 millirem, and a dose in the reactor room of 216 millirem (i.e., the doses have increased by 5.6 percent.)

The staff concludes that the consequences of the complete volatilization of 64.4 curies are much less than the consequences of the bounding MHA, and that increasing the allowable activity in the reactor room glove box from 61 curies to 64.4 curies does not significantly reduce the margin of safety with respect to the MHA and to 10 CFR Part 20 limits and that the increase is acceptable.

The staff has reviewed the proposed change to the Facility Operating License and concluded that it does not impact the licensee's ability to continue to meet the relevant requirements of 10 CFR Part 50.36.

## 3.0 ENVIRONMENTAL CONSIDERATION

This amendment does not 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 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 changes; and (3) such changes are 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: Warren J. Eresian

Date: December 30, 2003