

January 26, 2007

EA-06-324

Mr. Ralph Butler, Director  
Research Reactor Center  
University of Missouri—Columbia  
Research Park  
Columbia, MO 65211

SUBJECT: UNIVERSITY OF MISSOURI—COLUMBIA; ORDER RE: EMERGENCY PLAN  
REQUIREMENTS (TAC NO. MC2652)

Dear Mr. Butler:

This letter acknowledges receipt of your letter dated March 31, 2004, which requested that the U.S. Nuclear Regulatory Commission (NRC or the Commission) rescind the memoranda and orders that imposed EP requirements related to the Transuranic Management by Pyropartitioning Separation (TRUMP-S) Research Project. Your letter also proposed changes to the emergency plan (EP) for the University of Missouri Research Reactor, submitted under the provisions of Title 10, Section 50.54(q) of the *Code of Federal Regulations* (10 CFR 50.54(q)).

In response to your request, the NRC has issued the enclosed "Order Modifying Emergency Plan Requirements" applicable to Amended Facility License No. R-103 for the University of Missouri Research Reactor Facility. This order modifies the EP in accordance with your proposed changes which removes the Commission's EP requirements for the TRUMP-S Research Project.

The basis for the enclosed Order is that the TRUMP-S Research Project has been completed and licensed material associated with the project has been removed from the site. Furthermore, the authority to possess the types of material used in the TRUMP-S Research Project has been reduced in Broad Scope Materials License No. 24-00513-39 to possession limits that do not require consideration of the need for an EP.

The NRC has also determined that the proposed changes will not decrease the overall effectiveness of the EP for the University of Missouri—Columbia. The review of the proposed changes (using NUREG-0849, "Standard Review Plan for the Review and Evaluation of Emergency Plans for Research and Test Reactors") indicates that the changes comply with 10 CFR 50.54(q) and that the plan continues to meet the requirements of Appendix E, "Emergency

Planning and Preparedness for Production and Utilization Facilities,” to 10 CFR Part 50, “Domestic Licensing of Productions and Utilization Facilities.”

A copy of the safety evaluation supporting the Order is also enclosed.

Sincerely,

***/RA/***

Alexander Adams, Jr., Senior Project Manager  
Research and Test Reactors Branch A  
Division of Policy and Rulemaking  
Office of Nuclear Reactor Regulation

Docket No. 50-186

Enclosures: 1. Order Modifying Emergency Plan Requirements  
2. Safety Evaluation

cc w/enclosures: See next page

Planning and Preparedness for Production and Utilization Facilities,” to 10 CFR Part 50, “Domestic Licensing of Productions and Utilization Facilities.”

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Alexander Adams, Jr., Senior Project Manager  
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University of Missouri—Columbia

Docket No. 50-186

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UNITED STATES OF AMERICANUCLEAR REGULATORY COMMISSION

In the Matter of  
 THE CURATORS OF  
 THE UNIVERSITY OF MISSOURI

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Docket No. 50-186

(The University of Missouri  
 Research Reactor)

ORDER MODIFYING EMERGENCY PLAN REQUIREMENTS

I

The Curators of the University of Missouri (the Licensee) hold Amended Facility License No. R-103 issued by the U.S. Nuclear Regulatory Commission (NRC or the Commission) pursuant to Title 10, Part 50, "Domestic Licensing of Production and Utilization Facilities" (10 CFR Part 50), and Broad Scope Materials License No. 24-00513-39 issued by the NRC pursuant to 10 CFR Part 30, "Rules of General Applicability to Domestic Licensing of Byproduct Material." Amended Facility License No. R-103 authorizes the operation of the University of Missouri Research Reactor (MURR or the facility) in accordance with conditions specified therein. Broad Scope Materials License No. 24-00513-39 authorizes the possession and use of various byproduct, special nuclear, and source material at the Licensee's facility. The facility is located on the Licensee's campus in Columbia, Missouri.

II

On March 19 and April 5, 1990, the NRC staff issued two license amendments applicable to the Licensee's Special Nuclear Material and Source Material License No. SNM-247. At the request of the Licensee, the NRC terminated Special Nuclear Material and Source Material License No. SNM-247 on July 7, 1993. On that day, the Commission included the special nuclear materials that were listed on Special Nuclear Material and Source Material

License No. SNM-247 in the University's newly issued Broad Scope Materials License No. 24-00513-39. The amendments collectively authorized the Licensee to possess and use certain specified quantities of uranium (depleted in U-235), neptunium-237, americium-241, plutonium-239, and plutonium-240. The Licensee's purpose in requesting the amendments was to conduct research related to the Transuranic Management by Pyropartitioning Separation (TRUMP-S) Research Project. The Licensee carried out this research in the Alpha laboratory at the MURR.

Three organizations and 10 individuals filed motions to intervene and requests for hearing on the license amendments. In response to the intervenors' filings, the Commission appointed a Presiding Officer to conduct an informal hearing pursuant to Subpart L, "Informal Hearing Procedures for NRC Adjudications" of the Commission's procedural regulations in 10 CFR Part 2, "Rules of Practice for Domestic Licensing Proceedings and Issuance of Orders." The Presiding Officer issued a First Initial Decision on April 5, 1991, followed by a Final Initial Decision on July 10, 1991.

The Licensee and the intervenors appealed various aspects of the proceeding and decisions of the Presiding Officer and the Commission to the Commission. In response, the Commission issued Memorandum and Order, CLI-95-01, dated February 28, 1995; Memorandum and Order, CLI-95-08, (Petitions for Reconsideration), dated June 22, 1995; Memorandum and Order, CLI-95-11, (Petition for Partial Reconsideration), dated August 22, 1995; and Memorandum and Order, CLI-95-17, (Petition for Reconsideration), dated December 14, 1995. The first three of these memoranda and orders required the Licensee to make changes to the MURR Emergency Plan (EP). The MURR EP was changed because the material, while under a NRC broad scope materials license, was being used in the Alpha Laboratory at MURR. In response to the memoranda and orders, the Licensee submitted proposed changes to the EP on December 20, 1995, as supplemented on May 1, 1996. The NRC staff reviewed the Licensee's proposed changes to the EP and, in a letter to the Licensee

dated June 20, 1996, concluded that the proposed changes to the EP met the intent of the Commission's memoranda and orders and were acceptable as written.

### III

By letter dated March 31, 2004, the Licensee requested changes to the EP to remove the requirements added to it by the Commission's memoranda and orders related to the TRUMP-S Research Project. The Licensee also requested the rescission of the Commission's memoranda and orders requiring changes to the EP. The Licensee completed experiments at the MURR related to the TRUMP-S Research Project on September 30, 1997. By July 20, 1998, the Licensee had shipped all low-level waste from the project and completed final verification surveys documenting the decommissioning of the Alpha Laboratory. All transuranic waste (americium, neptunium, and plutonium) was shipped from the MURR to the Waste Isolation Pilot Plant on May 15, 2003. The NRC renewed Broad Scope Materials License No. 24-00513-39, effective December 22, 2003, with reduced possession limits for the radioisotope types associated with the TRUMP-S Research Project. The renewed license possession limits allow no radioisotope quantities in excess of the quantities listed in 10 CFR 30.72 Schedule C, "Quantities of Radioactive Materials Requiring Consideration of the Need for an Emergency Plan for Responding to a Release." The NRC staff reviewed the Licensee's proposed changes to the EP and concluded that they will not decrease the effectiveness of the EP and are therefore acceptable.

### IV

Accordingly, pursuant to Sections 104c, 161b and 161i of the Atomic Energy Act of 1954, as amended, and the Commission's regulations in 10 CFR Part 50, IT IS HEREBY ORDERED THAT:

The changes to the University of Missouri Research Reactor Emergency Plan imposed by Commission-issued Memoranda and Orders CLI-95-01 dated February 28, 1995; CLI-95-08 dated June 22, 1995; and CLI-95-11 dated August 22, 1995, are

hereby deleted and the changes to the Emergency Plan for the University of Missouri Research Reactor in the Licensee's letter of March 31, 2004, are approved.

V

Pursuant to the Atomic Energy Act of 1954, as amended, the licensee or any other person adversely affected by this Order may request a hearing within 30 days of the date of publication of this Order in the Federal Register. A request for a hearing or a petition for leave to intervene must be filed (1) by first class mail addressed to the Office of the Secretary, U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001, Attention: Rulemaking and Adjudications Staff, or (2) by courier, express mail, or expedited delivery services to the Office of the Secretary, Sixteenth Floor, One White Flint North, 11555 Rockville Pike, Rockville, Maryland 20852, Attention: Rulemaking and Adjudications Staff. Because of continuing disruptions in delivery of mail to U.S. Government offices, it is requested that requests for hearing should also be transmitted to the Secretary of the Commission either by e-mail addressed to the Office of the Secretary, U.S. Nuclear Regulatory Commission, [HEARINGDOCKET@nrc.gov](mailto:HEARINGDOCKET@nrc.gov), or by facsimile transmission addressed to the Office of the Secretary, U.S. Nuclear Regulatory Commission, Washington, DC Attention: Rulemakings and Adjudications Staff at 301-415-1101 (the verification number is 301-415-1966).

A copy of the request for hearing and petition for leave to intervene must also be sent to the Director, Office of Nuclear Reactor Regulation and to the Assistant General Counsel for Operating Reactors and High Level Waste Programs, Office of the General Counsel, with both copies addressed to the U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001. The NRC further requests that copies be transmitted either by facsimile transmission to 301-415-3725 or by e-mail to [OGCMAILCENTER@nrc.gov](mailto:OGCMAILCENTER@nrc.gov).

If a person other than the Licensee requests a hearing, he or she shall set forth with particularity the manner in which his or her interest is adversely affected by this Order and shall address the criteria set forth in 10 CFR 2.309, "Hearing Requests, Petitions to Intervene,

Requirements for Standing, and Contentions.”

If a hearing is requested by the Licensee or a person whose interest is adversely affected, the Commission will issue an order designating the time and place of any hearing. If a hearing is held, the issue to be considered at such hearing shall be whether this Order should be sustained.

In the absence of any request for a hearing or written approval of an extension of time in which to request a hearing, the provisions specified in Section IV above shall be effective and final 30 days from the date of publication of this Order in the Federal Register without further order or proceedings. If an extension of time for requesting a hearing has been approved, the provisions specified in Section IV shall be final when the extension expires if a hearing request has not been received.

In accordance with 10 CFR 51.10(d), this Order is not subject to Section 102(2) of the National Environmental Policy Act, as amended. The NRC staff notes, however, that with respect to environmental impacts associated with the changes imposed by this Order as described in the safety evaluation, the changes would, if imposed by other than an Order, meet the definition of a categorical exclusion in accordance with 10 CFR 51.22(c)(14)(v). Thus, pursuant to either 10 CFR 51.10(d) or 10 CFR 51.22(c)(14)(v), neither an environmental assessment nor an environmental impact statement is required.

For further information, see the application from the Licensee dated March 31, 2004 (Agencywide Documents Access Management System (ADAMS) Accession No. ML041040772), available for public inspection at the Commission's Public Document Room (PDR), located at One White Flint North, Public File Area O1 F21, 11555 Rockville Pike (first floor), Rockville, Maryland. Publicly available records will be accessible electronically from the ADAMS Public Electronic Reading Room on the Internet at the NRC Web site, <http://www.nrc.gov/reading-rm/adams.html>. Persons who do not have access to ADAMS or who have problems in accessing the documents in ADAMS should contact the NRC PDR

reference staff by telephone at 1-800-397-4209 or 301-415-4737 or by e-mail to PDR@nrc.gov.

FOR THE U.S. NUCLEAR REGULATORY COMMISSION

*/RA/*

Michael J. Case, Director  
Division of Policy and Rulemaking  
Office of Nuclear Reactor Regulations

Dated this 26th day of January 2007

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

ORDER MODIFYING EMERGENCY PLAN REQUIREMENTS

AMENDED FACILITY LICENSE NO. R-103

THE CURATORS OF THE UNIVERSITY OF MISSOURI

DOCKET NO. 50-186

1.0 INTRODUCTION

By letter dated March 31, 2004, the Curators of the University of Missouri—Columbia (UMC or the Licensee) submitted proposed changes to the University of Missouri Research Reactor (MURR) Emergency Plan (EP) pursuant to Title 10, Section 50.54(q), of the *Code of Federal Regulations* (10 CFR 50.54(q)). The proposed changes would remove the EP conditions related to the Transuranic Management by Pyropartitioning Separation (TRUMP-S) Research Project that memoranda and orders issued by the U.S. Nuclear Regulatory Commission (NRC or the Commission) put into place. The Licensee has requested that these memoranda and orders be rescinded.

2.0 BACKGROUND

On March 19 and April 5, 1990, the NRC staff issued two license amendments applicable to the Licensee's Special Nuclear Material and Source Material License No. SNM-247. At the request of the Licensee, the NRC terminated Special Nuclear Material and Source Material License No. SNM-247 on July 7, 1993. On that day, the Commission included the special nuclear materials that were on Special Nuclear Material and Source Material License No. SNM-247 in the University's newly issued Broad Scope Materials License No. 24-00513-39. The amendments collectively authorized the Licensee to possess and use certain specified quantities of uranium (depleted in U-235), neptunium-237, americium-241, plutonium-239, and plutonium-240. The Licensee's purpose in requesting the amendments was to conduct research related to the TRUMP-S Research Project. The Licensee carried out this research in the Alpha Laboratory at the MURR facility.

Three organizations and 10 individuals filed motions to intervene and requests for hearing on the license amendments. In response to the intervenors' filings, the Commission appointed a Presiding Officer to conduct an informal hearing pursuant to Subpart L, "Informal Hearing Procedures for NRC Adjudications," of the Commission's procedural regulations in 10 CFR Part 2, "Rules of Practice for Domestic Licensing Proceedings and Issuance of Orders." The Presiding Officer issued a First Initial Decision on April 15, 1991, followed by a Final Initial Decision on July 10, 1991.

The Licensee and the intervenors appealed various aspects of the proceeding and the decisions of the Presiding Officer to the Commission. In response, the Commission issued Memorandum and Order CLI-95-01, dated February 28, 1995; Memorandum and Order, CLI-

95-08, (Petitions for Reconsideration), dated June 22, 1995; Memorandum and Order, CLI-95-11, (Petition for Partial Reconsideration), dated August 22, 1995; and Memorandum and Order, CLI-95-17, (Petition for Reconsideration), dated December 14, 1995. The first three of these memoranda and orders required the Licensee to make changes to the MURR EP.

In Memorandum and Order CLI-95-01, the Commission determined that the EP covers all activities in the MURR facility, including the reactor containment and the laboratories. Because the TRUMP-S Research Project was carried out in a laboratory at the MURR facility, the EP applied to the TRUMP-S Research Project experiments. The Commission also determined the expected offsite dose levels that could result from the release of TRUMP-S radionuclides in a fire and compared these dose levels with those contemplated by the MURR EP. The Commission concluded that the EP was sufficient to respond to an accident involving TRUMP-S materials. However, the Commission required the Licensee to modify the emergency classes and action levels in the EP to clarify differences between the classification of a reactor fire and a fire affecting nuclear materials.

CLI-95-08 clarified the Commission's intent concerning the modification of emergency classes and action levels. In CLI-95-11, the Commission directed the Licensee to evacuate all persons to a point at least 150 meters from the Alpha Laboratory (where the TRUMP-S Research Project experiments were conducted) whenever an Alert was declared as a result of a fire involving TRUMP-S materials or to provide the NRC staff with sufficient information to determine whether the existing EP and procedures (or proposed modifications) would adequately protect the public within the site boundary in the event of a fire involving TRUMP-S materials. The Commission directed the NRC staff to require the Licensee to take further protective measures if necessary. CLI-95-17 addressed those issues raised only by the intervenors and imposed no requirements on the Licensee.

In response to the memoranda and orders and an NRC staff request for additional information, the Licensee submitted proposed changes to the EP on December 20, 1995, as supplemented on May 1, 1996. The NRC staff reviewed the Licensee's proposed changes to the EP and, in a letter to the Licensee dated June 20, 1996, concluded that the proposed changes to the EP met the intent of the Commission's memoranda and orders and were acceptable as written.

### 3.0 EVALUATION

The Licensee has requested changes to the EP to remove all references to the TRUMP-S Research Project and its related materials. The Licensee has also requested that the Commission's memoranda and orders placing conditions related to the TRUMP-S research project on the Licensee's EP be rescinded. These requirements were imposed in the EP by Commission memoranda and orders related to the TRUMP-S Research Project, as discussed above.

The Licensee completed experiments at the MURR facility related to the TRUMP-S project on September 30, 1997. By July 20, 1998, the Licensee had shipped all low-level waste from the project and completed final verification surveys documenting the decommissioning of the Alpha Laboratory. The Licensee shipped all transuranic waste (americium, neptunium, and plutonium) from the MURR to the Waste Isolation Pilot Plant on May 15, 2003. The NRC renewed the University of Missouri's Broad Scope Materials License No. 24-00513-39 effective December 22, 2003, with reduced possession limits for the radioisotopes associated with the TRUMP-S Research Project. The renewal possession limits preclude radioisotope quantities in excess of the quantities listed in 10 CFR 30.72 Schedule C, "Quantities of Radioactive Materials Requiring Consideration of the Need for an Emergency Plan for Responding to a Release."

Condition 13 of the license states, "in addition to the possession limits in Item 8, the Licensee shall further restrict the possession of licensed material to quantities below the limits specified in 10 CFR 30.72 which require consideration of the need for an emergency plan for responding to a release of licensed material."

All the changes to the EP proposed by the Licensee were related to the TRUMP-S Research Project and the Alpha Laboratory or Commission Memoranda and Orders CLI-95-01, CLI-95-08, and CLI-95-11. The NRC staff reviewed the changes based on the criteria found in NUREG-0849, "Standard Review Plan for the Review and Evaluation of Emergency Plans for Research and Test Reactors," and found that the proposed changes will not decrease the effectiveness of the EP because they are based on an NRC-approved reduction in possession limits of the Licensee's materials license. The staff concludes that the changes to the EP are in accordance with 10 CFR 50.54(q) and that the EP continues to meet the requirements of Appendix E, "Emergency Planning and Preparedness for Production and Utilization Facilities," to 10 CFR Part 50, "Domestic Licensing of Production and Utilization Facilities."

Because the TRUMP-S Research Project material has been removed from the MURR site, the Licensee's Broad Scope Material License No. 24-00513-39 restricts possession limits to levels that do not require an EP to be considered, and NRC staff review of the licensee's proposed changes to the EP finds them to be acceptable, the NRC staff concludes that it is acceptable to modify the EP as proposed by the Licensee to delete requirements related to TRUMP-S Research Project material imposed by Commission Memoranda and Orders CLI-95-01, CLI-95-08, and CLI-95-11.

#### 4.0 ENVIRONMENTAL CONSIDERATION

In accordance with 10 CFR 51.10(d), an order is not subject to Section 102(2) of the National Environmental Policy Act, as amended. The NRC staff notes, however, that even if these changes were not being imposed by an order, pursuant to 10 CFR 51.22(b), they would not require an environmental impact statement or environmental assessment. The EP changes in this Order are related to the renewal of a materials license issued pursuant to 10 CFR Part 30, "Rules of General Applicability to Domestic Licensing of Byproduct Material," authorizing use of radioactive materials for research and development and for educational purposes. The changes to the EP authorized by this Order meet the eligibility criteria for categorical exclusion set forth in 10 CFR 51.22(c)(14)(v).

#### 5.0 CONCLUSION

The NRC staff concludes, on the basis of the considerations discussed above, that (1) the EP requirements imposed on the Licensee by Commission Memoranda and Orders CLI-95-01, dated February 28, 1995; CLI-95-08, dated June 22, 1995; and CLI-95-11, dated August 22, 1995, can be deleted by modifying the EP as proposed by the Licensee and (2) the proposed changes to the EP will not decrease the effectiveness of the EP and are therefore acceptable.

Principal Contributors: A. Adams, Jr.  
D. Barss

Date: January 26, 2007