

September 25, 2014

Dr. Timothy W. Koeth, Director
Nuclear Reactor and Radiation Facilities
Chemical and Nuclear Engineering Building 090
University of Maryland
College Park, MD 20742

SUBJECT: UNIVERSITY OF MARYLAND - REQUEST FOR ADDITIONAL INFORMATION
RE: REVIEW OF THE ARGON-41 RADIOLOGICAL DOSE ASSESSMENT FOR
LICENSE RENEWAL OF THE MARYLAND UNIVERSITY TRAINING REACTOR
(TAC NO. ME1592)

Dear Dr. Koeth:

The U. S. Nuclear Regulatory Commission (NRC) is continuing its review of your application for the renewal of Facility Operating License No. R-70, for the Maryland University Training Reactor, dated May 12, 2000, (a redacted version of the application, including the safety analysis report, is available on the NRC's public Web site at www.nrc.gov under Agencywide Documents Access and Management System (ADAMS) Accession No. ML003718746), as supplemented. During our review of your letter dated June 18, 2014 (ADAMS Accession No. ML14176A078), questions have arisen for which we require additional information and clarification. The enclosed request for additional information (RAI) identifies the additional information needed to complete our review. We request responses to the enclosed RAI within 30 days from the date of this letter.

In accordance with 10 CFR 50.30(b), you must execute your response in a signed original document under oath or affirmation. Your response must be submitted in accordance with 10 CFR 50.4, "Written communications." Information included in your response that is considered sensitive or proprietary, that you seek to have withheld from the public, must be marked in accordance with 10 CFR 2.390, "Public inspections, exemptions, requests for withholding." Any information related to security should be submitted in accordance with 10 CFR 73.21, "Protection of Safeguards Information: Performance requirements." Following receipt of the additional information, we will continue our evaluation of your renewal request.

T. Koeth

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If you have any questions, or need additional time to respond to this request, contact Eben Allen at 301-415-4264 or by electronic mail at Eben.Allen@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. 50-166

Enclosure:

Request for Additional Information

cc: See next page

T. Koeth

- 2 -

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Sincerely,

/RA/

Geoffrey A. Wertz, Project Manager
Research and Test Reactors Licensing Branch
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Request for Additional Information
cc: See next page

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ADAMS Accession No: ML14266A658

NRR-088

OFFICE	PRLB: PM	PRLB : PM	PRPB: LA	PRLB: BC	PRLB : PM
NAME	EAllen	GWertz	CHawes for PBlechman	AAdams	GWertz
DATE	9/24/14	9/23/2014	9/25/14	9/25/14	9/25/14

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University of Maryland

Docket No. 50-166

cc:

Director, Dept. of Natural Resources
Power Plant Siting Program
Energy & Coastal Zone Administration
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Mr. Roland G. Fletcher, Program Manager IV
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Professor Robert Briber
Department of Materials Science and Engineering
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College Park, MD 20742-2115

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

OFFICE OF NUCLEAR REACTOR REGULATION
REQUEST FOR ADDITIONAL INFORMATION
REGARDING LICENSE RENEWAL FOR
THE MARYLAND UNIVERSITY TRAINING REACTOR
LICENSE NO. R-70; DOCKET NO. 50-166

The U. S. Nuclear Regulatory Commission (NRC) is continuing its review of your application for renewal of Facility Operating License No. R-70, for the MUTR, dated May 12, 2000, (ADAMS Accession No. ML003718746), as supplemented. During our review of your letter dated June 18, 2014 (ML14176A078), questions have arisen for which we require additional information and clarification. The RAI identifies the additional information needed to complete our review. We request that you provide responses to the enclosed RAI within 30 days from the date of this letter.

1. NUREG-1537, Part 1, Section 11.1.1.1 "Airborne Radiation Sources," provides detailed guidance on dose assessment associated with the production of Argon-41 (Ar-41) in non-power reactor facilities. This guidance requests that the specific source locations, source release rates, concentrations in occupied areas, personnel doses and dose rates, release points from the restricted area, diffusion and dispersion in unrestricted areas, predicted concentrations in unrestricted areas and potential dose rates and annual doses for both radiation workers (occupational) and members of the public (public) should be provided. The NRC staff review found specific details concerning this information to be lacking from the MUTR SAR and the letter dated June 18, 2014. The following information is requested:
 - a) Provide the leakage flow rate of Ar-41 from the restricted area to any outlying areas (hallways, classrooms, etc) and the environment. Provide any calculations, assumptions, and/or conservatism used to support the flow rate determination.
 - b) Provide a description of the release point(s) and any flow paths for the Ar-41 effluent from the restricted area to any unrestricted area(s).
 - c) Provide the potential radiological dose to any members of the public from effluents that could leak from the MUTR confinement. Provide an analysis of the maximum exposure to an individual at the nearest unrestricted location such as permanent residence, classroom, campus dormitory, fence line, or other special interest space. Provide any assumptions used for this determination.
 - d) In the letter dated June 18, 2014, MUTR stated the highest concentrations of Ar-41 exist on the experimental floor. Describe how access is controlled to this area during reactor operations. Describe how radiation monitoring is accomplished to provide protection to a worker from an unanticipated Ar-41 exposure when experimental facilities are being utilized or in the event of a failure such as the thermal column seal.