

November 2, 2016

Dr. Partha Chowdhury, Director  
Nuclear Radiation Laboratory  
University of Massachusetts-Lowell  
One University Avenue  
Lowell, MA 01854

SUBJECT: UNIVERSITY OF MASSACHUSETTS AT LOWELL – REQUEST FOR  
ADDITIONAL INFORMATION REGARDING THE OPERATOR REQUALIFICATION  
PROGRAM FOR RENEWAL OF FACILITY OPERATING LICENSE NO. R-125  
FOR THE UNIVERSITY OF MASSACHUSETTS AT LOWELL RESEARCH  
REACTOR

Dear Dr. Chowdhury,

The U.S. Nuclear Regulatory Commission (NRC) is reviewing your application for the renewal of Facility Operating License No. R-125, dated October 20, 2015 (redacted version of the application is available on the NRC's public web site at [www.nrc.gov/reading-rm/adams.html](http://www.nrc.gov/reading-rm/adams.html) under Agencywide Documents Access and Management System Accession No. ML16042A015), for the University of Massachusetts-Lowell Research Reactor.

The regulations in Title 10 of the *Code of Federal Regulations* (10 CFR) 50.34, "Content of applications; technical information," paragraph (b)(7), require that the reactor operator requalification program, pursuant to 10 CFR 55.59, "Requalification," for Facility Operating License No. R-125 be reviewed as part of the license renewal application. During the course of our review, the NRC staff determined that additional information was required to complete the review. Please provide responses to the enclosed requests for additional information within 30 days of the date of this letter.

In accordance with 10 CFR 50.30(b), "Oath or affirmation," 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.

P Chowdhury

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If you need additional time to complete this request, or have any questions regarding this review, please contact me at (301) 415-4246, or by electronic mail at [Eben.Allen@nrc.gov](mailto:Eben.Allen@nrc.gov).

Sincerely,

*/RA/*

Eben Allen, Project Manager  
Research and Test Reactors Licensing Branch  
Division of Policy and Rulemaking  
Office of Nuclear Reactor Regulation

Docket No. 50-223

Enclosure:  
As stated

cc: See next page

University of Massachusetts - Lowell

Docket No. 50-223

cc:

Mayor of Lowell  
City Hall  
Lowell, MA 01852

Mr. Leo Bobek  
Reactor Supervisor  
University of Massachusetts - Lowell  
One University Avenue  
Lowell, MA 01854

Department of Environmental Protection  
One Winter Street  
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Beverly Anderson, Interim Director  
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Department of Public Health  
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John Giarrusso, Planning and Preparedness Division Chief  
Massachusetts Emergency Management Agency  
400 Worcester Road  
Framingham, MA 01702-5399

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

P Chowdhury

- 2 -

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As stated

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**ADAMS Accession No: ML16061A081**

**\*concurrence via email**

**NRR-106**

<b>OFFICE</b>	NRR/DPR/PM	NRR/DPR/LA*	NRR/DPR/PROB	NRR/DPR/BC	NRR/DPRPM
<b>NAME</b>	EAllen	NParker	PTorres	AAdams	EAllen
<b>DATE</b>	10/26/16	10/27/16	10/27/16	10/27/16	11/2/16

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OFFICE OF NUCLEAR REACTOR REGULATION

REQUEST FOR ADDITIONAL INFORMATION

OPERATOR REQUALIFICATION PROGRAM FOR THE RENEWAL OF

THE UNIVERSITY OF MASSACHUSETTS AT LOWELL RESEARCH REACTOR

LICENSE NO. R-125; DOCKET NO. 50-223

The University of Massachusetts-Lowell submitted an application dated October 20, 2015, for renewal of Facility Operating License No. R-125 at the University of Massachusetts-Lowell Research Reactor (UMLRR). As part of the license renewal the Nuclear Regulatory Commission (NRC) staff reviewed the Operator Requalification Program (ORP) for the UMLRR (Rev. 2.0 April 2008), submitted March 16, 2016 (Agencywide Documents Access and Management System Accession No. ML16076A405). During the course of the review the NRC staff discovered the following items for which clarification or additional information is required.

The ORP for the UMLRR, is primarily evaluated using regulations in Title 10 of the *Code of Federal Regulations* (10 CFR) 55 "OPERATORS' LICENSES," and the guidance in American National Standards Institute/American Nuclear Society, (ANSI/ANS)-15.4-2016, "The Selection and Training of Personnel for Research Reactors."

**ORP-1**

Regulations in 10 CFR 55.59, "Requalification," paragraph(a)(1) states, "Each licensee shall — Successfully complete a requalification program developed by the facility licensee that has been approved by the Commission. This program shall be conducted for a continuous period not to exceed 24 months in duration."

The ORP does not specifically address a time period in which the requalification program shall be conducted. Therefore, it is not clear to NRC staff how the ORP meets the requirements of 10 CFR 55.59(a)(1).

Revise the ORP to include the requalification time period as stated in 10 CFR 55.59(a)(1), or justify why the current plan is acceptable.

**ORP-2**

Regulations in 10 CFR 55.59(a)(2) states, "Each licensee shall — Pass a comprehensive requalification written examination and an annual operating test."

ORP Section 5.4, "Requalification Examinations," states, "The Reactor Supervisor and the Chief Reactor Operator are responsible for the preparation, grading and evaluation of the results of the requalification examination, operator performance evaluation, and subsequent retraining efforts. They are thereby considered as having satisfied the requirements for completing the examination and performance evaluations."

Enclosure

The guidance for examinations provided in ANSI/ANS-15.4-2016 Section 5.4, "Examinations," states, in part, "Written, operating, and oral examinations for initial licensing shall be administered by or under the direction of the responsible authority. The examinations should be designed and weighted for the appropriate license level."

It appears to NRC staff that contrary to the requirement in the regulations, the Reactor Supervisor and the Chief Reactor Operator are indefinitely exempt from the requirements of taking a written examination and operating test.

Revise the ORP to ensure that no one licensed individual is permanently exempted from meeting the requirements of 10 CFR 55.59, or justify why the current plan is acceptable (e.g., the addition of a requirement that exam preparation is rotated among the senior reactor operators).

### **ORP-3**

Regulations in 10 CFR 55.59(c)(2) states, "The requalification program must include preplanned lectures on a regular and continuing basis throughout the license period in those areas where operator and senior operator written examinations and facility operating experience indicate that emphasis in scope and depth of coverage is needed in the following subjects:

- (i) Theory and principles of operation.
- (ii) General and specific plant operating characteristics.
- (iii) Plant instrumentation and control systems.
- (iv) Plant protection systems.
- (v) Engineered safety systems.
- (vi) Normal, abnormal, and emergency operating procedures.
- (vii) Radiation control and safety.
- (viii) Technical specifications.
- (ix) Applicable portions of title 10, chapter I, Code of Federal Regulations."

The ORP does not appear to include the 10 CFR 55.59(c)(2) requirement for preplanned and continuous training programs other than the statement in Section 4.4 B, "The licensed operator Re-Training program consist of preplanned lectures or tutoring sessions."

The guidance for examinations is provided in ANSI/ANS-15.4-2016, Section 6.2.1, "Refresher training," states, "This training shall be provided in critical areas not routinely used by the operator such as emergency planning, response to abnormal conditions, selected topics in radiation protection and reactor operation principles, and changes to facility design and procedures."

Revise the ORP to ensure that the nine specified subjects in 10 CFR 55.59(c)(2) are met, or justify why the current plan is acceptable.

### **ORP-4**

Regulations in 10 CFR 55.9, "Completeness and accuracy of information," states, "Information provided to the Commission by an applicant for a license or by a licensee or information required by statute or by the Commission's regulations, orders, or license conditions to be maintained by the applicant or the licensee shall be complete and accurate in all material respects."

ORP Section 4.1, "Biennial Written Requalification Examination," states, "A comprehensive biannual written requalification examination is administered to all licensed Reactor Operators. This examination includes questions on subject specified in 10CFR55.41 for Reactor Operators and 10CFR55.43 for Senior Reactor Operators. At the discretion of the Reactor Supervisor, this examination may be administered in whole or in parts. If administered in parts, all topics will be examined on a biennial cycle."

Guidance for requalification in ANSI/ANS-15.4-2016, Section 6.2, "Requalification program," states, "The requalification program shall be conducted over a period not to exceed 24 months, to be followed by successive 24-month programs. During the 24-month period, the following shall be provided or accomplished:

- (1) Refresher training;
- (2) Written examination;
- (3) Medical evaluation;
- (4) Reactivity manipulations."

The following items are not clear to the NRC staff:

- a. How frequent the written requalification examination is administered,
- b. If the examination is excluded for senior reactor operators, and
- c. A difference between subject, and topics.

Review and clarify the ORP and correct any typographical errors, or justify why the current plan is acceptable.

#### **ORP-5**

Regulations in 10 CFR 55.21, "Medical examination," states, "An applicant for a license shall have a medical examination by a physician. A licensee shall have a medical examination by a physician every two years. The physician shall determine that the applicant or licensee meets the requirements of § 55.33(a)(1)."

ORP Section 4.6, "Medical Examination," states, "Medical examination shall be conducted prior to initial licensing and biennially thereafter, with the interval not to exceed 30 months." While the ORP does appear to follow the ANSI/ANS-15.4-2016 guidance it does not meet the regulation in 10 CFR 55.21.

Revise the ORP to include the medical examination requirement in 10 CFR 55.21.