

**Operator Requalification Program for the University of  
Massachusetts Lowell Research Reactor (UMLRR)  
For  
Licensed Reactor Operators (RO)  
and  
Licensed Senior Reactor Operators (SRO)**

**License No. R-125**

**Revision 2.0**

**April 2008**

## **1. INTRODUCTION**

The Operator Requalification Program for the University of Massachusetts Lowell Research Reactor (**UMLRR**) includes all licensed Reactor Operators (**RO**) and Senior Reactor Operators (**SRO**). The Requalification Program entails written examinations, performance evaluations, lectures, on-the-job training, and re-training. The criteria, schedule and frequencies are listed below. The objectives of the program for licensed individuals are to refresh in areas of infrequent operation, to review facility and procedural changes, to address subject matter not reinforced by direct use and to improve any performance weaknesses. Due to the limited staff size, RO and SRO personnel training new licensees will provide a significant component of the facility and procedural re-training activities of the requalification program.

## **2. BASIS**

**10CFR55** – Operators' Licenses

**ANSI/ANS-15.4-2008** Selection and training of personnel for research reactors

**UMLRR** Technical Specifications

## **3. DEFINITIONS**

**Lectures:** The presentation of pre-planned materials in formats ranging from, but not limited to, classroom, online, Self-Study methods, or hybrid arrangements.

**On-the-job training:** A systematic structured method using a qualified person to provide the required job-related knowledge and skills to a trainee, usually in the actual workplace, with proficiency documented.

**Other Training Methods:** Unstructured activities such as group participation in facility-related design and safety-review groups, experimental activities, related technical presentations, and performance of maintenance and calibration activities are contributors to operational knowledge and should be accounted for. Due to the relatively small staff size, this type of training is often utilized. It may be documented by the logging of personnel performing the activities such as calibrations and maintenance.

**Performance evaluations:** These assessments that may be written or oral in format. The assessments will allow for the competence and performance of licensed personnel to be observed and documented.

**Re-training:** This is the type of performance based training that continues or is repeated until established results are achieved.

**Reactor Operator:** An individual who is licensed to manipulate the controls of a reactor.

**Schedule:** The requalification program should be conducted for a period not to exceed two years, and upon conclusion must be promptly followed, pursuant to a schedule by successive requalification programs.

**Senior Reactor Operator:** An individual who is licensed to direct the activities of reactor operators. Such Individual is also a reactor operator.

**Written Examinations:** Examinations equal in scope and difficulty to the license examination administered by examiners from Operator Licensing at the NRC administered to ensure that reactor operators and senior reactor operators knowledge and skills. These examinations can be used in whole or parts for the Re-Training Program

## **4. REQUALIFICATION PROGRAM**

### **4.1. Biennial Written Requalification Examination**

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.

### **4.2. Operator Performance Evaluation**

Annually, the performance and competence of licensed operators will be observed and evaluated during a reactor reactivity manipulation. The evaluation should include: oral

examination on normal and emergency operating procedures and understanding of apparatus and mechanisms pertaining to the operations of the reactor.

#### **4.3. Examination and Performance Standards**

- 4.3.1. A licensed operator or senior reactor operator who scores 70% or higher in all areas of the biennial written requalification examination and demonstrates the ability to operate the reactor safely in the operator performance evaluation thereby re-qualified.
- 4.3.2. A licensed operator or senior reactor operator who scores lower than 70% in any area of the biennial written re-qualification examination shall require immediate retraining in all deficient areas.
- 4.3.3. An overall grade of less than 70% on the biennial written examination will require participation in an accelerated re-training program. An individual in an accelerated re-training program must be removed from other licensed duties until he is re-examined and certified by the Reactor Supervisor or his designee.
- 4.3.4. A licensed operator who is unable to demonstrate the ability to safely operate the reactor during the performance evaluation shall be removed from licensed duties and placed in an accelerated re-training program.
- 4.3.5. Regardless of the score, if the evaluation identifies a deficiency in a critical area that affects safety, training shall be administered to promptly correct the critical deficiency.

#### **4.4. Re-Training and Accelerated Re-Training Programs**

The licensed operator Re-Training Program consists of:

- A. Self-Study; and
- B. Preplanned lectures or tutoring sessions;

C. followed by written or oral examination in the areas of identified deficiency from the re-qualification examination.

Re-Training is scheduled by the Reactor Supervisor or the Chief Reactor Operator.

A licensed operator must score 70% or higher on an examination in each of the identified areas of deficiency in order to satisfactorily complete retraining.

Accelerated Re-Training also carries the caveat of a strict timetable that shall be followed. Accelerated Re-Training shall be scheduled by the reactor Supervisor or Chief Reactor Operator and conducted within 90 days following the identification of deficient areas.

## **4.5. On-The-Job Training**

- 4.5.1. Each licensed RO will manipulate the plant controls and each licensed SRO will manipulate the plant controls or direct the activities of individuals during plant manipulations throughout the terms of their licenses. Manipulation shall consist of a least 10 reactivity control manipulations in any combination of reactor start-ups, changes in reactor power level, reactor shutdowns, critical experiments and reactor fuel loading. The reactivity manipulations dealing with power level changes should be substantial, that is, changes in power level of >10%, that should be carried out in manual operation. Efforts should be made to have a combination of various reactivity manipulations.
- 4.5.2. Periodic lectures will be held when re-qualification examination identifies general weakness, to explain major facility design changes, procedure changes, and facility license changes, or to cover topical material. These lectures will be scheduled by the Reactor Supervisor or the Chief Reactor Operator.
- 4.5.3. Each RO and SRO shall be cognizant of all facility design changes, procedure changes and facility license changes.
- 4.5.4. Each licensed RO and SRO will review the contents of all emergency operating procedures on a regular basis. Over the course of the calendar year all emergency procedures will be covered. Periodic drills for implementing these procedures will be held.
- 4.5.5. Performance of maintenance and calibration procedures by licensed RO and SROs is an integral element in the training of new personnel. This form of training allows for both the trainer to refresh and the trainee to gain knowledge of the facility and its operational characteristics. Documentation for the participation in these activities is maintained with the calibration documentation. Due to the limited staff size, this form of training typically is

a significant contributor to the on-the-job training received by operators and trainees.

#### **4.6. Medical Examination**

Each licensed RO or SRO shall undergo medical examination and evaluation as part of the requalification program. Medical examination shall be conducted prior to initial licensing and biennially thereafter, with the interval not to exceed 30 months. More frequent examination may be required if the conditions warrant as determined by the Reactor Supervisor or upon the recommendation of a medical examiner.

### **5. SPECIAL CONDITIONS**

#### **5.1. NRC License Examination**

Successful completion of the initial NRC license examination satisfies the licensee's biennial requalification requirements. Such an individual's retraining program is started with the next comprehensive examination scheduled at least 6 months after the licensee's initial licensing date.

#### **5.2. NRC License Renewal**

A RO or SRO whose license is due for renewal while they are in a requalification program, shall be provided a letter of certification indicating that they are currently enrolled in the requalification program. The letter of certification shall indicate the anticipated date when that requalification program will be completed by the individual.

#### **5.3. Extended Absence from Operations**

In accordance with the provisions of 10CFR55.53, each Licensed Operators who has not performed the functions of an RO or SRO for a minimum of four hours per calendar quarter shall perform a minimum of six hours of licensed functions under the direction of a qualified individual holding the same or higher level of license prior to being reinstated.

An operator who has not performed licensed duties as an RO or as an SRO for four or more months shall be given an oral examination on familiarity and procedure changes, followed by an operational performance evaluation. This evaluation shall encompass a reactivity manipulation. In addition, the operator shall be up to date on the biennial requalification examination. Only after completion of all examinations and the evaluation, shall the operator be reassigned to licensed operational duties. The results of the oral evaluation and performance examination provide the basis for recertification of competence to the NRC as required by 10CFR55.

#### **5.4. Requalification Exemptions**

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.

### **6. RECORDS**

The following records shall be retained at the facility for a period of five years.

#### **6.1. Examinations.**

All written examinations taken by licensed operators for requalification. This includes requalification, retraining and accelerated retraining examinations.

#### **6.2. Operator performance Evaluation Record**

Observational records completed for Operator performance evaluations, including a description of the reactor reactivity manipulation performed and the areas covered in the oral examination on emergency procedures.

#### **6.3. Reactivity Manipulation Summary**

Summaries of the reactivity manipulations for licensed operators are to be maintained.



#### **6.4. Lectures**

Records of lectures presented as part of requalification should be maintained, indicated the topic and personnel in attendance.

#### **6.5. Other Training Methods**

Records of tasks such as calibration, maintenance, and experimental activities that function as training are documented in the facility records. These activities can also be documented with other types of more formal training.

#### **6.6. Procedure and Facility Changes**

Operator review of significant procedure and facility changes shall be maintained to ensure that all operators are aware of appropriate changes. A sign-off sheet for all licensed personnel should be maintained.