Operator Requalification Program (ORP) 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 3.0

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1. INTRODUCTION

The Operator Requalification Program (**ORP**) 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. BASES

10CFR55 – Operators' Licenses

ANSI/ANS-15.4-2016 "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 shall be conducted for a continuous period not to exceed 24 months, 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

In accordance with ANSI/ANS-1 5.4-2016, Section 6.2, 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

4.1. Biennial Written Requalification Examination

A comprehensive biennial written requalification examination is administered to all licensed Reactor Operators and Senior Reactor Operators. This examination includes questions on subjects specified in 10CFR55.41 for Reactor Operators and 10CFR55.43 for Senior Reactor Operators. The written examination shall be completed no later than the last day of the 12 month of the second year. At the discretion of the Reactor Supervisor, this examination may be administered in whole or in parts.

4.2. Operator Performance Evaluation

At 12-month intervals, the performance and competence of licensed RO and SROs will be observed and evaluated during a reactor reactivity manipulation. The evaluation shall include: oral examination on normal and emergency operating procedures and understanding of apparatus

and mechanisms pertaining to the operations of the reactor. The evaluation shall be completed no later than the last day of the 12 month.

4.3. Examination and Performance Standards

4.3.1. A licensed RO or SRO 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 RO or SRO 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. A licensed RO or SRO 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 RO or SRO 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

As part of their licensed duties, all Reactor Operators and Senior Reactor Operators shall participate in refresher training on a regular and continuing basis throughout the license period in those areas where 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 l, Code of Federal Regulations.

4.4.1. The Reactor Operator Training Program includes but is not limited to the following elements:

A. Self-Study

B. Pre-planned lectures or tutoring sessions

C. On-The-Job-Training of new operators

D. Written or oral examination in the areas of identified deficiency from the requalification examination.

E. Re-training in the areas such as radiation safety and protection are provided by the UML Radiation Safety Program. All Licensed RO and SRO's are Radiation Workers and as such are required to undergo initial training and qualification (under 10CFR 20), as well as biennial refresher training and testing to maintain their Radiation Worker status.

F. As part of the Facility Emergency Plan, annual emergency drills are performed to simulate potential accident or abnormal operating conditions in the facility; meeting key elements from the guidance of ANSI/ANS 15.4-2016 Section 6.2.1.

4.4.2. Re-Training is scheduled by the Reactor Supervisor (RS) or the Chief Reactor Operator (CRO). A licensed operator must score 70% or higher on an

examination in each of the identified areas of deficiency in order to satisfactorily complete training.

4.4.3. Accelerated Re-Training also carries the caveat of a strict timetable that shall be followed. Accelerated Re-Training shall be scheduled by the RS or CRO and conducted within 90 days following the identification of deficient areas.

4.5. On-The-Job Training (OTJT)

Significant portions of the required Reactor Operator Refresher Training (Section 4.4) are met while training new Auxiliary Operators (AO) studying to earn a Reactor Operator License, as well as training Licensed Reactor Operators studying to earn a Senior Reactor Operators license. In addition to the goal of training new Reactor Operators, the following OTJT training requirements shall be met:

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 requalification 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 RS or CRO.

4.5.3. Each licensed 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 and Emergency Plan on a regular basis. Over the course of the calendar year all emergency procedures will be covered. Periodic drills for implementing elements of the Emergency Plan and 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 re-qualification program. Each licensee shall have a medical examination by a physician. The physician shall determine that the applicant or licensee meets the requirements of 10CFR 55.33(a)(1). Medical examinations shall be conducted prior to licensing and no less than every two years thereafter, with the periodic examination completed no later than the last day of the 12 month of the second year. 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 re-qualification 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 licensed 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 RO be reassigned to licensed operational duties. The results of the oral evaluation and performance examination provide the basis for recertification of RO 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. In order to comply with 10 CFR 55.59 (a)(2), requalification exam preparation and administration shall be alternated between the Reactor Supervisor and the Chief Reactor Operator. The RS or CRO preparing the exam shall be 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, re-training and accelerated re-training 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 shall be maintained, indicating 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 shall be maintained.

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