



# REED COLLEGE

REACTOR FACILITY

3203 Southeast

Woodstock Boulevard

Portland, Oregon

97202-8199

*telephone*

503/777-7222

*fax*

503/777-7274

*email*

reactor@reed.edu

*web*

<http://reactor.reed.edu>

May 24, 2013

ATTN: Document Control Desk  
U S. Nuclear Regulatory Commission  
Washington, DC 20555-0001  
Docket: 50-288  
License No: R-112

Enclosed is a revision to the Reed Reactor Facility Requalification Plan. Also enclosed is a mark-up version of the document that highlights the revisions. This revision does not decrease the effectiveness of the plan. This revision was approved by the Reed Reactor Operations Committee on April 11, 2013.

Please contact me if you have any questions.

I declare under penalty of perjury that the foregoing is true and correct.

Executed on 5/24/2013

Melinda Krahenbuhl, Ph.D.  
Director, Reed Research Reactor.

A D 20  
MRR

# **Requalification Plan**

## **Proposed**

Reed Research Reactor  
3203 SE Woodstock Boulevard  
Chemistry-102  
Portland, Oregon 97202  
(503) 777-7222  
reactor@reed.edu

License R-112  
Docket 50-288

**This Page is Intentionally Blank**

# Requalification Plan

## Table of Contents

<b>1</b>	<b>Introduction.....</b>	<b>1</b>
<b>2</b>	<b>Schedule .....</b>	<b>1</b>
<b>3</b>	<b>Meetings and Facility Changes .....</b>	<b>1</b>
3.1	Meetings.....	1
3.2	Reviews of Facility Changes .....	2
3.3	Missed Meetings .....	2
<b>4</b>	<b>On-The-Job Training .....</b>	<b>2</b>
4.1	Hours per Quarter .....	2
4.2	Reactivity Manipulations .....	2
<b>5</b>	<b>Evaluation .....</b>	<b>3</b>
5.1	Written Exam .....	3
5.2	Operating Exam .....	3
5.3	Exam Exemption.....	3
<b>6</b>	<b>Accelerated Requalification Program.....</b>	<b>3</b>
<b>7</b>	<b>Physicals.....</b>	<b>3</b>
<b>8</b>	<b>Other Requirements .....</b>	<b>4</b>
<b>9</b>	<b>Records.....</b>	<b>4</b>

**This Page is Intentionally Blank**

## 1 Introduction

This Requalification Plan is developed in compliance with the requirements of 10CFR55.59.

The requalification requirements are the same for Reactor Operators and Senior Reactor Operators. The term operator is used to apply to both levels of US NRC licensing.

## 2 Schedule

The Requalification Program shall be continuous and operate on a two-year cycle starting in odd numbered years. For purposes of this Plan, requirements are tracked annually.

The requalification year is the same as an academic year. The academic year begins on July 1 and ends on June 30.

Semesters are from July 1 through December 31, and from January 1 through June 30.

Calendar quarters are as follows:

First Quarter:	July 1 to September 30
Second Quarter:	October 1 to December 31
Third Quarter:	January 1 to March 31
Fourth Quarter:	April 1 to June 30

## 3 Meetings and Facility Changes

### 3.1 Meetings

A minimum of five meetings shall be scheduled during each requalification year, with a minimum of two each semester. The meetings shall be documented. The subjects of these meetings may be drawn from the topics listed below, but are not restricted to those topics. The specific content of the meetings is to be based on items identified as weaknesses in the training program or operator knowledge. These weaknesses may be identified using the results of NRC licensing exams, facility-administered requalification exams, or observations of operator knowledge and performance by the Director. It is not required that all topics be covered in any given requalification cycle. A single meeting may address more than one topic.

- a) Facility changes
- b) Theory and principles of reactor operation
- c) Reactor instrumentation, control, and safety systems
- d) Radiation control and safety; use and handling of radioactive materials
- e) Facility and regulatory requirements including License, Technical Specifications, Requalification and Emergency Plans, Administrative Procedures, and applicable portions of Title 10 Code of Federal Regulations
- f) Standard and Emergency Operating Procedures
- g) General and specific plant operating characteristics
- h) Fitness for duty requirements for operators
- i) Harassment policies
- j) Other topics identified by the reactor staff as relevant to the safe operation of the reactor in accordance with federal and state regulations

## REQUALIFICATION PLAN

---

### **3.2 Reviews of Facility Changes**

At least twice each requalification year, a meeting of operators shall be held to make them aware of facility design changes, and changes in procedures and administrative requirements. This meeting is normally held in conjunction with a requalification meeting. Written reviews of changes to the facility should be issued as Procedure Changes and Notifications.

### **3.3 Missed Meetings**

Any operator who is absent from any required requalification meeting shall complete an alternate program determined by the Director (or designee). Normally this will be a review of any notes, handouts, presentations, or other material from the meeting. The completion of the alternate program shall be documented, normally on the attendance record from the meeting the operator missed.

## **4 On-The-Job Training**

### **4.1 Hours per Quarter**

Each operator must actively perform the functions for which the operator is licensed for a minimum of four hours per calendar quarter. The Director shall maintain a list of those activities that may be counted towards this requirement. Obtaining an NRC Reactor Operator license satisfies the licensed hours requirement for that quarter.

Any operator who does not document four hours per quarter must spend six hours operating the reactor under the supervision of a licensed operator before resuming licensed duties. Completing this Accelerated Requalification program fulfills the licensed hours requirement for that quarter.

### **4.2 Reactivity Manipulations**

Each operator shall demonstrate an ability to conduct reactivity manipulations during the course of the year. A minimum of two reactivity manipulations shall be completed during each calendar quarter. The Director shall maintain a list of those operations that qualify towards meeting this requirement. Obtaining an NRC Reactor Operator license satisfies the reactivity manipulation requirements for that quarter.

Any operator who does not document two reactivity manipulations per quarter must perform four reactivity manipulations under the supervision of a licensed operator before resuming licensed duties. Completing this Accelerated requalification program fulfills the reactivity manipulations requirement for that quarter.

## **5 Evaluation**

### **5.1 Written Exam**

Each operator shall pass a comprehensive written exam following the NRC format in alternate requalification years. Passing criteria shall be 70% in each section.

The written exam shall either use an on-line random exam bank or be prepared by the Director or an SRO designated by the Director. The exam shall be proctored by an SRO.

### **5.2 Operating Exam**

Each operator shall pass an operating exam each academic year. Passing criteria shall be 70% overall. This is normally administered in two sections, one per semester.

The operating exam shall be administered by an SRO designated by the Director.

### **5.3 Exam Exemption**

A license exam administered by the NRC during a requalification year shall satisfy the requalification written and operating exam requirements for that year.

Any person who prepares an exam will be exempt from taking the exam during that requalification year. The same person shall not be exempted for two consecutive years.

## **6 Accelerated Requalification Program**

Operators not meeting the requalification requirements (“out of requalification”) shall complete and Accelerated requalification program designed to ensure they can safely perform their licensed duties. They may also be required to complete an Accelerated Requalification program if, in the opinion of the Director, they are deficient in operating knowledge or skills. An operator who is out of requalification shall not perform duties that require a license except under the direct supervision of a licensed operator, until completion of an Accelerated Requalification Program.

The Accelerated Requalification requirements for operators not meeting the requirements of sections 3 and 4 are listed in those sections. For operators out of requalification for any other reason, including the opinion of the Director that they are deficient in operating knowledge or skills, the content of the Accelerated Requalification Program shall be determined on a case-by-case basis by the Director or designee. It may include, but need not be limited to, revising facility documentation, attending individual or group study sessions, attending or presenting at meetings on the areas of weakness, or tutorials.

## **7 Physicals**

Each operator is required to satisfactorily complete a physical exam every 24 months. If the physical exam is not completed within 30 months of the previous physical exam, the operator may not perform licensed duties until the operator passes a physical exam.



## REQUALIFICATION PLAN

---

Operators whose NRC license specifies the need for corrective lenses shall wear corrective lenses when performing licensed duties.

Any operator who has a significant permanent change in their physical condition that may affect their ability to perform licensed duties must inform the Director immediately. The Director will evaluate their license status. The Director will notify the NRC in writing within 30 days of any permanent disability or illness that affects the operator's ability to perform licensed duties per 10CFR50.74.

### **8 Other Requirements**

Operator licenses expire six years from their effective date. To renew a license, an application (Form 398 and 396) must be submitted to the NRC per 10CFR55.57.

Any operator who is convicted of a felony must inform the Director immediately.

### **9 Records**

Each operator shall be responsible for maintaining records, in a format approved by the Director, to verify compliance with sections 4.1 and 4.2. Operator records will be reviewed by the Director (or designee) at regular intervals to ensure all operators comply with sections 4.1 and 4.2.

Originals of all records relating to the requalification requirements in this Plan shall be retained by the facility. Copies shall be provided to operators at their request.

## 1 Introduction

This Requalification Plan is developed in compliance with the requirements of 10 CFR 55.59.

The requalification requirements are the same for Reactor Operators and Senior Reactor Operators. The term *operator* is used to apply to both levels of US NRC licensing.

## 2 Schedule

The Requalification Program shall be continuous and operate on a two-year cycle starting in odd numbered years. For purposes of this Plan, requirements are tracked annually.

The requalification year is the same as an academic year. The academic year begins on July 1 and ends on June 30.

Semesters are from July 1 through December 31, and from January 1 through June 30.

Calendar quarters are as follows:

First Quarter:	July 1 to September 30
Second Quarter:	October 1 to December 31
Third Quarter:	January 1 to March 31
Fourth Quarter:	April 1 to June 30

## 3 Meetings and Facility Changes

### 3.1 Meetings

A minimum of five meetings shall be scheduled during each requalification year, with a minimum of two each semester. The meetings shall be documented. The subjects of these meetings may be drawn from the topics listed below, but are not restricted to those topics. The specific content of the meetings is to be based on items identified as weaknesses in the training program or operator knowledge. These weaknesses may be identified using the results of NRC licensing exams, facility-administered requalification exams, or observations of operator knowledge and performance by the Director. It is not required that all topics be covered in any given requalification cycle. A single meeting may address more than one topic.

- a) Facility changes
- b) Theory and principles of reactor operation
- c) Reactor instrumentation, control, and safety systems
- d) Radiation control and safety; use and handling of radioactive materials
- e) Facility and regulatory requirements including License, Technical Specifications, Requalification and Emergency Plans, Administrative Procedures, and applicable portions of Title 10 Code of Federal Regulations
- f) Standard and Emergency Operating Procedures
- g) General and specific plant operating characteristics
- h) Fitness for duty requirements for operators
- i) Harassment policies
- j) Other topics identified by the reactor staff as relevant to the safe operation of the reactor in accordance with federal and state regulations

Reuven Lazarus 12/4/12 11:59 AM  
Deleted: facility

3.2 Reviews of Facility Changes

At least twice each requalification year, a meeting of operators shall be held to make them aware of facility design changes, and changes in procedures and administrative requirements. This meeting is normally held in conjunction with a requalification meeting. Written reviews of changes to the facility should be issued as Procedure Changes and Notifications.

3.3 Missed Meetings

Any operator who is absent from any required requalification meeting shall complete an alternate program determined by the Director (or designee). Normally this will be a review of any notes, handouts, presentations, or other material from the meeting. The completion of the alternate program shall be documented, normally on the attendance record from the meeting the operator missed.

4 On-The-Job Training

4.1 Hours per Quarter

Each operator must actively perform the functions for which the operator is licensed for a minimum of four hours per calendar quarter. The Director shall maintain a list of those activities that may be counted towards this requirement. Obtaining an NRC Reactor Operator license satisfies the licensed hours requirement for that quarter.

Any operator who does not document four hours per quarter must spend six hours operating the reactor under the supervision of a licensed operator before resuming licensed duties. Completing this Accelerated Requalification program fulfills the licensed hours requirement for that quarter.

4.2 Reactivity Manipulations

Each operator shall demonstrate an ability to conduct reactivity manipulations during the course of the year. A minimum of two reactivity manipulations shall be completed during each calendar quarter. The Director shall maintain a list of those operations that qualify towards meeting this requirement. Obtaining an NRC Reactor Operator license satisfies the reactivity manipulation requirements for that quarter.

Any operator who does not document two reactivity manipulations per quarter must perform four reactivity manipulations under the supervision of a licensed operator before resuming licensed duties. Completing this Accelerated Requalification program fulfills the reactivity manipulations requirement for that quarter.

- Reuven Lazarus 11/29/12 9:35 AM  
Deleted: duty
- Reuven Lazarus 11/29/12 9:35 AM  
Deleted: s
- Reuven Lazarus 11/29/12 9:52 AM  
Deleted: the six hours under supervision
- Reuven Lazarus 11/29/12 9:35 AM  
Deleted: four
- Reuven Lazarus 11/29/12 9:35 AM  
Deleted: licensed duties
- Reuven Lazarus 11/29/12 9:36 AM  
Deleted: ten
- Reuven Lazarus 11/29/12 9:36 AM  
Deleted: requalification year
- Reuven Lazarus 11/29/12 9:37 AM  
Deleted: within 90 days before the end of the requalification year
- Reuven Lazarus 11/29/12 9:37 AM  
Deleted: year
- Reuven Lazarus 11/29/12 9:37 AM  
Deleted: ten
- Reuven Lazarus 11/29/12 9:37 AM  
Deleted: year
- Reuven Lazarus 11/29/12 9:37 AM  
Deleted: spend six hours operating the reactor

**5 Evaluation**

**5.1 Written Exam**

Each operator shall pass a comprehensive written exam following the NRC format in alternate requalification years. Passing criteria shall be 70% in each section.

The written exam shall either use an on-line random exam bank or be prepared by the Director or an SRO designated by the Director. The exam shall be proctored by an SRO.

**5.2 Operating Exam**

Each operator shall pass an operating exam each academic year. Passing criteria shall be 70% overall. This is normally administered in two sections, one per semester.

The operating exam shall be administered by an SRO designated by the Director.

**5.3 Exam Exemption**

A license exam administered by the NRC during a requalification year shall satisfy the requalification written and operating exam requirements for that year.

Any person who prepares an exam will be exempt from taking the exam during that requalification year. The same person shall not be exempted for two consecutive years.

**6 Accelerated Requalification Program**

Operators not meeting the requalification requirements ("out of requalification") shall complete an Accelerated Requalification program designed to ensure they can safely perform their licensed duties. They may also be required to complete an Accelerated Requalification program if, in the opinion of the Director, they are deficient in operating knowledge or skills. An operator who is out of requalification shall not perform duties that require a license except under the direct supervision of a licensed operator, until completion of an Accelerated Requalification Program.

The Accelerated Requalification requirements for operators not meeting the requirements of sections 3 or 4 are listed in those sections. For operators out of requalification for any other reason, including the opinion of the Director that they are deficient in operating knowledge or skills, the content of the Accelerated Requalification Program shall be determined on a case-by-case basis by the Director or designee. It may include, but need not be limited to, revising facility documentation, attending individual or group study sessions, attending or presenting at meetings on the areas of weakness, or tutorials.

**7 Physicals**

Each operator is required to satisfactorily complete a physical exam every 24 months. If the physical exam is not completed within 30 months of the previous physical exam, the operator may not perform licensed duties until the operator passes a physical exam.

Reuven Lazarus 11/29/12 9:39 AM  
Deleted: The Accelerated Requalification Program is designed to ensure an operator can safely perform his or her licensed duties. Operators may enter Accelerated Requalification after failing to demonstrate competency in performing licensed duties.

Reuven Lazarus 12/19/12 10:03 AM  
Deleted:

Reuven Lazarus 12/19/12 10:03 AM  
Deleted: in Accelerated Requalification

Reuven Lazarus 12/19/12 10:02 AM  
Deleted: T

Reuven Lazarus 12/19/12 10:02 AM  
Deleted: any

Operators whose NRC license specifies the need for corrective lenses shall wear corrective lenses when performing licensed duties.

Any operator who has a significant permanent change in their physical condition that may affect their ability to perform licensed duties must inform the Director immediately. The Director will evaluate their license status. The Director will notify the NRC in writing within 30 days of any permanent disability or illness that affects the operator's ability to perform licensed duties per 10\_CFR\_50.74.

**8 Other Requirements**

Operator licenses expire six years from their effective date. To renew a license, an application (Form 398 and 396) must be submitted to the NRC per 10\_CFR\_55.57.

Any operator who is convicted of a felony must inform the Director immediately.

**9 Records**

Each operator shall be responsible for maintaining records, in a format approved by the Director, to verify compliance with sections 4.1 and 4.2. Operator records will be reviewed by the Director (or designee) at regular intervals to ensure all operators comply with sections 4.1 and 4.2.

Originals of all records relating to the requalification requirements in this Plan shall be retained by the facility. Copies shall be provided to operators at their request.

Reuven Lazarus 11/29/12 9:54 AM  
Deleted:  
Reuven Lazarus 11/29/12 9:54 AM  
Deleted: designate