

September 28, 1992

Mr. Alexander Adams, Jr.  
Senior Project Manager  
Non-Power Reactors, Decommissioning  
and Environmental Project Directorate  
Division of Reactor Projects - III/IV/V  
Office of Nuclear Reactor Regulation  
United States Nuclear Regulatory Commission  
Washington, D.C. 200555

SCHOOL OF  
ENGINEERING & APPLIED SCIENCE

NUCLEAR REACTOR FACILITY  
Department of Mechanical,  
Aerospace & Nuclear Engineering

University of Virginia  
Charlottesville, VA 22903-2442

804-982-5440 FAX: 804-982-5473

Subject: Docket No.50-62, Additional Information concerning the  
Operator Regualification Program for the University of Virginia Reactor  
Facility.

Dear Mr. Adams:

Please find enclosed a revised Operator Regualification Program and the  
Procedures for Implementation of the Regualification Program (which  
include an Annual Operator Evaluation Form). When the program was last  
revised by the reactor staff and reviewed and approved by our Reactor  
Safety Committee, the implementing procedures and evaluation form were  
part of the "package." I apologize for the implementing procedures not  
having been included with the program which was sent to you on June 4  
for NRC review and approval.

These documents must be considered as a unit since the blanket statement  
made in the program, that research-reactor applicable portions of 10 CFR  
Part 55 are to be considered binding, is insufficient. Comparison of  
our program's statement with that of another facility in our region  
indicates that ours is shorter. Perhaps, the program for the other  
facility has its implementation built in implicitly. The justification  
for the short plan for our facility stems from an attempt by the staff  
to write (and in some cases, rewrite) facility documents with a  
minimalist principle in mind. We have found that repetition and  
verboseness in plans and their implementing procedures often lead to  
contradiction and misinterpretation.

Also, please find enclosed a 10 CFR Part 55 sub-part by sub-part  
comparison with the commitments made in our regualification program and  
implementing procedures. In this comparison, I indicate where, either  
(or both) in the program or the implementing procedures, the  
corresponding sub-parts of the regulation are addressed. With the  
several modifications made in the program (approved by our RSC on  
09/22/92) and the additional material now provided to you, I expect that  
it will be possible to conclude that the program meets regulatory  
requirements. Nevertheless, please feel free to call me at (804)982-  
5440 if further specifics are required.

Sincerely,

*Robert U. Mulder*

Robert U. Mulder, Director  
U.Va. Reactor Facility

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I hereby certify that the attached document is a true and  
exact copy of a Letter, presented before

me this 29th day of Sept 1992  
by Robert Mulder  
(name of official seeking acknowledgment)

*Robert U. Mulder*  
Special Author



Comparison of 10 CFR Part 55.59 Requirements With The UVAR Operator  
Requalification Program and Implementing Procedures.

50.59 Sub-Part

Corresponding Requal Program or Procedures  
Section

(a) (1)	Program item A.1
(2)	Program item B.3 & 4
(i)	Procedure item C: a),b),c)
(ii)	Procedure item B. & Annual Evaluation Form
(iii)	Not applicable to our reactor license
(b)	Not applicable to our reactor license
(c)	Requal Program approved by RSC and submitted to NRC
(1)	Program item A.1
(2)	Procedures, A. (a through h)
(3)(i)	Program A.2.
(ii)	Procedures, B & Annual Evaluation Form
(iii)	Procedures A.h) and B.
(iv)	Procedures A.b)
(v)	Not applicable to our reactor license
(4)(i)	Program B.3 & B.4, Procedures B.& C.
(ii)	Program B.3 and C
(iii)	Annual Evaluation Form
(iv)	N/A, no simulator, however there are emergency drills as per NRC approved Emergency Plan
(v)	Program, B.3 & Procedures, C.(last paragraph)
(5)(i)	Program, C.1 and C.2.
(ii)	Program, C.1
(iii)	Program, C.1
(6)	Not applicable to our reactor license
(7)	Use has been made of this provision to tailor the Program and its Implementing Procedures to this facility.



OPERATOR REQUALIFICATION PROGRAM  
FOR THE UNIVERSITY OF VIRGINIA REACTOR FACILITY

A. General

1. This requalification program applies to all licensed reactor operators of the University of Virginia Research Reactor (UVAR), located at the Reactor Facility of the University of Virginia. Reactor operator trainees may participate in the program as part of their training, however, since they are not licensed, the requalification program does not cover their status. The program shall meet the requirements of 10 CFR 55.59 and ANS Standard 15.4, as applicable to research reactors. The program will follow a two year cycle. The program will be followed by successive requalification programs, that is, begin anew every two years.
2. In addition to a lecture series and annual operator evaluation, the requalification program includes on-the-job training. For example, checklists, reactor startups and operation, core configuration changes, rod-drop measurements and calibrations, shut-down margin and excess reactivity calculations, measurement of reactivity worth of experiments, emergency drills and surveillance activities are performed as required by UVAF Technical Specifications. These activities are informally critiqued by co-workers.
3. The Reactor Administrator or, in his absence, a designated Senior Reactor Operator, will be responsible for administering the requalification program.
4. This requalification program is implemented by the "Procedures For Implementing The Requalification Program For Licensed Operators Of The UVAR Reactor" which contains the "UVAR Requalification Program, Operator Annual Evaluation Form".



## B. Program

### 1. Start-ups and Checklists

Each licensed operator will be required to complete reactor checklists and perform reactor start-ups and otherwise perform the functions of an operator or senior operator for a minimum of four hours per calendar quarter. If a licensed operator fails to operate the reactor during a calendar quarter, that individual will be required to perform licensed duties for at least six hours under the cognizance of a qualified senior operator prior to reinstatement as a qualified licensed operator.

### 2. Lectures

During the program's two year cycle, each licensed operator is required to attend a series of lectures. Trainees may also attend these lectures. A cycle will normally begin in September (corresponding to the beginning of an academic year). The lectures will be pre-scheduled to run from September through June, with a break during the summer months of July and August, and continue the following September. The lectures will cover the following subjects: Reactor Theory and Principles of Operation; Normal, Abnormal and Emergency Procedures; Technical Specifications; Reactor Instrumentation and Control Systems; Reactor Protective and Engineered Safety Systems; Radiation Control and Safety; General and Specific Plant Operating Characteristics; applicable parts of 10 CFR and any major changes to procedures or equipment. The operator who misses a lecture will be required to review the lecture notes. This will be verified by the Reactor Administrator.

### 3. Written Examinations

At the end of each two-year cycle a written exam will be administered to licensed operators to determine their knowledge of facility operations. An overall grade of 70% or greater will be considered as passing. If an operator receives less than 70% on one or more sections of the exam, but has a passing grade overall, he/she will be retrained in the deficient areas and given a make-up written exam covering only those areas. If an operator scores less than 70% overall on the examination, he/she will be excused from licensed duties, undergo retraining, and retake the entire exam.



If an individual does not requalify within a calendar quarter, Facility management will request the NRC to cancel the license of that individual.

The bi-annual exam will be composed and administered by a senior staff member with a Senior Operator License. This individual will be exempted from taking the exam required by this program.

The reactor operator trainee(s) may take the same exam as the licensed operators as part of their training whenever enough experience has been assimilated. The training program coordinator will review areas of weakness with the trainee(s).

#### 4. Annual Operations Test

Once each calendar year, an evaluation will be made of each licensed operator. The supervisor(s) will observe the completion of checklists, reactor start-up and control.

If an operator is found to be deficient in some area of operation, this will be documented and the appropriate action to correct the deficiency taken and noted.

Reactor operator trainee(s) will receive this evaluation also, to gauge progress and areas that need strengthening.

#### 5. Physical Fitness

Licensed operators will be required to undergo physical examinations at least once every two years to assure continued physical fitness to operate the reactor in a safe and efficient manner.



C. Records

1. A file shall be kept for each licensed operator and operator trainee. The file shall contain legible records about checklists and start-ups performed by the individual, the content and results of written exams, the results of annual evaluations, additional training received covering areas of exhibited deficiencies, and the results of bi-annual medical exams. These personal records shall be retained until the operator's or senior operator's license is renewed or surrendered or for a longer period if so ordered by the Nuclear Regulatory Commission.
2. Records showing the lecture schedule, content and attendance by the licensed operators and operator trainees will be kept in a separate requalification program file.



## PROCEDURES FOR IMPLEMENTING THE REQUALIFICATION PROGRAM FOR LICENSED OPERATORS OF THE UVAR REACTOR

The following procedures are set forth to implement the Operator Requalification Program for the University of Virginia Reactor (UVAR). The program will cycle on a 2 year schedule, running from September to June of each calendar year and terminating at the end of the second year with a written examination comparable to an NRC exam.

### A. Lectures

All licensed operators will be required to attend a series of lectures. A list of scheduled lectures will be distributed at the beginning of each cycle. Lectures will be scheduled to cover the following topics:

- a) Reactor Theory and Principles of Operation
- b) Normal, Abnormal and Emergency Procedures
- c) Technical Specifications
- d) Reactor Instrumentation and Control Systems
- e) Reactor Protective and Engineered Safety Systems
- f) Radiation Control and Safety
- g) General and Specific Plant Operating Characteristics
- h) Applicable sections of 10 CFR
- i) Major Changes to Procedures or Equipment

Each licensed operator will present at least one lecture during each cycle. If a lecture cannot be given on the scheduled date it will be re-scheduled at the earliest convenient date. If an operator or trainee misses a lecture, he/she will be required to review the lecture notes. This will be verified and documented by the Reactor Administrator. Self-study is also considered an adequate and appropriate training method.



#### B. Annual Operating Test

An annual evaluation will be made of each licensed operator and operator trainee (see attached form). Each will perform a daily checklist and a reactor startup. The evaluation will be made by the Reactor Supervisor(s) and will be based on compliance with written procedures and good engineering practices. As a part of the evaluation, the evaluator(s) will question the operator or trainee on the appropriate actions to be taken for various emergency and/or abnormal conditions. Deficiencies uncovered during the evaluation will be noted and the operator or trainee retrained in the deficient areas.

#### C. Written Examination

At the end of each two-year cycle a proctored written examination will be given to all licensed Senior and Reactor operators. Operator trainees may also take the exam. The examination will be based on the current NRC format (systems approach) and cover the following areas:

- a) Reactor Theory and Facility Operating Characteristics.
- b) Normal and Emergency Operating Procedures and Radiological Control
- c) Facility and Radiation Monitoring Systems.

An overall grade of 70% or greater is passing. Individuals scoring less than 70% on one or more areas but passing the exam overall will be required to re-study and be retested on those areas. Individuals scoring less than 70% overall on the exam will be removed from licensed activities and required to take "rapid" retraining. After retraining they will be required to retake the entire exam. Once a score of 70% or greater is achieved, operators can be returned to



licensed activities. If an operator cannot pass the exam within a calendar quarter after retraining, facility management will request the NRC to cancel the license of that individual.

The exam will be composed and administered by a senior staff member who is licensed as a Senior Reactor Operator. This individual will be exempt from taking the exam required under the requalification program. This exemption will be rotated among the senior reactor staff, as practical.

#### D. Physical Examinations

Licensed operators will be required to take and pass physical exams by qualified medical personnel at least once every two years. If a medical problem is found that could result in incapacitation during the time the individual is operating the reactor, another licensed operator will be required to be present at the console whenever the individual with the anomalous medical condition is performing the duties of a licensed operator.

#### E. Drugs

If a licensed individual is found at work to be under the influence of alcohol or illegal or mind-altering drugs he/she will not be allowed to perform licensed activities and appropriate action will be taken by facility management in conformance with U.Va.'s substance abuse policy.

Licensed operators are requested to report to the reactor supervisor(s) prescription drugs that they may be about to take and which have known side effects, such as drowsiness, which may render them temporarily unsuited for reactor console operation.



#### F. Document Availability

Every licensed operator and trainee is given a personal copy of the requalification program and procedures for permanent reference, following each revision. These documents are required reading.



UVAR REQUALIFICATION PROGRAM  
OPERATOR ANNUAL EVALUATION FORM

Purpose: To demonstrate operator's ability to safely operate the UVAR.  
To satisfy the requirements of 10 CFR 55.59(a)(2)(iii).

Operator: \_\_\_\_\_

Date: This evaluation \_\_\_\_\_ / \_\_\_\_\_ / \_\_\_\_\_

Last evaluation: \_\_\_\_\_ / \_\_\_\_\_ / \_\_\_\_\_

1. Familiarity with Daily Checklist:  
☐ Excellent      ☐ Very Good      ☐ Good      ☐ Needs refresher
2. Manipulation of Console Controls:  
☐ In accordance with SOP's      ☐ Retraining and retesting indicated
3. Accurate Instrument Readings:  
☐ All times      ☐ Most times, retraining indicated
4. Correct Identification of Annunciators:  
☐ Yes      ☐ No, will be retrained and retested
5. Observed to Follow Procedures:  
☐ Yes      ☐ No, will be retrained and retested
6. Observes and Checks Instruments Regularly:  
☐ Yes      ☐ No, will be retrained and retested
7. Knowledge of Selected Alarms, Setpoints, Radiation Monitoring Systems and Significant Radiation Hazards:  
☐ Yes      ☐ No, will be retrained and retested
8. Familiarity With Selected Tech. Spec. Requirements:  
☐ Yes      ☐ No, will be retrained and retested
9. Familiarity With Procedures For Abnormal Reactor Operating Conditions:  
☐ Yes      ☐ No, will be retrained and retested
10. Familiarity With Selected Emergency Procedures:  
☐ Yes      ☐ No, will be retrained and retested

Certification: ☐ The above operator has passed the annual operator evaluation and in general, has during the past year discharged licensed responsibilities competently and safely.

☐ The above operator has not passed the annual operator evaluation, therefore, he/she will be retrained and retested in those areas.

\_\_\_\_\_  
Reactor Administrator

\_\_\_\_\_  
Reactor Supervisor (when applicable)

I have seen the above evaluation and I agree to carry out the recommendations.

\_\_\_\_\_  
Operator

Projected date of next evaluation: \_\_\_\_\_

☐ Copy of evaluation form sent to operator

☐ Copy of evaluation form sent to Reactor Director