DEPARTMENT OF MECHANICAL ENGINEERING
THE UNIVERSITY OF TEXAS AT AUSTIN

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U.S. Nuclear Regulatory Commission
Director of Reactor Regulation
Washington, D.C. 20555

November 19, 1990

Attention: Al Adams
Project Manager, Docket 50-602

Reference: Docket 50-602
Operator Requalification Plan

Dear Sir:

The enclosed information is provided pursuant to 10CFR 55.5(a) and 10CFR 50.4b(2)i. One copy of the Operator Requalification Plan (revision 1, August 1990) is enclosed. One copy has been sent to the Director, Division of Radiation Safety and Safeguards of Region IV.

Material in this submittal is for the docket 50-602 research reactor facility at the University of Texas. Revisions to the previous submittal dated November 1984 and March 1985 update the previous documents and include revisions. This submittal is made to address regulatory changes since acceptance of the original submittals. The original plan was submitted as Chapter 12 of the SAR submittal dated 9/84. Docket 50-602 SER, May 1985, page 1-2, item (8) documents the original approval.

Sincerely,

Thomas L. Bauer
Assistant Director,
Nuclear Engineering
Teaching Laboratory

APPROVED:

Bernard W. Wehring

Bernard W. Wehring, Director
Nuclear Engineering Teaching Laboratory

TLB:mm
enclosures

cc: H. Marcus
Mr. A. Bill Beach (Region IV NRC)

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UNITED STATES OF AMERICA

NUCLEAR REGULATORY COMMISSION

In the Matter of	ξ	
	ξ	
The University of Texas	ξ	
at Austin	ξ	Docket No. 50-602
	ξ	
Balcones Research Center	ξ	
Nuclear Engineering Teaching	ξ	
Laboratory (NETL)	ξ	

AFFIDAVIT

Gerhard J. Fonken being duly sworn, hereby deposes and says that he is Executive Vice President and Provost, The University of Texas at Austin; that he is duly authorized to sign and file with the Nuclear Regulatory Commission the enclosed updated Operator Requalification Plan, dated November 1990, Revision 1, for docket 50-602 and Construction Permit CPRR-123; that he is familiar with the content thereof; and that the matters set forth therein are true and correct to the best of his knowledge and belief.

Gerhard J. Fonken
Executive Vice President and Provost

STATE of TEXAS ξ

Subscribed and sworn to before me, a Notary Public in and for the State of Texas, this 21st day of December, 19 90.

Notary Public in and for the State of Texas

UT TRIGA

Requalification Plan

Docket 50-602

Revision 1
November 1990

Nuclear Engineering Teaching Laboratory
Balcones Research Center
The University of Texas at Austin

UT TRIGA

Reactor Operator

Requalification Plan

1.0 Introduction

Reactor operator requalification applies to all the controls and some features of the TRIGA reactor at The University of Texas at Austin (UT), Balcones Research Center (BRC). The purpose of this plan is to provide training of each individual that is to qualify for a license to operate or direct the operation of the TRIGA reactor. There are two license classes, one is an operator and the other is a senior operator. License qualification by written and operating test, and license issuance or removal, are the responsibility of the U.S. Nuclear Regulatory Commission. No rights of the license may be assigned or otherwise transferred and the licensee is subject to and shall observe all rules, regulations and orders of the Commission. Requalification training maintains the skills and knowledge of operators and senior operators during the period of the license. Training also provides for the initial license qualification.

1.1 Operator License Status

Active status of any licensee shall require the performance of the functions of an operator or senior operator for a minimum of four hours each calender quarter. If the condition of an active license status is not met, the Director of the facility shall certify, (1) that the qualifications and status of the licensee are current and valid, and (2) that for recertification a minimum of six hours of license functions have been done. The license functions shall be done with supervision of the appropriate operator or senior operator. Otherwise the license status shall be inactive and no functions of the license shall be done.

1.2 Requalification Program Bases

Regulatory requirements and standards provide guidance for requalification training. Specific regulatory requirements are found in 10CFR55 for the licensing of operators and senior operators with regulations for requalification set forth in section 55.59. Standards for the selection and training of facility personnel and reactor operators are available in ANS 15-4. Specific regulations in the form of two sets of license conditions also apply to the facility personnel and reactor operators. One set of conditions for the facility license, 10CFR 50.54, applies to facility personnel. The other set of conditions for individual licenses, 10CFR 55.53 applies to operators and senior operators. The following plan documents the requalification of operators and senior operators for the UT BRC TRIGA reactor facility.

2.0 Requalification Program

The requalification program consists of training personnel by lectures, instruction, discussion and self-study. At times the number of operators with licenses may be as few as 1 or 2. In these circumstances the application of discussion and self-study methods are necessary to accomplish the training process.

2.1 Schedule

Lectures from the requalification program topics and on-the-job training will be done on a two year cycle for the completion of all requirements. The part of the program done each year will consist of six lectures, two on-the-job training activities, and the performance of sixteen hours of license functions.

Lectures or instruction on the topics of the requalification program consist of eight topics shown in section 2.2. Three lectures will be given each six months so that during the year there is an average of one topic presentation every two months. Each of the eight topics will occur during the two year cycle with four topics each year. The other two lectures each year are available for special subjects, repeat subjects or review.

On-the-job training relies on two specific reactor control manipulations to be done each year. These control manipulations will consist of startup, shutdown, operation, coolant loss, loss of control rod pneumatic air or electrical power events, and other system malfunctions. The two control manipulations will require a change in system reactivity and will use events from each of the two lists in section 2.3. One event from the list of section 2.3.1 must be done each year and one event from the list of section 2.3.2 must be done each two years. A program of less than two years duration may accelerate the training of persons for new operator certification.

2.2 List of Subjects

2.2.1 (A) Theory and principles of operation.
2.2.2 (B) General and specific plant operating characteristics.
2.2.3 (C) Plant instrumentation and control systems.
2.2.4 (D) Plant protection systems and Engineered safety systems.
2.2.5 (E) Normal, abnormal, and emergency operating procedures.
2.2.6 (F) Radiation control and safety.
2.2.7 (G) Technical specifications.
2.2.8 (H) Applicable portions of Title 10, Chapter I, Code of Federal Regulations.

2.3 On-the-job-training:

2.3.1 List of annual training tasks; (one must be done each year):
- 2.3.1.1 Plant or reactor startups to include a range that reactivity feedback from nuclear heat addition is noticeable and heatup rate is established.
- 2.3.1.2 Plant shutdown.
- 2.3.1.3 Significant (>10 percent) power changes in manual rod control.
- 2.3.1.4 Loss of coolant inside or outside primary confinement.
- 2.3.1.5 Loss of coolant, large or small, including leakrate estimate.
- 2.3.1.6 Loss of control air (or inadequate pressure).
- 2.3.1.7 Loss of electrical power (or degraded power sources).
- 2.3.1.8 Loss of core coolant flow/natural circulation.

2.3.2 List of training tasks; system malfunctions (one must be done each two years):
- 2.3.2.1 Reactor trip.
- 2.3.2.2 A nuclear instrumentation failure.
- 2.3.2.3 Loss of protective system channel.
- 2.3.2.4 Control rod or drive failure such as rod position error, rod drop or stuck drive, mispositioned control rod or rods (or rod drops), Inability to drive control rods.
- 2.3.2.5 Fuel cladding failure or high activity in reactor coolant or offgas.
- 2.3.2.6 Malfunction of an automatic control system that affects reactivity.

2.3.3 On-the-job training will perform the following periodic training checks or functions.
- 2.3.3.1 Observation at least once each year of a satisfactory understanding of the reactivity control system and knowledge of operating procedures.
- 2.3.3.2 Each operator or senior operator will review facility design changes, procedure changes and license changes as they occur or once each 6 to 8 months.
- 2.3.3.3 A review of the contents of abnormal and emergency procedures will be done by each operator or senior operator at 6 to 8 month intervals so that at least 3 reviews occur during the two year training cycle.

2.4 Evaluation

Evaluation of license personnel depends on annual examination and periodic observation. The evaluation by annual written examination determines the knowledge level and requirements for retraining by a percentage test score. Other evaluations by visual observation assess the performance and competency with routine procedures and the skill at manipulating the controls of the reactor.

The written annual examination will assess operator or senior operator knowledge of current training subjects and review requirements. A five part test with objective questions will assess the knowledge of four of the eight program subjects, and the areas of section 2.3.3.2 and 2.3.3.3. These two sections pertain to changes in facility design, normal procedures, reactor license, and abnormal and emergency procedures.

Each of the five parts of the exam will have a 100 point basis with an average of 80% as the acceptance criteria. An overall score of less than 65% shall require an immediate evaluation of license duties. Proficiency by retraining shall demonstrate acceptance within 4 months or license duties shall suspend until proficiency is acceptable. A person that scores between 65%-80% shall retrain as necessary in those areas that written or oral exams indicate a deficiency.

A systematic observation of license activities, by a supervisory senior operator or a level of the facility management to which a supervisory operator is responsible will evaluate operator and senior operator performance. Visual observation of the performance in response to the conditions of sections 2.3.1 and 2.3.2 will provide the basis for judgement of the operator's skill. In the case of a senior operator the performance may be either direct actions or the direction of a response by another operator. Judgements of a person's skill or competency is subjective and may include general observations of performance at any time the person is responsible for license functions.

2.5 Records

Records for each operator or senior operator will consist of the documentation for the requalification activities within the two year training cycle. The records will be kept until the completion of the next training cycle. A record for each operator includes at least the following information:

*Attendance at training lecture or acceptable review of the material, including topic and date
*Completion, satisfactorily, of two on-the-job training events with performance evaluation; recording date and performance as excellent, average or poor.
*Total # of reactor control system hours and energy production in each calender quarter.
*Scores of the written examination and copies of the exam questions, answers, and responses by personnel.

2.6 Training Coordinator

Exemption status for supervisory senior operator.

The person who writes, grades, and administers the exam and on-the-job training events is a reactor supervisor or a supervisory senior operator. The reactor supervisor or supervisory senior operator as the person that coordinates training and examination will not take the annual exam. Several factors will allow for the exemption of that person from the regular evaluation and exam process. These factors are the educational experience of a graduate degree in the field of nuclear engineering, daily involvement in performance or review of activities of reactor operation, participation in the training program, preparation of examination material, and evaluation of exam questions. Evaluation of the reactor supervisor or a supervisory senior operator will, however, be done as part of the routine management responsibilities of the facility director. This will include certification that the person is performing an active role in training, operation and teaching at the UT BRC TRIGA facility.

Example Record Sheet

Requalification Record
UT BRC TRIGA

Name: _____ Year _____

RO ☐ SRO ☐ # _____

Lectures:		Topic:	Date ********
1	A B C D E F G H	_____	_____
2	A B C D E F G H	_____	_____
3	A B C D E F G H	_____	_____
4	A B C D E F G H	_____	_____
5	A B C D E F G H	_____	_____
6	A B C D E F G H	_____	_____

Events:		Performance: Excellent	Acceptable	Poor	Date
1	_____	E	A	P	_____
2	_____	E	A	P	_____

Examination:

Part 1 _____ Part 2 _____ Part3 _____ Part 4 _____ Part 5 _____ _____ Total

	Q1	Q2	Q3	Q4	Total
Hours:	_____	_____	_____	_____	_____
MW-hours	_____	_____	_____	_____	_____

License status:

inactive; ___/___/___

retrain complete _____ initial date

6 hour supervision _____ initial date

active: ___/___/___

Comments: (corrective training)

_____

_____

Evaluation Acceptance:

_____ Supervisory Senior Operator

_____ Date