GPU Nuclear	TRAINING AND EDUCATION DEPARTMENT TRAINING PROGRAMS MANUAL	Number 7811-PGD-2613
Title TMI-1 LICENSED OPERATOR REQUALIFICATION TRAINING PROGRAM		Revision No. 5
Applicability/Scope 10CFR55 License Holders at TMI-1		Responsible Office 7810-Operator Training Mgr. TMI
This document is within QA plan scope | X | Yes | ___ | No Safety Reviews Required | X | Yes | ___ | No		Effective Date 06/01/88

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DOCUMENT HISTORY

Rev 4

- Incorporates 10CFR55 Rules, effective 5/26/87:

  - changes annual written examination to biennial
  - adds requirement for an annual operating test
  - removes on-shift time requirement for off-shift licenses at TMI-1
  - relaxes Annual Program Evaluation Section to biennial
  - removes 40 Hr BPTS requirement for TMI-1
  - places in current format

Rev 5

- Incorporates 10 CFR55.59 (C) provisions for modification of LOR programs based on a systems approach to training, as described in LOR SAT Final Project Decumentation Memo #7811-88-0328..

  - changes performance frequency for all skill training requirements to biennial.
  - incorporates a new skills training task list based on a SAT approach.
  - incorporates a new core lecture series based on a SAT approach.
  - added program completion certification of Section 4.5.6.

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1.0 PURPOSE

The purpose of this Program Description is to define the TMI-1 Licensed Operator Requalification Training Program.

2.0 APPLICABILITY/SCOPE

2.1 Applicability

This program applies to TMI-1 active licensed and inactive licensed reactor operators and senior reactor operators, as defined below.

2.2 Scope

To achieve the stated purpose, this licensed operator requalification program has been established with a sufficiently broad scope to provide a comprehensive review of skills and knowledge necessary for safe plant operation and with the flexibility to cover recent operating experience and operational changes. (Ref. 6.9)

2.3 Objectives

The requalification program objectives are to:

2.3.1 Maintain nuclear plant operational safety and reliability.

2.3.2 Assure that operators maintain the high level of skill and knowledge required to accomplish routine and emergency duties.

2.3.3 Establish a system for evaluating and documenting operator proficiency and competency.

2.4 Program Segments

The requalification program described in this document is implemented utilizing four interrelated segments. These segments are:

2.4.1 Pre-planned lecture class series

2.4.2 Skills training

2.4.3 Operational review program

2.4.4 Licensee evaluation

2.5 Effective Date

This program becomes effective upon issue. Full compliance is to be achieved within 90 days of the effective date.

3.0 DEFINITIONS

3.1 GPUNC Definitions

The definitions given below are of a restricted nature for the purpose of this program description.

3.1.1 Active License - The license status which authorizes the licensee to manipulate or supervise the manipulation of the Controls of the facility.

3.1.2 Case Study - An instructional strategy designed to promote better understanding of a specific (actual or hypothetical) event by presenting information germane to the event in a way that the audience identifies closely with it. (Ref 6.12)

3.1.3 Class - A formal lecture or seminar led by an instructor.

3.1.4 Contact Hour of Instruction - A period of approximately one hour in which the course instructor is present to instruct or lead discussion, or is immediately available for assisting students. Lectures, seminars, discussions, problem solving sessions and examinations are considered contact periods under this definition.

3.1.5 Cycle - A set of usually consecutive, essentially identical weeks of instruction designed to accommodate the delivery of training material to each of the operating shifts during their scheduled training weeks.

3.1.6 Drill - A supervised training exercise conducted in a work environment in the plant, a simulator, or a mock-up for the purpose of developing and maintaining skills required to cope with plant abnormal/emergency conditions and including an evaluation of performance.

3.1.7 Inactive License - The license status which authorizes the licensee to perform all licensed duties except to manipulate or supervise the manipulation of the controls of the facility.

3.1.8 Individual Guided Study (IGS) - Study periods during which the student may receive individual assistance from a Training Instructor.

3.1.9 Instructor - Person certified by the Training Department as having both the technical knowledge and instructional skills to carry out formal instruction.

3.1.10 SHALL, Should, and May - The word "SHALL" is used to denote a requirement; the word "should" to denote a recommendation; and the word "may" to denote permission - neither a requirement nor a recommendation.

3.2 NRC Definitions

The following definitions are taken from 10 CFR 55.4 and are provided for information.

3.2.1 Actively performing the functions of an operator or senior operator - means that an individual has a position on the shift crew that requires the individual to be licensed as defined in the facility's technical specifications, and that the individual carries out and is responsible for the duties covered by that position.

3.2.2 Controls - When used with respect to a nuclear reactor, means apparatus and mechanisms the manipulation of which directly affects the reactivity or power level of the reactor.

3.2.3 Licensee - Means an individual operator or senior operator.

3.2.4 Operator - Means any individual licensed under 10 CFR 55 to manipulate a control of a facility.

3.2.5 Plant-referenced simulator - Means a simulator modeling the systems of the reference plant with which the operator interfaces in the control room, including operating consoles, and which permits use of the reference plant's procedures. A plant-referenced simulator demonstrates expected plant response to operator input, and to normal, transient, and accident conditions to which the simulator has been designed to respond.

3.2.6 Reference plant - Means the specific nuclear power plant from which a simulation facility's control room configuration, system control arrangement, and design data are derived.

3.2.7 Senior operator - Means any individual licensed under 10 CFR 55 to manipulate the controls of a facility and to direct the licensed activities of licensed operators.

3.2.8 Simulation facility - Means one or more of the following components, alone or in combination, used for the partial conduct of operating tests for operators, senior operators, and candidates: (1) the plant, (2) a plant-referenced simulator, (3) another simulation device.

3.2.9 Systems approach to training (SAT) - Means a training program that includes the following five elements:

(1) Systematic analysis of the jobs to be performed.

(2) Learning objectives derived from the analysis which describe desired performance after training.

(3) Training design and implementation based on the learning objectives.

(4) Evaluation of trainee mastery of the objectives during training.

(5) Evaluation and revision of the training based on the performance of trained personnel in the job setting.

4.0 PROGRAM DESCRIPTION

4.1 Structure

4.1.1 Pre-Planned Class Series

The requalification program SHALL include pre-planned training sessions conducted on a regular and continuing basis in those areas where written examinations, facility experience and SAT analysis indicate that emphasis in scope and depth of coverage is needed (Ref 6.10, Section (c) and c.2).

The training sessions should include two types of class series (Ref 6.12):

1) Fundamentals review class series covering areas in which the knowledge required of an operator is relatively constant.

2) Operational proficiency class series covering areas which involve essential plant operational guidelines, operational changes, and facility/industry experience.

4.1.1.1 Core Lecture Series

The topics to be presented in the core lecture series SHALL include those items identified in Exhibit 1. These items were selected to support the tasks selected for the Licensed Operator Requalification Program and were chosen using a systematic approach to training.

The scope of the core lecture series SHALL be determined by the Supervisor, Licensed Operator Training and be approved by the Operations Training Manager and the Plant Operations Director.

4.1.1.2 Fundamentals Review Class Series Topic Selection

The fundamentals review class topics SHALL include the topics identified in Exhibit 1.

The topics presented and the depth of coverage in the fundamentals review series should reflect the results of the technical content review of Section 4.7.5.

The scope of the fundamental review class series SHALL be determined by the Supervisor, Licensed Operator Training and be approved by the Operator Training Manager and the Plant Operations Director.

Category II quizzes may be used as an aid to planning the specific content of individual classes.

4.1.1.3 Operational Proficiency Class Series Topic Selection

The class topics SHALL include the material from each of the topics identified in Exhibit 1, unless the applicable information is covered in another appropriate manner, such as staff discussion sessions or operational review program (Section 4.1.3) discussion sessions.

The scope of the class series SHALL be determined by the Supervisor, Licensed Operator Training and approved by the Operator Training Manager and Plant Operations Director.

4.1.1.4 Pre-Planned Class Series Attendance

All licensees SHALL be required to attend scheduled requalification classroom training. Absences from a scheduled training session should be made up by attending later weekly presentations during the cycle.

Absences which cannot be made up should be limited to twenty hours of training per annual period. Self-study or individual guided study may be utilized for make-up with approval of the Supervisor, Licensed Operator Training.

If absences exceed this amount, a recommendation regarding the licensee's removal from licensed duties and placement in an accelerated requalification program SHALL be made by the Operator Training Manager via the Manager, Plant Training to the Director, TMI-1.

Those licensees whose biennial written examination and annual oral examination indicates that a mandatory upgrading of their knowledge level is required, SHALL attend the applicable pre-planned lecture series presentation. Mandatory attendance requirements SHALL be determined by the Supervisor, Licensed Operator Training and be approved by the Operator Training Manager and Plant Operations Director.

Brief absences from only part of a training session should be handled at the discretion of the instructor.

A licensee may obtain a written waiver for topics in which he/she is considered to be expert. The waiver memo SHALL include proper justification for the waiver and SHALL be approved by the Plant Operations Director and the Operator Training Manager. The licensee SHALL not, however, be excused from any quiz or examination coverage of the waivered topics.

Instructors may be given attendance credit for those lectures that they have presented in a licensed operator training program during the previous two years. The Supervisor, Licensed Operator Training should determine attendance credit based on a comparison of the present lecture and the instructor's previous lecture assignment.

4.1.1.5 Pre-Planned Class Series Training Methods

The following provides the methods which should be used to deliver the pre-planned class series training:

- Lecture presentation
- BPTS exercises
- Seminar presentation
- Individual guided study
- Computer-based training
- Case study (Ref 6.12)

4.1.2 Skills Training

In order to maintain an acceptable level of skills and knowledge associated with the nuclear plant systems, controls, and operational procedures, each licensee SHALL participate in a variety of plant evolutions. The manipulations and evolutions may be accomplished by the following methods:

- Nuclear plant simulator exercises
- Actual plant manipulations and evolutions (In Plant)
- Plant drill scenarios
- Emergency plan drills
- Classroom training if the plant referenced simulator is not capable to performing the evolution

4.1.2.1 Reactivity Manipulations and Plant Evolutions (Ref 6.10, Section C

The reactivity manipulations and plant evolutions required for each licensee were selected using a systematic approach to training method.

Each licensed operator SHALL participate on a biennal basis (i.e., all evolutions must be completed once during each two-year program presentation) in those plant evolutions specified in Exhibit 2. Plant evolutions training should be conducted in accordance with the specified training settings as indicated in Exhibit 2.

During the systematic selection of LOR tasks, other tasks were identified that would be beneficial to the operator but were not of sufficient importance, consequence or difficulty to warrant being designated as mandatory. These tasks were included in a discretionary list and are intended to be used to supplement operator training as appropriate. The selection and use of the discretionary task list SHALL be determined by the Supervisor, Simulator Training and approved by the Operator Training Manager and Plant Operations Director.

4.1.2.2 Nuclear Plant Simulator Exercises

Once the Simulator has been certified to the NRC per Ref 6.2, Section 55.45.(b), Ref 6.10, Sections (c)(3)(v) and (c)(4)(iv), it shall be the only acceptable simulation facility.

The Simulator Development Manager, TMI, SHALL notify the Supervisor, Simulator Training of all evolutions and manipulations that the simulation facility is incapable of performing.

4.1.2.3 Plant Drill Program

The plant drill program may be used to meet the manipulation requirements if a suitable simulator is not available. (Ref 6.12, Section 3.22 and Ref 6.10, Section (c)(4)(iv))

Where the control panels of TMI-1 are used for the drill, the actions to be taken for the emergency or abnormal condition SHALL be discussed or simulated; actual plant manipulation is not required (Ref 6.10, Section (c)(4)(iv)).

Plant drills SHALL be conducted with the approval of the Plant Operations Director on an individual or team basis and may involve:

1) Reviewing plant procedure steps
2) Identifying actions required to establish stable plant conditions
3) Identifying equipment control locations and functions
4) Identifying expected plant instrumentation and alarm response
5) Reviewing communications necessary to gather information or coordinate team actions
6) Identifying supplementary actions aimed at mitigating results or causes of plant abnormal/ emergency conditions

Plant drills which cover integrated plant operations, vice task specific operations, should be planned in a prepared drill scenario approved by the Operator Training Manager and Plant Operations Director or their designees. The drill scenario should include the following:

a) Purpose/objectives of the drill
b) Initial conditions
c) General description
d) Method of initiation
e) Precautions and limitations
f) Sequence of expected actions
g) Point of termination/conditions under which the drill is to be secured
h) Final conditions
i) Monitors required/location

4.1.2.4 Evolution and Manipulation Credit

Each licensee SHALL manipulate the controls while each senior operator SHALL either manipulate or direct the manipulations for each evolution (Ref. 6.10, Section (c)(3)(i)).

Simulator instructors and plant drill monitors may receive credit for those evolutions contained within drill scenarios that they present.

Licensed Operations Department and Training Department Management may receive credit for those evolutions which they monitor and evaluate.

Licensees who participate in Emergency Plan drills may receive credit for those drills as determined by the Operator Training Manager.

4.1.2.5 Participation

In the event that skills training guidelines for participation in plant evolutions and control manipulations of Section 4.1.2.1 are not met, evolutions which will fulfill the requirements SHALL be scheduled and completed prior to the end of the required biennial training period.

If the requirements are not completed, a recommendation regarding the licensee's removal from licensed duties and placement in an accelerated requalification program SHALL be made by the Operator Training Manager via the Manager, Plant Training to the Director, TMI-1.

4.1.3 Operational Review Program

The operational review program provides a system for review of selected operational experiences and changes to existing operating guidance or equipment on a short-term basis.

4.1.3.1 Modification Review (Ref 6.10, Section (c)(3)(iii), Ref. 6.12, Section 3.1.1, and Ref 6.17)

A continuing system SHALL be established by the Plant Operations Director so licensees review documented plant design changes, equipment modifications, procedures changes, equipment modifications, procedure changes and technical specification changes. Selected changes and modifications should be analyzed and information pertinent to the basis for the changes and their operational implications collected.

The Plant Operations Director should specify changes and modifications to be analyzed, with information for review transmitted in accordance with the urgency of the situation.

This information should be formally transmitted to all on-shift and off-shift licensees.

Changes to emergency procedures, technical specifications and safety related systems should be reviewed during the licensees shift operation for on-shift licensees or through a required reading program (Ref 6.11) for off-shift licensees.

Expanded coverage of plant design changes, equipment modifications, procedure changes and technical specification changes in the operational proficiency lecture series should be recommended by the Plant Operations Director to the Operator Training Manager.
On-shift supervisory (SRO) personnel should provide guidance to on-shift operators in interpreting and reviewing changes and modifications. An on-shift discussion period to review changes and modifications is encouraged. (Ref 6.12)

4.1.3.2 Operating Experience Review (Ref 6.17)

A continuing system SHALL be established by the Operator Training Manager so that licensees review operating experience from the facility and applicable segments of the nuclear industry (6.29).

Technical Functions and Plant Engineering personnel assess plant operating experience per Ref 6.18 and recommend operating experience to be analyzed for training purposes.

Subsequent coverage of operating experience in the operational proficiency class series should be considered by the Supervisor, Licensed Operator Training and the Plant Operations Director.

These experiences may also be integrated into the nuclear plant simulator exercises or the plant drill program.

4.1.4 Accelerated Requalification Program

The accelerated requalification program is for licensees having demonstrated deficiencies requiring assignment to a special retraining effort (Ref 6.10, Section (c)(4)(v)).

4.1.4.1 Attendance Requirements

Operators meeting one or more of the following criteria SHALL be assigned to an accelerated requalification program:

a) Comprehensive written examination performance deficiencies per Section 4.4.2.4.

If the examination failure was due to individual section scores of less than 70% while the overall grade was 80% or greater the Accelerated Requalification is only required for the failed sections.

If the examination failure was due to an overall score of less than 80%, one of the following accelerated requalification programs SHALL be used:

- The Accelerated Requalification is for the entire written examination.

OR

- The Accelerated Requalification is only for those sections where scores of less than 80% were achieved.

b) Annual operating examination performance deficiencies per Section 4.4.3.6. If the individual only fails one segment of the operating examination, the accelerated requalification is only required for the failed segment.

c) Pre-planned class series quiz performance deficiencies per Section 4.4.1.3.

d) Significant licensed duty performance deficiencies identified by the Plant Operations Director.

e) Skills training participation deficiencies as described in Section 4.1.2.6.

f) Pre-planned class series participation deficiencies per Section 4.1.1.3.

g) Cyclic quiz participation deficiencies per Section 4.4.1.2.

4.1.4.2 Program Content

The accelerated requalification program content SHALL be specifically structured to upgrade knowledge and skills identified as deficient. Examination categories and areas in which performance standards were not met SHALL be covered in the program.

The Supervisor, Licensed Operator Training and/or the Supervisor, Simulator Training, as appropriate, SHALL be responsible for formulating, in writing, individual accelerated requalification plans. They SHALL be approved by the Operator Training Manager and the Plant Operations Director.

4.1.4.3 Program Administration

The accelerated requalification program may involve a variety of training exercises, including:

- Individual guided study
- Oral interviews and discussion sessions
- Pre-planned classes
- Skills training exercises in the plant, utilizing a simulator, or plant drills.

Successful completion of the accelerated requalification program SHALL be determined by administering an examination. The examination SHALL cover all categories of the requalification written examination and/or all areas of the requalification operating examination originally failed.

4.1.4.4 Performance Standards

Performance standards for the accelerated requalification program SHALL be as follows:

1) A score of at least 70% on each accelerated requalification written examination section when individual sections were failed.

2) If the initial examination failure was due to an overall score of less than 80% the following applicable standard applies:

   - An overall grade of 80% or greater than with each category 70% or greater if the entire examination was re-taken.

   - A score of at 80% or greater on each accelerated requalification written examination section when the accelerated requalification was limited to those sections where scores of less than 80% was achieved.

3) A passing evaluation on the accelerated requalification oral or simulation facility examination.

4.1.4.5 Program Failure

In the event that these standards are not met, the individual's suitability for resuming licensed duties SHALL be reviewed by the Operator Training Manager, Plant Operations Director, and the Manager Plant Training. They SHALL provide a recommendation to the Director, TMI-1 regarding the individual's permanent removal from licensed duties or additional upgrading efforts to be considered.

If appropriate, another accelerated requalification program SHALL be structured to correct deficiencies. However, in this instance the NRC SHALL be notified and may require evidence of successful completion of this training or may require additional training before being returned to licensed duties (Ref 6.10, Section (b)).

4.2 Prerequisites

In order to participate in this program, individuals SHALL:

4.2.1 Hold an active or inactive operator or senior operator license, or

4.2.2 Be a qualified Training Department Instructor fulfilling their continuing training requirements, or

4.2.3 Be a qualified STA fulfilling their continuing training requirements, or

4.2.4 Receive permission from the Operator Training Manager to attend selected portions of this program.

4.3 Instructor Qualifications

1) Training Department instructors SHALL be qualified in accordance with approved Training Department procedures.

2) "Guest" lecturers who are experts in a particular subject area need not possess the above qualification. "Guest" lecturers SHALL be approved by the Operator Training Manager.

4.4 Licensee Evaluation Scheme

All licensees SHALL be evaluated at the level consistent with their license. Control room operators who hold inactive status senior operator licenses SHALL be evaluated at the senior operator level during all types of evaluations (Ref. 6.25).

4.4.1 Cyclic Quizzes

After approximately each week of training, a written Category I quiz covering the week's topic(s) should be administered. (Ref 6.10, Section (c)(4)(ii) and Ref 6.12, Section 4.3).

4.4.1.1 Quiz Administration

The quiz SHALL contain questions related to the learning objectives covered during the training cycle.

All topics covered during the training cycle session should be represented by test items.

The quizzes SHALL be administered in accordance with Ref 6.4 and Reference 6.8.

The quiz and answer key SHALL be approved by the Operator Training Manager or his designee.

A review of each quiz should be conducted with those individuals who took the examination.

4.4.1.2 Participation

Licensees should have attended all of the lectures represented on the quiz prior to taking it.

If a licensee is absent from a scheduled quiz, it should be made up by taking another quiz later in the cycle. In any case, the quiz SHALL be made up as soon as practicable. The makeup quiz should be coordinated with scheduled lecture make-ups per 4.1.1.3 by the Supervisor, Licensed Operator Training or his designee.

Training instructors may be exempted from taking those portions of the quiz that they were involved in the developing.

If the requirements for attendance are not met by the end of the annual training period, a recommendation regarding the licensee's removal from licensed duties SHALL be made by the Operator Training Manager via the Manager, Plant Training to the Director, TMI-1.

4.4.1.3 Quiz Standards

A performance standard of 80% is established for a written quiz.

4.4.1.4 Remedial Review Process

Licensees who do not meet this quiz standard SHALL complete a remedial review process as specified by the Supervisor, Licensed Operator Training or his designee, and should include:

1) Independent licensee review of the training session material associated with identified knowledge deficiencies or by attendance at designated lecture series topic(s), and

2) Review of associated reference material.

Following the remedial review, a second quiz SHALL be administered covering the identified knowledge deficiencies. If the second quiz is completed satisfactorily, the licensee SHALL receive credit for completion of the required quiz.

If the second quiz is not completed satisfactorily, the Operator Training Manager, Plant Operations Director, and Manager, Plant Training SHALL review the licensee's suitability for continued licensed duties.

They SHALL provide a recommendation regarding the licensee's removal from licensed duties and placement in an accelerated requalification program to the Director, TMI-1.

4.4.2 Comprehensive Written Examination (Ref 6.10, Sections (a)(2) and (c)(4)(i))

In order to determine each licensed individual's knowledge of topics covered in the requalification program and to provide a basis for determining areas in which retraining is needed, a comprehensive written requalification examination SHALL be administered, as a minimum, at the conclusion of each biennial training period.

Prior to sitting for the written examination, each licensee SHALL satisfactorily complete program requirements. (Ref. 6.31)

4.4.2.1 Comprehensive Written Examination Content

The test items should be derived from the knowledge, skills and abilities needed for the licensed position, as described by the learning objectives. These objectives should be derived from the systematic analysis of the job position (Ref 6.2, Section 41, 43).

The examination SHALL include a representative sample from the categories identified in Exhibit 3 (Ref 6.10, Section (a)(2)(i)).

The examination should emphasize the operational application of theoretical concepts and application of facility administrative limits, Tech. Specs, etc. rather than memorized lists of numbers and facts typical of an Initial/Replacement examination. (Ref 6.13, Ref. 6.26 and Ref. 6.30).

The examination should emphasize the facility changes in equipment, systems, procedures, Tech. Specs etc. and plant experience since the last examination.

The examination should adhere to the current NRC requalification examination format.

4.4.2.2 Examination Administration

The examination SHALL be reviewed and approved by the Operator Training Manager and the Plant Operations Director, or for those examinations which they are scheduled to take, their designees.

The examination SHALL be administered in accordance with Ref 6.4 and Ref. 6.8.

4.4.2.3 Examination Participation

ALL licensees SHALL participate in the examination process with the exception of individuals who have successfully completed the NRC licensing examination within six months of the requalification examination date.

Licensed ROs enrolled in SRO training programs may substitute their upcoming NRC licensing examination if it is scheduled within three months of the requalification examination date.

Examination preparers who are required to participate in the examination SHALL be administered examinations which they were not involved in the preparation of and SHALL be administered entire examinations.

4.4.2.4 Examination Performance Standards

To satisfactorily complete the examination, a score of at 70% or greater on each section and an overall average score of or greater SHALL be achieved.

A licensee receiving a grade of less than 70% in any examination category or an over-all grade of less than 80%, SHALL be placed in an Accelerated Requalification Program (Section 4.1.4) and removed from all licensed duties, except as noted below.

Under circumstances where a grade of less than 70% has been scored in a single section with the overall average 80% or greater, the Plant Operations Director may authorize the individual to remain on licensed duties and

take a written reexamination of the failed section within one week of notification of the failure.

The Operator Training Manager, via the Manager, Plant Training, SHALL notify the Director, TMI-1 of written examination results.

4.4.3 Annual Operating Test (Ref 6.10, 10 CFR 55.59, Sections (a)(2)(ii) and (c)(4)(i))

4.4.3.1 Operating Test Content

The test content should be developed from the learning objectives derived from a systematic analysis of operator or senior operator duties. (Ref. 6.2, Section 10 CFR 55.45, Operating Tests)

The operating test SHALL require each licensee to demonstrate an understanding of, and the ability to perform the actions necessary to accomplish a comprehensive sample of the items identified in Exhibit 4 (Ref 6.10, 10 CFR 55.59, Section (a)(2)(ii) Requalification Requirements, Operating Test and Reference 6.12, INPO Guideline 86-025, Section 4.5.1, Oral Examination Content).

The operating test should adhere to the current NRC requalification examination format.

4.4.3.2 Operating Test Administration (Ref 6.2, Section 55.45.(b)(1))

The test SHALL be administered on an annual basis in two parts:

- A plant walkthrough oral examination
- A simulation facility examination.

The test may be administered utilizing an evaluation instrument similar to that found in Ref. 6.27.

4.4.3.3 Test Participation

ALL licensees SHALL participate in the test process with the exception of individuals who have successfully completing the NRC licensing examination within six months of the requalification examination date.

Licensed ROs enrolled in SRO training programs may substitute their upcoming NRC licensing examination if it is scheduled within three months of the requalification examination date.

4.4.3.4 Oral Examination

The oral examination SHALL be conducted under a structure enabling consistency of questioning and evaluation. The following guidelines apply:

a) A checklist identifying the areas to be covered should be used.
b) Overall evaluation SHALL be made on a pass/fail basis.
c) Comments on individual weaknesses SHALL be made on a written record of the student's performance on the questions.

An evaluation form similar to that of Exhibit 5 should be used to conduct the examination.

The Supervisor, Licensed Operator Training and the Plant Operations Director should establish the oral examination schedule.

Personnel assigned to conduct oral examinations SHALL have successfully completed education and training programs required for a senior operator's license, and SHALL be approved by the Plant Operations Director.

Each oral examination should be structured so that an examination time of two hours or more is appropriate.

The oral examination should involve sessions conducted in the plant or the simulator control room, and in plant areas occupied by individuals whose actions are directed by the licensed operator.

4.4.3.5 Simulation Facility Examination

The scenarios used for annual simulator examination SHALL be developed by the Plant Operations Director and Operator Training Manager or their designees.

The examination SHALL be conducted under a structure enabling consistency of evaluation. The following apply:

a) The simulator drill scenario guide SHALL contain the key points for operator performance evaluation.
b) An overall evaluation SHALL be made on a pass/fail basis for each individual and the team (Ref 6.14).
c) Comments on individual and team strengths and weaknesses SHALL be made on a written record (Ref 6.14).

4.4.3.6 Operating Test Performance Standard

A failing grade on either the oral examination or simulation facility examination segments SHALL require the licensee to be removed from licensed duties and placed in an accelerated requalification program.

The Operator Training Manager, via the Manager, Plant Training, SHALL notify the Director, TMI-1 of the operating test results.

4.5 Training Records

4.5.1 General

Training records SHALL be maintained in accordance with Ref. 6.28.

4.5.2 Specific Records (Ref 6.10, Section (c)(5)(i))

The Supervisor, Licensed Operator Training and the Supervisor, Simulator Training are responsible for generating the following requalification program records:

1) Written examination questions, answer keys, and results for each operator
2) Lecture series attendance records
3) Plant drill participation records
4) Reactivity manipulation and plant evolution participation records
5) Simulator training participation records
6) Operating Test Records

The Operator Training Administrative Assistant is responsible to ensure that generated training records are turned over to document control for permanent retention.

4.5.3 Operational Review Records

Operational review series participation records SHALL be generated and maintained by the Plant Operations Director.

4.5.4 Program Presentation Correspondence

The Operator Training Administrative Assistant SHALL ensure that all pertinent correspondence relating to each program presentation is established within a program history file for each annual training period.

4.5.5 License Renewal Training File

The Operator Training Administrative Assistant SHALL establish and maintain a training file on each licensee in accordance with applicable NRC license renewal certification process procedures. This file will contain information pertinent to the individuals NRC Form #398, License Application.

4.5.6 Program Completion Certification

At the completion of each biennial LOR program, the Supervisor, Licensed Operator Training and the Supervisor, Simulator Training SHALL certify in a memorandum to file that all participants have completed all program requirements, including:

- Lecture attendance per Section 4.1.1.3
- Skills training per Sections 4.1.2.1 and 4.1.2.5
- Accelerated requalification per Section 4.1.4.1
- Cyclic quizzes per Section 4.4.1.2
- Comprehensive written examination per Section 4.4.2.3
- Annual operating tests per Section 4.4.3.3

This certification is intended as a program quality control check and is to be used for the NRC license renewal process of Reference 6.3.

4.6 Training Schedule

4.6.1 The operator requalification program SHALL be conducted on a cyclic basis so that all program requirements are completed a biennial basis.

4.6.2 Successive requalification programs SHALL be conducted on a schedule enabling a continuing program to exist (Ref 6.10, Sections (c)(1) and (a)(1)).

4.6.3 In general, six weeks of training should be scheduled during a seven week period to accommodate six shifts with one week of preparation and development time scheduled for the training staff. This seven week period is referred to as a cycle.

4.6.4 In general, six cycles of training should be scheduled each annual period.

4.6.5 In general, each annual training period is scheduled to commence during March of each calendar year. (e.g. training year '88 would be scheduled between 3/'88 - 3/'89)

4.6.6 In general, each biennial training period is scheduled to commence during March of odd numbered calendar years. (e.g. 1989, 1991, 1993, etc.)

4.7 Program Evaluations

4.7.1 Course Evaluation

The Course Evaluation Process of Ref 6.20 SHALL be applied to this program.

The Operator Training Manager SHALL recommend to the Manager, Plant Training the desired scope and depth of course evaluations for this program's segments.

The Manager, Plant Training SHALL determine the scope, structure, and frequency of these evaluations.

4.7.2 Program Evaluation

The Program Evaluation process of Ref 6.22 should be applied to this program at least every four years.

This evaluation may be conducted concurrent with a Program Evaluation of the Initial RO and SRO Training Programs.

The Operator Training Manager SHALL recommend and the Manager, Plant Training SHALL determine the scope, structure, and frequency of this evaluation.

4.7.3 Presentation Evaluation

Evaluation of selected class series and simulator training sessions SHALL be conducted in accordance with Ref 6.23.

4.7.4 On-The-Job Performance Evaluation (Ref 6.19)

Evaluation by Operations Department supervisors of the on-the-job performance by their licensees SHALL be utilized to relate job performance to the effectiveness of the requalification training. It may also indicate that changes to the respective initial training programs are necessary.

This on-the-job evaluation SHALL be conducted annually consistent with Ref 6.21 and the areas identified in Exhibit 7.6.

This evaluation is not required for inactive status licensees.

4.7.5 Biennial Technical Content Review Evaluation

A requalification program technical content review and evaluation SHALL be conducted at the conclusion of each biennial program presentation.

The purpose of this evaluation is to conduct a comprehensive review of reference material in order to determine areas where remedial or upgrade training may be appropriate during the next biennial period.

This evaluation should be conducted by individuals designated by the Operator Training Manager and should consider input from the licensees, the Plant Operations Director, and instructors.

The areas encompassed by the review should include:

1) QA inspection, audit, and evaluation reports of the Plant Operations and Training Departments.
2) NRC or other outside inspection, audit, and evaluation reports of the Plant Operations and Training Departments, including NRC SALP Reports.
3) Annual Operating test results.
4) Comprehensive written examination results.
5) Cyclic quiz results.
6) Simulator skills training critiques.
7) Plant operational performance indicators including the following: (Ref 6.31)
   a. Transient Assessment Reports
   b. Management Off-shift Plant Tour Program Reports
   c. Potentially Reportable Event Reports
   d. Licensee Event Reports
   e. Plant Incident Reports
   f. Other routine monitoring of operator performance by Operations Department Management and Training Staff
   g. Review of GPUN Operating Experience, EP-17 (Ref 6.18 and Ref 6.31)
8) Annual On-The-Job evaluation of Section 4.7.4.
9) Interviews with program instructors and participants and results from the trainee reaction per section 4.7.6.

Requalification program technical content remedial or upgrade needs determined by the review SHALL be identified, recommended corrective actions structured and a report of these submitted to Operations and Training Management.

4.7.6 Trainee Reaction

Trainee reaction should be collected at the conclusion of each biennial LOR program using an instrument similar to Exhibit 7. Results from the compilation of the operator feedback should be included in the biennial Technical Content Review Evaluation per section 4.7.5.

4.8 Program Maintenance

4.8.1 Baseline Documents

Requirements from issuance or revision to baseline documents, such as NUREGS, Code of Federal Regulations, Reg. Guides, ANSI Standards, INPO Guidelines, FSAR, etc. which are determined to have impact, SHALL be incorporated in the body of this program or its applicable appendices with a specific reference to the source document provided.

4.8.2 Commitments

Commitments made as a result of internal or external program audits and evaluations SHALL be incorporated into the body of this program or its appendices with a specific reference to the source document provided.

4.8.3 Revision Process

All program revisions SHALL be processed in accordance with ref. 6.24.

4.8.4 Evaluations

Changes to this program description as a result of the various evaluations instruments of Section 4.7 SHALL be made.

4.8.5 Program Approval

4.8.5.1 TMI-1 Approval

This program description and any changes thereto should receive the concurrence of the Operator Training Manager and SHALL be approved by the Manager, Plant Training and the Plant Operations Director.

4.8.5.2 NRC Approval of Program Revisions (Ref 6.15)

TMI-1 SHALL not, except as specifically authorized by the Commission or as noted below, decrease the scope of this Requalification Program.

Program revisions which do not reduce the scope should be forwarded to the NRC for information.

TMI-1 may certify to the NRC that its Requalification Program has received INPO accreditation and that it has been developed using a Systematic Approach to Training. (Ref 6.10, Section (c), Ref 6.16)

Once certified, any program revision as a result of the evaluation phase of the Systematic Approach to Training is considered to have NRC approval discussed above.

5.0 RESPONSIBILITIES

5.1 Supervisor, Licensed Operator Training, SHALL be responsible for:

1) Determining the scope of the fundamentals review and operational proficiency class series
2) Scheduling training to meet the program completion requirements
3) Designating those abnormal and emergency procedures to be reviewed for each requalification cycle such that all abnormal and emergency procedures are reviewed biennially
4) Ensuring the development and conduct of the plant drill program
5) Determining expanded coverage of plant design changes, equipment modifications, procedure changes, and technical specification changes in the operational proficiency class series

6) Establishing the annual oral examination schedule
7) Designating personnel to conduct oral examinations
8) Formulating individual accelerated requalification programs.
9) Establishing the requalification program records identified in Section 4.5
10) Determining mandatory lecture series attendance requirements based on examination weaknesses.
11) At the conclusion of each biennial LOR program presentation, certify in memorandum that all participants have completed all program requirements.

5.2 Supervisor, Simulator Training SHALL be responsible for:

1) Ensuring the development and implementation of BPT and replica simulator training to support the needs of the licensed operator requalification program.
2) Ensuring the development and evaluation of annual simulator examinations.
3) Formulating individual accelerated requalification programs for simulator performance deficiencies.
4) At the conclusion of each biennial LOR program presentation, certify in memorandum that all participants have completed all program requirements.
5) Scheduling simulator training as necessary to meet plant evolution requirements.

5.3 Operator Training Manager SHALL be responsible for:

1) Approving the scope of the fundamentals review and operational proficiency class series
2) Approving scheduling and appearance of "guest" lecturers
3) Approving accelerated requalification programs
4) Notifying the Operations Director of unsatisfactory examination results
5) Conducting a required reading program for Training Department licensed personnel
6) Recommending to the Manager, Plant Training the scope and depth of course and program evaluations related to this program.
7) Conducting a biennial requalification program review and evaluation, submitting a report on this review, and taking immediate corrective action where necessary
8) Initiating a biennial review of this program description.

5.4 Manager, Plant Training SHALL be responsible for:

1) Approving this requalification program description.
2) Ensuring that the Training Department maintains the records identified in Section 4.5.
3) Determining the scope, structure, and frequency of course and program evaluations relating to the Requalification Training Program.
4) The overall development, presentation, and direction of this program.
5) Ensuring that this program meets the requirements of Regulatory Guide 1.8 of 1977 and 10CFR55.59, Requalification (Ref 6.5).

5.5 Plant Operations Director SHALL be responsible for:

1) Providing inputs to the Training Department on topics to be presented in the fundamentals review and operational proficiency class series.
2) Approving plant drill scenarios, and the conduct of plant drills.
3) Reviewing repeated personnel error or other indicators of degraded proficiency and recommending appropriate training
4) Providing to the Training Department periodic observations identifying on-the-job performance results related to requalification training.
5) Establishing a continuing system so that operators review documented plant design changes, equipment modifications, procedure changes and technical specification changes, specifying the changes and modifications to be analyzed, and ensuring that on-shift licensed personnel review the selected information in a timely manner
6) Establishing the annual oral examination schedule
7) Approving personnel designated to conduct oral examinations
8) Approving accelerated requalification programs
9) Establishing and maintaining operational review series participation records
10) Providing copies of all required reading material to the Operator Training Manager
11) Assisting in the Development and Approving Simulator Examination Scenarios.
12) Approving or designating Operations Department staff to approve the comprehensive written examination.

13) Assuring that each active status licensee participates in control manipulations which affect core reactivity or power level.
14) Assuring that each on-shift licensee maintains an active status license.

5.6 Operator Training Administrative Assistant SHALL be responsible for:

1) Ensuring that generated training records are turned over to document control for permanent retention.
2) Maintaining a program presentation correspondence file.
3) Maintaining a training file on each TMI-1 Licensee for license renewal purposes.
4) Tracking off-shift active status licensees watchstanding requirements.

5.7 Simulator Development Manager, TMI

1) Determining which control manipulations the TMI-1 Replica Simulator is incapable of performing.

6.0 REFERENCES

6.1 10 CFR 50 - Domestic Licensing of Production and Utilization Facilities
6.2 10 CFR 55 - Operator's Licenses, effective 5/26/87
6.3 AP 1058, "Operator's Licenses"
6.4 GPUN Procedure 1000-ADM-2604.01, "Control of Examinations"
6.5 TMI-1 Technical Specifications, Section 6.4.1
6.6 Reg. Guide 1.8
6.7 ANS 3.1, "Selection, Qualification and Training of Personnel for Nuclear Power Plants"
6.8 7810-ADM-2504.01, "Control of Examinations"
6.9 TMI-1 FSAR Section 12.2.4.2.5
6.10 10 CFR 55.59 - Operator Licenses, Requalification, effective 5/26/87
6.11 7810-ADM-2610.01, "Revision Review/Required Reading for Operator Training Instructors"
6.12 INPO 86-025, Guideline For Continuing Training of Licensed Personnel
6.13 NUREG 1021, ES-601
6.14 TMI-1 Licensing Action Item 87-9113.
6.15 10 CFR 50.54.i-1, effective 5/26/87
6.16 Final Policy Statement or Training and Qualification of Nuclear Power Plant Personnel, 50 FR 11147; 3/20/85

6.17 NRC TMI-1 Restart order, dated 10/2/85, Continuing Requirement (1).
6.18. Technical Functions Procedure EP-17, "Review of Industry/GPUN Operating Experience"
6.19. ASLB Restart Remand on Management - Training, LBP-85-21, dated 6/24/85.
6.20 7800-ADM-2682.12, "Course Evaluation Process"
6.21 7800-ADM-2682.10, "Trainee Evaluation - Once Back On The Job"
6.22 7800-ADM-2682.11, "Program Evaluation"
6.23 7800-ADM-2607.01, "Instructor Evaluation"
6.24 7800-ADM-1218.01, "Management Control Documentation System"
6.25 TMI-1 Licensing Action Item 87-9149
6.26 NRC TMI-1 Requalification Audit Report No. 50-289/87-07(OL), dated 5/11/87, Section 3.b
6.27 NUREG-1021, ES-302.
6.28 7810-ADM-2600.02, "Training Department Records Procedure"
6.29 7810-ADM-2600.04, "Industry Experience Review"
6.30 NRC Systematic Assessment of Licensee Performance (SALP) Report No. 50-289-86-98, February 11, 1988. GPUN File No. C311-88-3017.
6.31 7800-PGD-2610, GPUN Licensed Operator Requalification Training Program

7.0 EXHIBITS

1 Lecture Series Topics
2 Biennial Plant Evolutions
3 Comprehensive Written Examination Topics
4 Operating Test Topics
5 Annual Oral Examination Evaluation Form
6 On-The-Job Performance Evaluation Areas.
7 Sample Trainee Reaction Forms

Exhibit 1

LECTURE SERIES TOPICS

A. Core Lecture Series

Core lecture series topics were selected in response to an LOR program evaluation. These topic SHALL be covered during the two-year LOR program:

1) Instrument Air/Backup Instrument Air/2 Hr. Air System
2) Makeup and Purification System
3) Emergency Feedwater System
4) Integrated Control System
5) ATP 1210-1 through 1210-10
6) Lessons from the course "Recognition and Mitigation of Core Damage", as selected by the Supervisor, Licensed Operator Training
7) Decay Heat Removal System
8) Vital AC/DC
9) Class 1E Electrical Systems
10) Engineered Safeguards Actuation System
11) Control Rod Drive System
12) Natural Circulation
13) Emergency Diesel Generator System
14) Reactor Protection System
15) Non-Nuclear Instrumentation System
16) Heat Sink Protection System

B. Fundamental Review Class Series Topics

The fundamentals review class topics are to be covered at least each two years and SHOULD include the topics identified below.

1) Theory and principles of reactor operation topics
2) Heat transfer, fluid flow and thermodynamics topics
3) Plant chemistry
4) Fuel handling Core parameters. Note: This topic may be scheduled to coincide with Reactor Refuelings.

C. Operational Proficiency Class Series Topics

1) Normal, abnormal and emergency operating procedures
Note: Each licensed operator and senior operator SHALL review the contents of all abnormal and emergency procedures on a regularly scheduled basis. (Ref 6.10, Section C.3.iv).

Exhibit 1

LECTURE SERIES TOPICS

2) Technical specifications
3) Administrative procedures, conditions and limitations
4) Major operational evolutions
5) Facility design and license changes
6) Procedure changes
7) Operating history and problems
8) Related nuclear industry operating experience

D. Other Topics

The following topics SHALL be presented to comply with other requirements or commitments, but are not required for successful completion of this training program:

1) NPDES/PPC Plan - biennial
2) Worker Right-to-Know (OSHA Hazard Communication Standard) - annual
3) General Employee Training - annual
4) Emergency Plan Refresher Training - annual

Exhibit 2

BIENNIAL PLANT EVOLUTIONS

The following selected LOR task have been compiled as the result of a systematic approach to training process. These tasks SHALL be accomplished during the biennial requalification program by each licensed operator. The "SETTING" column identifies the training setting for each task. The "CATEGORY" column provides a logical grouping for simulator tasks. The last column, "Performance Requirement", assigns a performance applicability for each task. "TEAM" tasks are to be performed by the control room members as a team. "SRO" designates tasks to be performed "AT-THE-CONTROLS" by SRO licensees. "SRO/CRO" designates Auxiliary Operator tasks to be performed or simulated IN-PLANT by the licensed operators.

REPLICA SIMULATOR TASKS

Category	Task Description	Performance Requirement
AIR	Respond to Loss of Instrument Air System	Team
ATOG	Respond to Excessive Cooling	Team
	Respond to A Large Break LOCA Cooldown	Team
	Respond to an Abnormal Transient Without Reactor Trip	Team
	Perform the Required Actions for a Turbine Trip Below the Anticipatory Trip Setpoint	
	Adjust High Pressure Injection Flow	Team
	Isolate the Affected OTSG During Excessive Primary to Secondary Heat Transfer	Team
	Respond to a Reactor/Turbine Trip	Team
	Respond to an OTSG Tube Leak/Rupture	Team
	Respond to a Small Break LOCA	Team
	Respond to a Lack of Heat Transfer	Team
	Respond to a Reactor/Turbine Trip	SRO
	Respond to a Loss of Subcooled Margin	Team
	Take Actions for HPI Cooling - Recover From Solid Operations	Team
	Operate the Decay Heat Removal System in The Low Pressure Injection Mode	Team
CRD	Perform Regulating Group Transfer Operations to/from the Auxiliary Power Supplies	SRO
	Respond to a Dropped Control Rod	Team
DHR	Place the Decay Heat Removal System in Operation During a Shutdown and Cooldown	Team

Exhibit 2

Category	Task Description	Performance Requirement
Electrical	Respond to Station Blackout (loss of offsite power)	Team
	Respond to a Station Blackout W/Loss of Both EDG's	Team
EP/AP	Respond to a Steam Leak	Team
	Respond to a Total Loss of ICS/NNI Power	Team
ES	Reset an ES Channel	SRO
	Reset an ES Channel	Team
	Bypass an ES Channel	SRO
	Bypass an ES Channel	Team
	Authorize Bypass of Engineered Safety Features Functions	SRO
	Manually Initiate Engineered Safeguards Actuation System	Team
Feedwater	Respond to an Emergency Feedwater Actuation	Team
	Operate the EF-V-30's from the Control Room	SRO
	Throttle Emergency Feedwater	Team
	Operate the EF-V-30's from the Control Room	Team
	Respond to a Loss of Main Feedwater	Team
	Supply Feedwater (Main or Emergency) to a Dry OTSG	Team
	Perform the Required Actions if the Emergency Feedwater System Does Not Operate Properly in Automatic	Team
ICS	Operate in ICS in Hand	SRO
	Transfer ICS Stations to Auto	Team
Tech Spec	Perform Required Actions if Quadrant Power Tilt Exceeds Tech Spec Limits	SRO
RC Flow	Establish Natural Circulation	Team
RCS	Establish Natural Circulation	SRO

Exhibit 2

Category	Task Description	Performance Requirement
Startup	Perform a Plant Startup	Team
Supervisory	Direct Shift Personnel Actions to Ensure Plant Safety During Emergency Conditions	SRO
	Direct Shift Personnel Actions to Correct the Cause of the Emergency	SRO
	Identify and Declare Emergency Classifications	SRO
	Evaluate Plant/Personnel Safety Hazards Associated with the Emergency Event	SRO
	Direct Actions to Ensure that Core Cooling and Subcooling Margin are Maintained in an Emergency Event	SRO
	Direct Corrective Actions to Mitigate the Consequences of an Emergency Event	SRO
ATOG	Operate the High Pressure Injection System in the Piggyback Mode	Team
RCP	Respond to a Loss of RCP Seal Injection Coincident with a Loss of Intermediate Closed Cooling	Team

Exhibit 2

Category	Task Description	Performance Requirement
IN PLANT TRAINING TASKS		
AO Task	Operate the Turbine Bypass Control Valves Locally (MS-V-3's)	SRO/CRO
	Start a Diesel Generator Locally	SRO/CRO
	Reset and Manually Control EF-P-1 Speed Locally	SRO/CRO
	Manually Operate the Atmospheric Relief Valves (MS-V-4A/B)	SRO/CRO
	Manually Operate the Emergency Boration Valves (MU-V-51)	SRO/CRO
	Take Local Control of Feedwater Regulating Valves	SRO/CRO
	Loss of Instrument Air (local operation of MU-V-20, IC-V-3, 4, 5 and 6)	SRO/CRO
Feedwater	Shift Emergency Feedwater Pump Suctions (All Four Sources)	CRO/SRO
RSP	Perform a Plant Cooldown from the Remote Shutdown Panel	Team
	At the Remote Shutdown Panel Establish and Control Primary to Secondary Heat Transfer IAW 1202-37	Team
	At the Remote Shutdown Panel, Anticipate and Protect Against Spurious Component Actuations IAW EP 1202-37	SRO
	At the Remote Shutdown Panel Establish or Make Available a Protected Supply of Electric Power IAW EP 1202-37	Team
	At the Remote Shutdown Panel, Establish a Protected Supply of RCS Makeup, Letdown and Seal Injection IAW 1202-37	Team
	Determine when to Implement a Cooldown from Outside the Control Room Using EP 1202-37	SRO
Supervisory	Direct Activities to Establish Plant Control During a Cooldown from Outside the Control Room IAW EP 1202-37	SRO

Exhibit 2

Category	Task Description	Performance Requirement
E-PLAN TRAINING TASKS		
Supervisory	Direct Initiation of a Site Evacuation, if Necessary	SRO
	Make Protective Action Recommendations to Offsite Officials	SRO
	Review and Evaluate RAC Radiological Assessments and Recommendations	SRO
	Direct the Emergency Response as the Emergency Director	SRO
	Direct Appropriate Response to an Emergency Using EPIP's	SRO

Exhibit 2

Category	Task Description	Performance Requirement
CLASSROOM TRAINING TASKS		
ATOG	Take Actions for Superheated RCS	Team
	Determine if indications of Core Damage are Present	SRO
Boration	Perform an Emergency Boration	Team
DHR	Respond to Loss of the Decay Heat Removal System	Team
Feedwater	Perform the Required Actions if Emergency Feedwater Fails Due to an Improper Valve Lineup	Team
Tech Specs	Perform the Required Actions if Delta Flux Exceeds the Operating Band	SRO
RCS	Control RCS Level While the RCS is in a Partially Drained Down Condition	Team
Supervisory	Approve and Direct Deviations from Established Operating Procedures	SRO
	Authorized Deviations from Tech Spec/Procedures During an Emergency IAW 10 CFR 50.54	SRO
	Identify and Report Safety Limit Violations and Portable Occurrences IAW AP 1044	SRO

EXHIBIT 2

The following simulator tasks are presented as related groupings to allow flexibility in scheduling their completion as plant performance and industry experience indicates.

At least one task from each group SHALL be completed and documented during each biennial requalification program.

CONTROL ROD DRIVE TASKS

Task Description

Respond to a Control Rod Stator High Temperature

Respond to an Inoperable/Stuck Control Rod

Respond to a Control Rod Drive Motor Fault

Respond to a Continuous Rod Insertion

Respond to a Rod Position Indication Failure

Respond to a Control Rod Misalignment

Recover from a Sequence Inhibit Situation

Recover from a Study Rod Out-Limit Situation

Respond to a Continuous Rod Withdrawal.

ELECTRICAL SYSTEMS TASKS

Task Description

Respond to a Load Rejection

Respond to a Loss of Vital Bus

Respond to a Loss of 4160 VAC Bus

Respond to a Loss of Stator Control

Return an Engineering Safeguards 4160 VAC Bus to Its Normal Power Supply

Respond to a Loss of Isolated Phase Bus Duct Cooling

Respond to a Loss of "A" DC Distribution

Respond to a Loss of "B" DC Distribution

COOLING SYSTEMS

Task Descriptions

Respond to a Loss of Intermediate Closed Cooling

Respond to a Secondary Services Closed Cycle System Failure

Respond to a Nuclear Services River Water Failure

Respond to a River Water System Failure (DR/SR)

Respond to a Loss of Nuclear Services Closed Cooling System

PRESSURIZER FAILURES

Task Descriptions

Respond to a Failed Open PORV (RC-RV-2)

Respond to a Failed Open Code Safety Valve (RC-RV-1A/1B)

Leak in the Pressurizer

Exhibit 3

Comprehensive Written Examination Topics
(Ref 6.10 Section a.2.i)

A. SRO and RO

(1) Fundamentals of reactor theory, including fission process, neutron multiplication, source effects, control rod effects, criticality indications, reactivity coefficients, and poison effects.

(2) General design features of the core, including core structure, fuel elements, control rods, core instrumentation, and coolant flow.

(3) Mechanical components and design features of the reactor primary system.

(4) Secondary coolant and auxiliary systems that affect the facility.

(5) Facility operating characteristics during steady state and transient conditions, including coolant chemistry, causes and effects of temperature, pressure and reactivity changes, effects of load changes, and operating limitations and reasons for these operating characteristics.

(6) Design, components, and functions of reactivity control mechanisms and instrumentation.

(7) Design, components, and functions of control and safety systems, including instrumentation, signals, interlocks, failure modes, and automatic and manual features.

(8) Components, capacity, and functions of emergency systems.

(9) Shielding, isolation, and containment design features, including access limitations.

(10) Administrative, normal, abnormal, and emergency operating procedures for the facility.

(11) Purpose and operation of radiation monitoring systems, including alarms and survey equipment.

(12) Radiological safety principles and procedures.

(13) Procedures and equipment available for handling and disposal of radioactive materials and effluents.

(14) Principles of heat transfer thermodynamics and fluid mechanics.

Exhibit 3

Comprehensive Written Examination Topics
(Ref 6.10 Section a.2.i)
(continued)

B. SRO Only

(1) Conditions and limitations in the facility license.

(2) Facility operating limitations in the technical specifications and their bases.

(3) Facility licensee procedures required to obtain authority for design and operating changes in the facility.

(4) Radiation hazards that may arise during normal and abnormal situations, including maintenance activities and various contamination conditions.

(5) Assessment of facility conditions and selection of appropriate procedures during normal, abnormal, and emergency situations.

(6) Procedures and limitations involved in initial core loading, alterations in core configuration, control rod programming, and determination of various internal and external effects on core reactivity.

(7) Fuel handling facilities and procedures.

Note: Items 6 and 7 (Fuel Handling) may be covered by separate examination prior to refueling activities.

Exhibit 4

Operating Test Topics
(Ref 6.10, Section a.2.ii)

(1) Perform pre-startup procedures for the facility, including operating of those controls associated with plant equipment that could affect reactivity.

(2) Manipulate the console controls as required to operate the facility between shutdown and designated power levels.

(3) Identify annunciators and condition-indicating signals and perform appropriate remedial action where appropriate.

(4) Identify the instrumentation systems and the significance of facility instrument readings.

(5) Observe and safely control the operating behavior characteristics of the facility.

(6) Perform control manipulations required to obtain desired operating results during normal, abnormal, and emergency situations.

(7) Safely operate the facility's heat removal systems, including primary coolant, emergency coolant, and decay heat removal systems, and identify the relation of the proper operation of these systems to the operation of the facility.

(8) Safely operate the facility's auxiliary and emergency systems, including operating of those controls associated with plant equipment that could affect reactivity or the release of radioactive materials to the environment.

(9) Demonstrate or describe the use and function of the facility's radiation monitoring systems, including fixed radiation monitors and alarms, portable survey instruments, and personnel monitoring equipment.

(10) Demonstrate knowledge of significant radiation hazards, including permissible levels in excess of those authorized, and ability to perform other procedures to reduce excessive levels of radiation and to guard against personnel exposure.

Exhibit 4

Operating Test Topics
(Ref 6.10, Section a.2.ii)
(continued)

(11) Demonstrate knowledge of the emergency plan for the facility, including, as appropriate, tne operator's or senior operator's responsibility to decide whether the plan should be executed and the duties under the plan assigned.

(12) Demonstrate the knowledge and ability as appropriate to the assigned position to assume the responsibilities associated with the safe operation of the facility.

(13) Demonstrate the applicant's ability to function within the control room team as appropriate to the assigned position, in such a way that the facility licensee's procedures are adhered to and that the limitations in its license and amendments are not violated.

Additional Topics to be Included as Part of the
Plant Walkthrough Oral Examination (Ref. 6.12, Section 4.5.1):

(14) Demonstration or discussion of equipment and procedures that are not effectively evaluated by simulator exercises and written examinations.

(15) Performance weaknesses identified on the job through Plant Incident Reports, Transient Assessment Reports, and Licensing Event Reports.

(16) Component locations and operating idiosyncrasies

(17) Precautionary measure that may be taken during maintenance and surveillance activities.

(18) Knowledge weaknesses displayed during previous simulator or written examinations.

Exhibit 5

ORAL EXAMINATION FORM

Candidate Name: _____

Employee Number: _____

SS Number: _____

Examiner Name: _____

Date: _____

Exhibit 5

Evaluation

A. ADMINISTRATIVE TOPICS

*1. Shift Relief and Log Entries; AP 1012 _____
a. _____
b. _____
c. _____

*2. Bypass of Safety Functions; AP 1013 _____
a. _____
b. _____

3. Jumpers / Lifted Leads / TMM; AP 1013 (SRO only) _____
a. _____
b. _____
c. _____

*4. Switching & Tagging; AP 1002 _____
a. _____
b. _____
c. _____

*5. Independent Verification; AP 1067 _____
a. _____
b. _____
c. _____

6. Controlled Key Locker Control; AP 1011 _____
a. _____
b. _____

*7. Conduct of Operations; AP 1029 _____
a. _____
b. _____

8. Event Review and Reporting; AP 1044 (SRO only) _____
a. _____
b. _____

9. Procedure Review and Approval; AP 1001A _____
a. _____
b. _____
c. _____

*10. Surveillance Testing; AP 1001J (Frequency, Logging, Tracking, Familiarity, etc.) _____
a. _____
b. _____
c. _____
d. _____

Exhibit 5

Evaluation

11. Control of Maintenance Activities and Precautionary Measures (SRO only) _____
    a. _____
    b. _____

12. Other Administrative Procedures; Understanding & Familiarity _____
    a. _____
    b. _____
    c. _____
    d. _____
    e. _____
    f. _____
    g. _____

13. Plant Parameter Verification (ECP's, Heat Balances, RCS Leakrate, Pri-Sec Leakrate, Soluble Poison Control etc.) _____
    a. _____
    b. _____
    c. _____

14. Reactor / Plant Startup Requirements _____
    a. _____
    b. _____
    c. _____
    d. _____

15. Technical Specifications; Understanding/Familiarity _____
    a. _____
    b. _____
    c. _____

*16. Emergency Plan _____
    a. Call Outs & Notifications
    b. On Shift Organizations
    c. Event Classification (SRO only)
        1. _____
        2. _____
    d. Off Shift Organizations Function & Activations (SRO only)
        1. _____
        2. _____
        3. _____
    e. Protective Action Recommendations (SRO only)
        1. _____
        2. _____

Exhibit 5

Evaluation

17. Radiation Sources and Hazards _____
    a. _____
    b. _____

*18. Radiation Exposure Limits _____
    a. Federal Limits
    b. Local Control Limits
    c. Authorization to Exceed Local Limits
    d. _____

19. Radiation Work Permits _____
    a. _____

*20. Radiation Release Control _____
    a. Logging & Chart Annotation
    b. Permits (SRO only)
    c. Flow path monitoring
    d. Rates & Limits
    e. _____

21. Radiation / Contamination Personnel Monitoring Equipment _____
    a. _____
    b. _____

22. Contamination Control _____
    a. _____
    b. _____

23. Short Term Information (Night Orders, OPS Memos etc.) _____
    a. _____
    b. _____
    c. _____

24. OPS Training Handouts _____
    a. _____
    b. _____

25. Piping / Instrumentation / Electrical Prints Use and Familiarity _____
    a. _____
    b. _____
    c. _____

Exhibit 5

	Evaluation
26. Fuel Handling Precautions, Limitations and Tech Specs (SRO only) a. _____ b. _____ c. _____	_____
7. Fuel Handling Equipment / Systems / Storage a. _____ b. _____	_____
28. Fuel Handling Casualties (SRO only) a. _____ b. _____	_____

* Mandatory Subtopic

Exhibit 5

B. CONTROL ROOM SYSTEMS Heat Removal, Auxiliary, Emergency, Instrumentation and Control, and Radiation Monitoring	System Equipment / Components	System Instrumentation / Protection / Interlocks	Procedural Knowledge / Use	Administrative Requirements	Comments
1.					
2.					
3.					
4.					
5.					
6.					
7.					
8.					
9.					
10.					
11.					
12.					
13.					
14.					
C. PLANT WALKTHROUGH Supervision and Local System / Plant Operations from Outside the Control Room					
15.					
16.					
17.					
18.					
19.					
20.					

Exhibit 5

D. RECENT FACILITY EXPERIENCE (PIRs, LERs, TARs, etc.)

1. _____ _____
2. _____ _____
3. _____ _____
4. _____ _____
5. _____ _____

E. IDENTIFIED INDIVIDUAL WEAKNESSES
(Not applicable to initial qualification exams)

1. _____ _____
2. _____ _____
3. _____ _____
4. _____ _____
5. _____ _____
6. _____ _____

COMMENTS:

_____
_____
_____
_____
_____
_____
_____
_____

OVERALL GRADE: PASS or FAIL

Examiners Signature: _____

Supervisor Licensed
Operator Training Review: _____

Exhibit 5

ORAL EXAM INSTRUCTIONS

Exhibit 5

The format and content of the Oral Exam has been designed to be similar to the materials used by the NRC. This helps to insure all areas are covered in our Oral Exams to meet the requirements of 10 CFR 55.45 and INPO Guideline 86-025.

The oral exam is broken up into five (5) major categories which are as follows:

A ADMINISTRATIVE TOPICS
B CONTROL ROOM SYSTEMS
C PLANT WALKTHROUGH
D RECENT FACILITY EXPERIENCE
E IDENTIFIED PREVIOUS WEAKNESSES (from prior exams, orals and evaluations)

The following are detailed instructions for each category contained in the Oral Exam form.

A ADMINISTRATIVE TOPICS

This section contains twenty eight subtopic areas of which at least fourteen subtopic areas must be covered during the exam. Each subtopic area for the most part carries no minimum evaluation guidance, and it is left to the examiner's discretion to determine when each area is adequately covered. Space has been provided for you to document your areas of questioning in each subtopic area.

The examiner must be sensitive to the candidates license level and ask questions to the appropriate knowledge depth.

It should be noted that various subtopic areas are designated as MANDATORY and shall be covered. These MANDATORY topics are designated with a "*" prior to the subtopic number.

(14 of 28 subtopic areas required)

B CONTROL ROOM SYSTEMS

This category is used by the examiner to determine if the candidate possesses adequate knowledge in the area of plant systems and the operation of these systems. When questioning a candidate in this category, the examiner must cover four major subjects; System Equipment / Components, System Instrumentation / Protection / Interlocks, Procedural Knowledge / Use, and Administrative Requirements. Each subject covers a broad array of knowledge and it is the responsibility of the examiner to preplan the discussion to ensure adequate coverage. An evaluation in ALL FOUR subject areas for each system selected is mandatory. As a minimum four separate systems shall be covered. A system list is provided for your use.

(4 systems required)

Exhibit 5

SUBJECT CATEGORY DESCRIPTIONS

System Equipment / Components incorporates the system hardware design and components. This subject should also include the basic flowpath (explanation, free- hand drawings or tracing piping and instrument drawings) sources, power supplies, component locations, system backups, system operation to perform its function and its relationship with connecting systems, and any operating idiosyncrasies.

System Instrumentation / Protection / Interlocks incorporates instrumentation associated with the system its purpose, normal readings, expected readings during normal off-normal and emergency situations, component protection and interlock functions and location of local and remote instrumentation. Also any automatic protection afforded by the system including setpoints, alarms and interlocks and reasons for the protection.

Procedural Knowledge / Use subject area incorporates normal, abnormal or emergency procedures associated with the system, including procedural prerequisites and precautions and limitations. The examiner shall sample a candidate's knowledge in normal, abnormal and emergency procedures to a depth necessary to insure competency.

Administrative Requirements will document knowledge in the area of Technical Specifications, surveillance testing, documentation associated with the system and any special restrictions or instructions placed on the system.

C PLANT WALKTHROUGH

The intent of this category is to determine the candidate's knowledge in the supervision and operations of the plant and individual systems from outside the control room.

The subjects to be covered in the discussion are the same as those in Category B, which were explained above. The only difference is that all subject matter is to be oriented to local information and operations.

As a minimum, the candidate's knowledge of TWO systems shall be evaluated. The examiner must evaluate ALL four subject areas for each of the systems discussed.

(2 systems required)

Exhibit 5

D RECENT FACILITY EXPERIENCE

The intent of this category is to determine if the candidate is familiar with recent plant events and their effects or changes in plant operations. Also to determine if the candidate has become familiar with the lessons learned from recent plant events and on-the-job performance weaknesses to aide in avoiding a reoccurrence.

Consider the following sources of information:

1. Plant Incident Reports
2. Licensing Event Reports
3. Transient Assessment Reports

E IDENTIFIED INDIVIDUAL WEAKNESSES

The individuals past weaknesses identified during simulator training and evaluations, annual and cyclic examinations, and job performance evaluations, will be listed here. The examiner should examine the candidate in at least fifty percent of the topics identified in this area.

Exhibit 5

SYSTEM LIST

1. Reactor Coolant System
2. RCP's
3. Core Flood
4. Make-up and Purification System
5. Decay Heat Removal System
6. Building Spray System
7. DHCCW
8. NSCCW
9. Decay River Water System
10. Nuclear River Water System
11. Reactor River Water System
12. Reactor Building Ventilation
13. Waste Gas Disposal System
14. Liquid Waste Disposal System
15. RMS
16. Control Rod Drive System
17. ICS
18. RPS
19. HSPS
20. Nuclear Instrumentation System
21. Non-Nuclear Instrumentation System
22. ESAS
23. EHC
24. Main Turbine Generator
25. Turbine Support Systems (Stator Cooling, Hydrogen Seal Oil, etc.)
26. Main Steam System
27. Main Feedwater System
28. Emergency Feedwater System
29. Condensate System
30. Control Building H&V
31. BOP Electrical
32. Class 1E Electrical
33. Vital AC / DC
34. Substation
35. Diesel Generators
36. Fuel Handling Systems
37. Aux & FH building H&V
39. Remote Shutdown System
40. Plant Computer
41. Incore Instrumentation System

Exhibit 6

ON-THE-JOB PERFORMANCE EVALUATION ITEMS
(TO BE USED WITH REF. 6.21)

Reactor Operator: Normal Plant System/Component Operation

- Perform Technical Specification Surveillance IAW approved procedures.
- Perform Operations Surveillance IAW approved procedures.
- Take log readings; sensitive to trends and out of spec readings.
- Perform switching and tagging.
- Shift turnover communications.
- Communication/Direction of Auxiliary Operators.
- Power Operations; plant maneuvering.
- Overall plant control (e.g. Heatup, Rod position manipulations etc.)
- Adherence to Government and Company regulations
- Routine equipment operation and monitoring
- Proper response to Control Room Alarms
- Effective utilization of reference material (i.e., prints and elec. diagrams).
- Adherence and knowledge of Quality Control and Radiological Control Procedures.
- Use of plant computer and CRT System.
- Identification of equipment problems requiring operator response.
- Communication and knowledge of system (Met-Ed) dispatching.
- Knowledge and adherence of NPDES permit.
- Maintenance of Control Room Operator Log Book.
- Knowledge/Adherence/Use of Administrative procedures.
- Maintenance of shift records.
- Use of communications equipment.

Exhibit 6

ON-THE-JOB PERFORMANCE EVALUATION ITEMS
(TO BE USED WITH REF. 6.21)

Senior Reactor Operator: Normal Plant System/Component Operation

- Proper control of ESAS and EFW systems (e.g., redundancy, removing from service, returning to service and testing).
- Adherence to Technical Specifications including actions when LCO exceeded.
- Directions of trends and out of spec readings during log review.
- Crew turnover briefings.
- Coordination of Support personnel/groups.
- Prioritization of work/evolutions.
- Implementation of the Switching and Tagging procedures.
- Power Operations plant maneuvering.
- Overall plant control (e.g., Heatup, rod position, manipulation, load change coordination etc.).
- Supervision of equipment operation.
- Proper response to Control Room alarms.
- Effective utilization of reference material.
- Implementation, adherence and knowledge of Quality Control and Radiological Control Procedures.
- Use of plant computer and CRT system.
- Identification of equipment problems and determination of required response or maintenance.
- Communication, knowledge and implementation of system dispatching requirements.
- Knowledge and adherence of NPDES permits.
- Maintenance of shift foremen log book.
- Knowledge, use and coordination of plant procedures.

Exhibit 6

ON-THE-JOB PERFORMANCE EVALUATION AREAS
(TO BE USED WITH REF. 6.21)

Senior Reactor Operator: Normal Plant System/Component Operation (Cont'd)

- Knowledge/Adherence/Use of Administrative Procedures
- Use of communication equipment.
- Control of plant chemistry.
- Conduct of audits to insure compliance with company administrative procedures.
- Overall knowledge of plant status and integrated system operation.
- Determination of the requirement and content of pre-evolution briefings.
- Insurance that proper shift manning is maintained.
- Recommended Operations policy/procedural changes.
- On-the-job performance evaluation of personnel.

Exhibit 7

EXAMPLE OF LOR TRAINEE REACTION

Exhibit 7

LICENSED OPERATOR REQUALIFICATION TRAINING PROGRAM

OPERATOR TRAINING FEEDBACK

Name (Optional): _____ Date: _____

Position (CRO, SF, SS): _____

This LOR feedback form is your direct input to the program for recommended program content changes. Please complete this form and return it to Operator Training for input to the LOR program. Please give complete answers and try to avoid "YES" or "NO" answers. Use a separate piece of paper if needed.

A. Please list the simulator performance tasks/evolutions you would like to see included in the simulator training schedule. Would you rather have unannounced casualties or demonstration/practice training?

_____
_____
_____
_____
_____
_____
_____
_____
_____

B. How often would you like to have your drill scenarios or evolutions video taped and critiqued?

_____
_____
_____
_____

C. One of the most important areas in which we need to evaluate our training is diagnostic skills training. What suggestions do you have to enhance our present diagnostics skills training?

_____
_____
_____
_____

Exhibit 7

D. What training do you feel is needed for modification training in addition to the Operations Training Handouts? Please list specific modifications.

E. In which areas of Industry Experience training do you feel we need to improve our transfer of information to you? Please be specific.

TMI-1 Experiences

Other B&W Plant Experiences and/or B&W Owner's Group Reports

Other Plants

F. What suggestions do you have for improving procedure and tech spec revision training? What procedures/Tech specs would you like to receive classroom training in?

G. Please list the Fundamentals Training you would like to see presented this year.

Exhibit 7

H. Please list the Systems Training you would like to see presented this year.

I. There have been some suggestions for ATOG Theory, Bases and Application training to be added to requal training. What are your suggestions for this training?

J. What are your suggestions for improving our present EP/AP review training?

K. What are your suggestions for improving our present Admin Procedure Review training?

L. What are your suggestions for requal quiz frequency? A quiz every cycle? A quiz every other cycle? Please keep in mind that if we stagger the quizzes, we are still responsible for all the material covered in both cycles.

Exhibit 7

M. What is your opinion of a review cycle prior to the March '89 comprehensive written exam?

N. What is your opinion of the use of the BPT for requal training?

O. What are your recommendations as to spending more time doing in-plant training versus classroom or simulator training?

P. What is your opinion of the SRO receiving simulator training in the CRO position? Which tasks/evolutions would you recommend?

Q. Please comment on the effectiveness of E-Plan Refresher training. Would you like to see deeper E-Plan implementation during routine simulator training?

Exhibit 7

R. Your feedback to us about instructor effectiveness is one of the most important inputs we can receive from you. Please provide us with your evaluation and comments on instructor effectiveness, both in the classroom and simulator. Please be specific about which instructor(s) you are commenting.

Please be assured that you comments will be used only for program evaluation. They will not be make public.

Classroom Instructors

_____
_____
_____
_____
_____
_____
_____

Simulator Instructors

_____
_____
_____
_____
_____
_____
_____

Exhibit 7

S. Considering that there will be a comprehensive written exam in March 1989, please suggest a distribution (by %) of requal training across the following topics:

1.	Simulator Unannounced drills	_____
2.	Simulator demo/practice	_____
3.	EP/AP classroom review	_____
4.	System lecture	_____
5.	Modification training	_____
6.	Industry experience review	_____
7.	Theory Fundamentals review	_____
8.	Study time	_____
9.	Admin procedure review	_____
10.	Operating procedure review	_____
11.	In plant training	_____
12.	Other	_____

_____
_____
_____
_____

Total 100%