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0-00-5 LICENSED OPERATOR QUALIFICATION AND REQUALIFICATION PROGRAM

1.0 DISCUSSION

The Nuclear Regulatory Commission (NRC) requires that all individuals who manipulate the controls of nuclear facilities or supervise the manipulation of those controls be authorized by a license issued by the Commission. In addition, the Nuclear Regulatory Commission also requires that once an individual receives an operating license that he be enrolled in a continuous and ongoing requalification program established by the licensed facility to insure that all licensed individuals maintain a high degree of knowledge and operating ability.

The programs outlined below describe the methods to be used at Maine Yankee to accomplish these requirements.

2.0 OBJECTIVE

To outline the programs to be used for Reactor Operator (RO) Qualification, Senior Reactor Operator (SRO) Qualification and Licensed Operator Requalification such that the facility is assured of maintaining a well qualified staff of licensed personnel and to insure that the requirements of Title 10, Code of Federal Regulations, Part 55 are met.

3.0 REFERENCES

- 3.1 Maine Yankee Technical Specifications, Section 5.4.1.
- 3.2 Title 10, Code of Federal Regulations, Part 55.
- 3.3 ANSI-N18.1 - March 8, 1971, Selection and Training of Nuclear Power Plant Personnel.

4.0 REACTOR OPERATOR QUALIFICATION PROGRAM

The program outlined below is designed to prepare an employee to safely and efficiently manipulate the controls of the Maine Yankee facility and to acquire the license required of a Reactor Operator by the U. S. Nuclear Regulatory Commission.

4.1 Entrance Examination

Each potential candidate for the Reactor Operator program will be required to successfully complete a written examination before being enrolled in the program.

#### 4.2 Preplanned Lecture Series

A preplanned lecture series will be scheduled to properly prepare each license candidate. This lecture series will provide instruction in the following areas:

- a) Mathematics
- b) Nuclear Physics
- c) Reactor Operation
- d) Plant Performance
- e) Radiation Detection and Control
- f) Water and Waste Treatment
- g) Instrumentation and Operational Analysis
- h) Plant Systems
- i) Plant Procedures
- j) Principles of Heat Transfer and Fluid Mechanics
- k) Reactor Casualty Response Training

#### 4.3 Simulator Training

Each candidate shall attend a simulator training program. The program will consist of startup, shutdown, and reactor/plant transient training. A startup simulator examination will be included in the training.

#### 4.4 Watchstanding Training

Each candidate shall have 3 months training on shift as an extra person in the control room.

#### 4.5 Periodic Examinations

Periodic written examinations and/or quizzes will be administered throughout the lecture program to monitor the progress of the candidates. Oral examinations will also be conducted during the program, some of which may be administered by personnel not directly involved in the program.

#### 4.6 Qualifying Examination

Each candidate shall successfully complete a company administered, NRC type, written and oral examination prior to the NRC license examination. In addition, an NRC type examination may be administered by an independent organization prior to the NRC license examination.

Candidates will grant permission to the NRC to inform Maine Yankee management regarding the results of the examination for the purpose of enrollment in the requalification program.

#### 4.7 Implementing Procedure

Departmental procedure 18-200-1 details the methods to be used to accomplish the Reactor Operator Qualification Program and to properly document the activities associated with this program.

## 5.0 SENIOR REACTOR OPERATOR QUALIFICATION PROGRAM

The program outlined below is designed to prepare a licensed reactor operator for an NRC senior operator's license. In special circumstances, a license candidate may be enrolled in both the RO and SRO programs simultaneously.

### 5.1 Entrance Examination

Prior to being enrolled in the SRO qualification program each candidate will complete an entrance examination based on subjects applicable to NRC senior license operators.

### 5.2 Experience

Candidates for senior operator licenses shall have 4 years of responsible power plant experience.

A maximum of 2 years power plant experience may be fulfilled by academic or related technical training, on a one-for-one basis.

Two years shall be nuclear power plant experience. At least 6 months of the nuclear power plant experience shall be at Maine Yankee.

Candidates for senior operator licenses shall have held an operator's license for 1 year.

### 5.3 Preplanned Lecture Series

A preplanned lecture series will be scheduled to properly prepare each license candidate. This lecture series will provide instruction in the following areas:

- a) Reactor Theory
- b) Radioactive Material Handling
- c) Specific Operating Characteristics including Plant and Reactor Transients
- d) Fuel Handling and Core Parameters
- e) Administrative Procedures, Conditions and Limitations
- f) Theory of Fluids and Thermodynamics
- g) Reactor Casualty Response Training

Additionally, areas identified by the entrance examination as needing review, will be included in the lecture series.

### 5.4 Watchstanding Training

Each candidate shall have 3 months training on shift as an extra man in the control room.

### 5.5 Qualification Examination

Each candidate shall successfully complete a company administered, NRC type, senior reactor operator's written and oral examination prior to the NRC license examination. In addition, an NRC type examination may be administered by an independent organization prior to the NRC license examination.

Candidates will grant permission to the NRC to inform Maine Yankee management regarding the results of the examination for the purpose of enrollment in the requalification program.

### 5.6 Implementing Procedure

Departmental procedure 18-200-2 details the methods to be used to accomplish the Senior Reactor Operator Qualification Program and to properly document the activities associated with this program.

## 6.0 LICENSED OPERATOR REQUALIFICATION PROGRAM

Following successful completion of the Nuclear Regulatory Commission licensing process, all licensed personnel at Maine Yankee shall be enrolled in the Licensed Operator Requalification Program. The program outlined below is designed to maintain a licensed individual's knowledge and competence equal to or greater than that attained during initial licensing and to meet the requirements imposed by federal regulations for license renewal.

### 6.1 Lecture Program

A formal lecture program shall be established and administered to all licensed operators on an annual basis. The subject areas delineated in 10 CFR 55 Appendix A will be considered when formulating the program. Additional topics for this program will include heat transfer, fluid flow, thermodynamics and mitigation of accidents involving a degraded core.

### 6.2 Written Examinations

Periodic examinations and/or quizzes shall be administered to determine the licensee's knowledge of a subject. A grade of less than 80% will indicate a need for additional training in that subject. Additional training will normally consist of a review of the material presented. A written or oral examination will be conducted following this review to insure that a satisfactory level of knowledge is attained.

### 6.3 Reactivity Control Manipulation

Each licensed operator shall be required to manipulate, or direct individuals who manipulate, the controls of the facility for the control manipulations specified in Appendix A. These manipulations shall be performed on an annual or biannual basis as specified in the Appendix.

An evaluation of licensed operator's performance of these manipulations shall be made by supervisors and/or members of the training staff.



6.4 Document Review

Each licensee shall be required to review all Emergency, Casualty, and Abnormal procedures on an annual basis. In addition, Facility License Changes, Plant Information Reports, Procedure Changes, and applicable Facility Design Changes shall be reviewed.

6.5 Requalification Examination

Each licensed operator shall participate in an annual requalification examination. The results of this examination will be utilized to identify areas where additional emphasis should be placed in the next requalification cycle.

A licensed operator who fails to attain a grade of 70% in an individual category shall participate in an accelerated training program covering that category. He shall be required to attain a grade of 80% on a re-test of that category.

A licensed operator who fails to attain an overall grade of 80% shall be relieved of his licensed duties until he successfully completes an accelerated training program covering all categories graded less than 80% and attains an overall grade of 80% on a re-test of those categories.

A licensed operator who fails to attain a grade of 80% in any category of the annual examination shall be required to participate in a retraining session covering that category during the next annual cycle.

6.6 Requalification Examination Exemptions

Licensed members of the training staff who participate in the program preparation or presentation, and/or the preparation or grading of the examination need not take the annual examination.

6.7 Implementing Procedure

Departmental procedure 18-200-3 shall detail the methods to be used to accomplish the Requalification Program and to properly document the activities associated with this program.

7.0 FINAL CONDITIONS

The programs outlined above should prepare an individual to obtain an NRC reactor operator or senior reactor operators license, maintain his qualifications, and meet the license requirements imposed by federal regulatory agencies.

Auditable records of the qualification, experience, training, retraining, and operator requalification program and examinations for each member of the plant organization covered by this document shall be maintained for a period of at least two (2) years, or as long as a person performs work in job categories described in this standard, whichever is shorter.

APPENDIX A

CONTROL MANIPULATIONS

The following control manipulations and plant evolutions where applicable to the plant design are acceptable for meeting the reactivity control manipulations required by Appendix A, Paragraph 3.a. of 10 CFR Part 55. The starred items shall be performed on an annual basis; all other items shall be performed on a two-year cycle. However, the Licensed Operator Requalification Program contains a commitment that each individual shall perform or participate in a combination of reactivity control manipulations based on the availability of plant equipment and systems. Those control manipulations which are not performed at the plant may be performed on a simulator. The use of the Technical Specifications should be maximized during the simulator control manipulations. Personnel with senior licenses are credited with these activities if they direct or evaluate control manipulations as they are performed.

- \* (1) Plant or reactor startups to include a range that reactivity feedback from nuclear heat addition is noticeable and heatup rate is established.
- (2) Plant shutdown.
- \* (3) Manual control of steam generators and/or feedwater during startup and shutdown.
- (4) Boration and or dilution during power operation.
- \* (5) Any significant ( $> 10\%$ ) power changes in manual rod control.
- \* (6) Loss of coolant including:
  - a. significant steam generator leaks
  - b. inside and outside primary containment
  - c. large and small, including leak-rate determination
  - d. saturated Reactor Coolant response.
- (7) Loss of instrument air (if simulated plant specific).
- (8) Loss of electrical power (and/or degraded power sources).
- \* (9) Loss of core coolant flow/natural circulation.

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- (10) Loss of condenser vacuum.
- (11) Loss of service water.
- (12) Loss of shutdown cooling.
- (13) Loss of component cooling system or cooling to an individual component.
- (14) Loss of normal feedwater or normal feedwater system failure.
- \* (15) Loss of all feedwater (normal and emergency).
- (16) Loss of protective system channel.
- (17) Mispositioned control rod or rods (or rod drops).
- (18) Inability to drive control rods.
- (19) Conditions requiring use of emergency boration or standby liquid control system.
- (20) Fuel cladding failure or high activity in reactor coolant or offgas.
- (21) Turbine or generator trip.
- (22) Malfunction of automatic control system(s) which affect reactivity.
- (23) Malfunction of reactor coolant pressure/volume control system.
- (24) Reactor trip.
- (25) Main steam line break (inside or outside containment).
- (26) Nuclear instrumentation failure(s).