

PILGRIM NUCLEAR POWER STATION

NRC LICENSED OPERATOR
REQUALIFICATION PROGRAM

Revision 4

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I. INTRODUCTION

The Pilgrim Station Requalification Program is a specialized retraining program designed to maintain an organization fully qualified to safely operate the reactor and its associated auxiliary equipment. It is the intent of this Requalification Program to satisfy the NRC requirements as set forth in Appendix A of Part 55, Title 10, Code of Federal Regulations.

The primary objective of the Requalification Program is to maintain licensed operating personnel at a high level of proficiency in their normal operation of the facility and to maintain their capability to respond to unexpected operating conditions.

The Requalification Program shall not be significantly deviated from without prior approval of the appropriate authority in the U.S. NRC.

II. SCHEDULE

The Requalification Program is conducted for a continuous two year period, September to September. Upon its conclusion, a successive Requalification Program is immediately initiated.

The formal lecture series of the Requalification Program is divided into two periods. These periods are from Labor Day of one year until Memorial Day of the following year. With the exception of special activity periods, such as refueling outages, the lecture series will be spread reasonably evenly throughout each year.

III. LECTURES

During the Requalification Program, licensed operations personnel will attend formal lectures either live or on videotape or film. Videotape or film presentations shall be used for not more than 50% of the lecture series. The Requalification Program covers the following subjects:

1. Theory and principles of operation
2. General and specific plant operating characteristics
3. Plant instrumentation and control systems
4. Plant protection systems
5. Engineered safety systems
6. Normal, abnormal and emergency operating procedures
7. Radiation control and safety
8. Technical Specifications
9. Applicable portions of Title 10, Chapter I, Code of Federal Regulations
10. Principles of heat transfer and fluid mechanics (for RO's,
11. Theory of fluids and thermodynamics (for SRO's)

Abnormal and Emergency Procedures will be reviewed during each segment of the lecture series.

IV. ON THE JOB TRAINING

Each licensed operator shall, during the term of his license, perform a minimum of 10 reactivity control manipulations which demonstrate his skill and/or familiarity with reactivity control systems. Each licensed senior

operator shall either manipulate the controls or direct the activities of others during 10 reactivity control manipulations. These may consist of any combinations of the following but reasonable effort will be made to provide a variety of reactivity changes for each operator.

1. Shutdown to Cold Critical
2. Cold Critical to a moderator temperature __ 350 F
3. A temperature change from 400 F to 10% power
4. A heatup temperature change __ 150 F
5. Shutdown to Hot Critical
6. 10% power to a temperature __ 400 F
7. A temperature change from __ 350 F to Cold Critical or Shutdown
8. A power change __ 10% with manual operation of the reactivity control systems.
9. A gradual manual recirculation flow change __ 10% balanced by control rod movement to hold reactor power steady.
10. Refueling equipment manipulation which results in one or more fuel elements, control rods or control curtains being installed or removed from the reactor core.
11. A startup of the main turbine generator up to and including placing the control valves on pressure control.

The Chief Operating Engineer provides a timely review and observation of the operation of apparatus and mechanisms by licensed personnel to assure, or provide additional training to assure their satisfactory understanding of the equipment and the associated operating procedures.

A system to assure that all licensed operators and senior operators become cognizant of facility design changes, procedure changes, and facility

license changes have been implemented. Review of these changes will be documented.

The Senior Nuclear Training Specialist also receives copies of Station design changes, procedure changes, and Station license changes, and conducts reviews of important changes during each lecture series. All licensed operators and senior operators shall participate in these lectures regardless of their performance on the annual written examinations.

Abnormal and Emergency Procedures are reviewed annually by the licensed operators and senior operators and a form has been provided to document this review. When this form is completed, it becomes a part of the permanent records kept by the Training Department.

The annual Requalification Program will include the use of a Simulator Program for all licensed operators. The following control manipulations and plant evolutions will be performed by all licensed operators, the starred items shall be performed on an annual basis; all other items shall be performed on a two-year cycle. The use of Technical Specifications will be maximized during the simulator control manipulations. Personnel with Senior Reactor Operator 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 feedwater during startup and shutdown.

4. Any significant (10%) power changes in manual rod control or recirculation flow.
5. Any reactor power change of 10% or greater where load change is performed with load limit control.
- *6. Loss of coolant including:
 - a. Inside and outside primary containment
 - b. Large and small, including leak-rate determination
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.
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 reactor protection system.
17. Mispositioned control rod or rods (or rod drops).
18. Inability to drive control rods.
19. Conditions requiring use of 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).

V. EVALUATION

The Requalification Program shall include annual NRC type written examinations. Passing grade for this examination is 80% overall and 70% per section. These examinations shall be graded and the candidates informed of his test results and areas where improved knowledge is required. A minimum grade of 80% correct on any section shall exempt an operator or senior operator from required attendance at requalification lectures pertinent to that section. Each licensed operator and senior operator shall be encouraged to attend 50% of the lecture series regardless of his examination performance. A grade of less than 80% correct on any lecture series examination shall require an operator or senior operator to be re-scheduled for lectures on that subject the next time such lectures are scheduled.

The written examinations shall provide a basis for evaluating the licensed operator's and senior operator's knowledge of the subjects covered in the Requalification Program along with their knowledge of abnormal and emergency procedures. The written examinations shall be given prior to December 17th of each year.

An Employee Development Report shall be made out yearly for evaluation of licensed operators and senior operators by the next highest management supervisor who has prime responsibility for supervising said licensed operator.

An evaluation of each licensed operator's performance on shift coverage, attendance in formal classes, and examination grades will be reviewed annually by the Station Manager or his designated alternate.

Annually, the Senior Nuclear Training Specialist or a technically qualified person from an operating BWR facility or simulator, will administer a plant walkthrough examination to each licensed operator. The results of this examination will be reviewed by the Station Manager and the Senior Nuclear Training Specialist. Special emphasis is given to operator response to abnormal and emergency conditions during the plant walkthrough examination of each licensed operator.

If it is determined through written examinations or plant walkthrough examinations that a need exists for further training in selected areas, the training will be scheduled within sixty days.

If a licensed operator or senior operator fails to achieve an overall examination grade of 80% of 100% per section on his yearly requalification examination, he will be removed from licensed duties and he will be required to satisfactorily complete an accelerated training program and pass a makeup examination prior to resuming any licensed duties. His performance will be immediately reviewed by the Station Manager or his designated alternate, who will approve of the accelerated training program. The Senior Nuclear Training Specialist will establish the accelerated training program based upon the individual's needs.

Licensed staff members will participate in the Requalification Program to the extent that their normal duties preclude the need for retraining in specific areas. Those licensed staff members who are actively engaged in the implementation of the Requalification Program will be required to complete those sections of this program for which they serve an active function. As a minimum, each licensed staff member will participate in the Requalification Program to the extent indicated below:

1. Be administered the annual written examination and participate

in the lecture series based on the results thereof.

2. Manipulate the controls, or supervise the manipulations of the controls through 10 reactivity changes.
3. Systematically review design changes, procedure changes and facility license changes.
4. Systematically review the contents of all abnormal and emergency procedures on a regularly scheduled basis.
5. Be systematically evaluated regarding actions to be taken during simulated abnormal and emergency conditions by a walkthrough of the procedural steps in the Control Room.

If a licensee has not been actively performing the functions of a licensed operator or senior operator for a period of four months or longer, he shall pass a requalification examination and receive NRC approval prior to resuming licensed activities. This examination will be broad enough to determine the licensee's knowledge of any license changes, facility design modifications and procedure changes that may have occurred during his absence.

VI. RECORDS

The Senior Nuclear Training Specialist will establish and maintain records of the Requalification Program to document each licensed operator's and senior operator's participation in the Requalification Program. The training files shall contain copies of written examinations administered, the answers given by the licensee, results of evaluation and documentation of any additional training administered in areas in which an operator has exhibited deficiencies.

VII. ALTERNATE TRAINING PROGRAMS

It is the intention of the Station management to evaluate requalification services from outside agencies and purchase their services whenever they would be beneficial to the Pilgrim Station Requalification Program.