

KEWAUNEE NUCLEAR POWER PLANT HOT LICENSE TRAINING PROGRAM
UTILIZING A SIMULATOR

1.0 PURPOSE

The purpose of this program is to make a hot license candidate eligible for a Hot Examination with no reactor startup demonstration. This will be accomplished with classroom training, supervised on-the-job training, and completion of an NRC approved training program at a nuclear power plant simulator.

2.0 APPLICABILITY

2.1 This program applies to personnel who are candidates for an initial Reactor Operator or Senior Reactor Operator license.

3.0 EDUCATIONAL REQUIREMENTS

3.1 Senior Reactor Operator Candidate

3.1.1 Shall as a minimum have a high school diploma or equivalent.

3.1.2 Shall have a minimum of four (4) years of responsible power plant experience. Responsible power plant experience should be that obtained as a control room operator (fossil or nuclear) or as a power plant staff engineer involved in the day-to-day activities of the facility.

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

3.1.4 Applicants for senior operator licenses shall have held an operator's license for 1 year. (As allowed for by the clarification of RO and SRO qualification requirements in item I.A.2.1 of NUREG 0737, this require- may be waived for corporate or plant staff supervisory personnel who have earned a bachelor's level or higher degree in a technical or engineering discipline.)

3.2 Reactor Operator Candidate

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- 3.2.1 Shall have a high school diploma or equivalent.
- 3.2.2 Shall have a minimum of two years of power plant experience of which a minimum of one year shall be nuclear plant experience.

4.0 BACKGROUND

- 4.1 The position of control operator at the Kewaunee Nuclear Power Plant is a position that is normally filled via job progression. This progression is from equipment operator, to auxiliary operator, to license training, to Auxiliary/Control Operator or Control Operator with the successful completion of the NRC Hot Reactor Operator Examinations. The people selected for a vacancy for the position of equipment operator are therefore selected based on their potential to complete a license program in the future. The result of this progression means they have certain minimum qualifications upon entering the Hot License Program.
- 4.2 A situation may occur in which a person is employed directly as a control operator. When this occurs, he will normally have a strong nuclear background. He will, however, be required to demonstrate sufficient knowledge of or complete a program which adequately familiarizes him with the significant aspects of the Auxiliary and Equipment Operator functions.
- 4.3 When an unlicensed person becomes a candidate for a Senior Reactor Operator license, he will be required to demonstrate sufficient knowledge of or complete a program which adequately familiarizes him with the significant aspects of the Auxiliary and Equipment Operators functions.

5.0 ON-THE-JOB TRAINING

- 5.1 Each hot license candidate shall participate in at least three months (as an extra person) of on-shift training which includes familiarization with the duties and responsibilities of the Control Operator and manipulation of the plant controls during day to day operation as delineated in the following paragraphs.
- 5.2 Performance Objectives
 - 5.2.1 Each hot license candidate shall perform (as plant conditions permit) or walk through the actions of as many safety related operating procedures as is possible during the course of his on-the-job

training.

5.2.2 As a minimum, each candidate shall perform (as plant conditions permit) or walk through the actions of the following operating procedures in the company of a licensed person. Completion of this action will be documented and the records retained by the Training Supervisor.

1. N-0-01, Plant Startup from Cold Shutdown to Hot Shutdown Condition.
2. N-0-02, Plant Startup from Hot Shutdown to 15% Power
3. N-0-03, Plant Operation Greater than 15% Power
4. N-0-04, 15% Power to Hot Shutdown
5. N-0-05, Plant Cooldown from Hot Shutdown to Cold Shutdown
6. N-0-02, Natural Circulation Operation

NOTE: N-0-01 thru N-0-05 reference the other operating procedures used by the control operator. The control room action for each referenced procedure must be walked through as part of the parent procedure.

7. E-0-01, Station Blackout While Critical
8. E-0-02, Natural Disaster
9. E-0-03, Deleted
10. E-0-04, Turbine Reactor Trip
11. E-0-05, Deleted
12. E-0-06, Control Room Inaccessibility
13. E-0-07, Safety Injection Activation
14. E-0-08, Loss of Secondary Coolant
15. E-0-09, Steam Generator Tube Rupture
16. E-0-10, Loss of Reactor Coolant

5.2.3 Surveillance Procedures.

Each hot license candidate shall perform or walk

through as many Operations Surveillance Procedures as is practicable during the course of his on-shift training. Documentation of this will be maintained by the Training Supervisor.

5.2.4 Reactivity Manipulation

Each hot license candidate will manipulate the controls of the Kewaunee Nuclear Power Plant for at least five of the following reactivity changes of which no more than three of one type will be counted.

1. Reactor Startup to the point of adding heat
2. Reactor Shutdown from the point of adding heat
3. Manual control of S/G levels during plant startup or shutdown
4. Operations of the turbine EH System during plant startup or shutdown
5. Boration of the RCS
6. Dilution of the ECS
7. Manipulator crane operation in the core area
8. Power change of $\pm 10\%$ with rod control in manual
9. Power change of $\pm 25\%$ with rod control in auto
10. Manual rod control prior to and during generator synchronization
11. Heatup of the RCS of 75°F or more
12. Cooldown of the RCS of 75°F or more
13. Unscheduled reactivity changes such as reactor trip. These will be decided on a case basis.

Each Reactivity change will be documented and retained by the Training Supervisor.

6.0 LECTURES

- 6.1 The lecture series will cover a minimum of 500 hours of which a maximum of 125 hours may be on video tape. Any time video tape is used an SRO licensed person will be available to answer any questions the candidates have concerning the

material on tape.

6.2 The subjects are as follows. The actual time spent on each subject will be dictated by the individual needs of the candidate, however, the total lecture series will be a minimum of 500 hours duration.

1. Reactor Theory
2. Health Physics
- * 3. NSS Systems
- * 4. Safeguard Systems
5. Instrumentation and Control
- * 6. Plant Transient Response
7. Reactor Protection
- * 8. Safety Analysis
9. Balance of Plant
10. Technical Specifications
11. Refueling
- * 12. Operating Procedures
- * 13. Emergency Procedures
14. Heat Transfer/Fluid Flow and Thermodynamics
15. Training in the use of installed plant systems to control or mitigate an accident in which the core is severely damaged.

* Presented by SRO Licensed Instructor

6.3 Attendance at the training lectures will be recorded by the Training Supervisor.

7.0 SIMULATOR TRAINING

- 7.1 The Training Supervisor will schedule the simulator training near the completion of the plant training program.
- 7.2 The simulator training shall consist of an NRC approved training program of at least one week duration at a nuclear power plant simulator that reproduces the general operating

characteristics of Kewaunee Nuclear Power Plant and the arrangement of the instrumentation and controls of the simulator are similar to Kewaunee Nuclear Power Plant.

7.3 The simulator training center shall supply the Kewaunee Nuclear Power Plant Training Supervisor with certification attesting to the hot license candidate.

1. Ability to manipulate the controls and keep the reactor under control during a reactor startup.
2. Ability to predict instrument response and use the instrumentation during a reactor startup.
3. Ability to follow the facility startup procedures, and
4. Ability to explain alarms and annunciators that may occur during this operation.

7.4 The simulator will be used to augment the hot license training program in meeting the requirements of Section 5.2.4 (reactivity manipulations) and to provide training in various minor and major emergencies.

8.0 EXAMINATIONS

8.1 Examinations will be given on each subject that is covered in the lecture series.

8.2 Oral or written examinations will be given on the material covered while training in the control room to evaluate on-shift training.

8.3 Upon completion of the entire program a simulated NRC written and oral examination will be given which, along with the simulator training center recommendation, the training course exams and control room performance results, will be used to determine if the candidate is qualified to be examined by the NRC.

9.0 DOCUMENTATION

9.1 The Training Supervisor will maintain the following records:

1. Equipment Operator Qualification
2. Auxiliary Operator Qualification
3. Lecture Attendance

4. Lecture Exam Grades
 5. Record of Control Room Training Time
 6. Record of Reactivity Manipulations
 7. Record of procedure and surveillance procedure performance
 8. Record of walk through of 9.1.7 and Emergency Procedures
 9. Simulator Training Certification
- 9.2 The Training Supervisor shall send, with the license application, certification from the simulator training center attesting to 7.3 and certification of completion of this program.