DUKE POWER COMPANY

MCGUIRE NUCLEAR STATION

OPERATOR REPLACEMENT TRAINING PROGRAM

FEBRUARY 15, 1985

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OPERATOR LICENSING PROGRAM

1.0 INTRODUCTION

Operator license training is a requirement of 10 CFR 55. The Operator Licensing Program for McGuire Nuclear Station is designed to provide the trainee with the necessary knowledge and training to become a competent operator. This program will be conducted on a continuing basis as the needs for replacement training demand. This program will include the use of lectures, on-the-job training, simulator training, and audit examinations. The program will be implemented so as to minimize scheduling difficulties that will be incurred by site management.

2.0 EDUCATIONAL REQUIREMENTS

The minimum educational requirements for operator license trainees will be in accordance with Section 4.5 of ANSI 3.1 - 1978.

3.0 SCOPE

The range of instruction provided for operator training includes complete training for personnel of various initial entry experience levels.

3.1 Experienced personnel previously assigned to a nuclear or fossil station or military nuclear personnel.

3.2 Technical school trained with cooperative education on-the-job training.

3.3 Engineering graduates

3.4 Non-trained and non-experienced personnel

The initial entry level which an employee is admitted into the Operator Training Program shall be determined after a conservative evaluation of the employee's past experience, education, and level of understanding.

4.0 TRAINING DESCRIPTION

Training and qualification of operators consists of classroom experience, on-the-job performance tasks, simulator training, and audit evaluation.

4.1 Orientation Training

The screening of new employees is done at the station or General Office by means of pre-employment tests and interviews. Pre-employment tests are used as a selection measurement tool based on job success performance criteria for the selection of new employees. When a prospective employee is selected for employment and hired, he/she is given orientation training which introduces him/her to the Company, Company and Station policy, nuclear energy, health physics, safety, basic quality assurance policies and procedures, and basic system configurations. Qualification requirements for restricted area access are met during orientation training. This phase of training encompasses 24 hours of live and taped lectures.

4.2 Non-Licensed Operator Training

A. The training of Learners and/or Nuclear Equipment Operators (NEO) includes a minimum of 36 weeks of formal training in:

1. Systems General *

   a. Systems

   b. Components

   c. Electrical

   d. Instrumentation and Control

   e. Chemistry

2. Systems Specific *

   a. Systems

   b. Components

   c. Electrical

   d. Instrumentation and Control

   e. Chemistry

   f. Math

   g. Physics

* These segments may be bypassed by examination or exempted by experience. Equivalency for previous training and experience will be granted on a case-by-case basis.

3. Nuclear Preparatory *

   a. Chemistry

   b. Instruments and Controls

   c. Reactor Theory

   d. Physics

   e. Radiation Protection

   f. Research Reactor Training +

4. Nuclear Fundamentals *

   a. Instruments and Controls

   b. Electrical

   c. Core Performance +

   d. Systems

   e. Administrative

   f. Plant Operations +

5. Introduction to Systems, Specific (ISS)

   a. Systems

   b. Components

   c. Instruments and Controls

   d. Electrical

   e. Administrative Procedures

   f. Fuel Handling

   g. Thermodynamics/Fluid Flow

* These segments may be bypassed by examination or exempted by experience. Equivalency for previous training and experience will be granted on a case-by-case basis.

\+ These topics may not be bypassed or exempted.

6. Operator Qualification Program

This program consists of a series of task lists based on the NEO's job analysis. The NEO is required to obtain necessary knowledge and ability to perform these tasks in the process of becoming a "Qualified" operator. This training is normally performed as OJT with support of the ISS program described above. It is performed at a pace determined as acceptable by the individual's supervisor.

4.3 License Preparatory Training, Reactor Operator

A. Experience

RO license candidates will have a minimum of 2 years of power plant experience or related technical training. At least 1 year shall be nuclear plant experience with a minimum of 6 months at McGuire Nuclear Station.

B. Classroom Training

A minimum of 8 weeks of training will be provided consisting of the following topics. This training will be given prior to administration of the license examination.

1. Systems
2. Components
3. Instruments and Controls
4. Electrical
5. Administrative Procedures and Controls
6. Fuel Handling
7. Thermodynamics/Heat Transfer/Fluid Flow
8. Radiation Control
9. Chemistry
10. Procedures
11. Reactor Theory
12. Plant Transient Response (Includes Accident Damage Mitigation and Pressurized Thermal Shock Considerations)

C. In-Plant Training

The on-the-job training phase shall assure that the license trainee will meet or exceed the intent of the requirements of ANSI 3.1-1978, Section 4.5.1.

The program will include a minimum of three months training on shift as an extra person in the control room and which will require the manipulation of nuclear power plant controls during day-to-day operation. This phase of training will include the performance of the RO Task Training List.

D. Reactivity Changes

The trainee during his on-the-job training phase will perform five reactivity changes at McGuire Nuclear Station from the following list. Reactivity changes will be documented in the training files.

1. Plant or reactor startup and power escalation to a range where reactivity feedback from nuclear heat addition is noticeable and heatup rate is established.

2. Normal plant shutdown from mode 1 to source range indication.

3. Manual control of steam generator water level and/or feedwater flow during plant startup/and/or shutdown.

4. Boration and/or Dilution during power operation.

5. Reactor power changes of 10% or greater where rod control is in manual, or where feedwater flow is controlled manually.

6. Reactor power changes of 10% or greater where load change is performed with the DEH turbine control in manual.

7. Operation of turbine controls in manual during turbine startup.

8. Decay Heat Removal System (ND) operation.

9. Incore monitoring system operation.

10. Operation of Manipulator crane during refueling over the core.

E. Simulator Training

Each license candidate will participate in a minimum of eight weeks of simulator training during which he/she will respond to normal, abnormal, and emergency conditions listed in enclosure 4 of Harold Denton's letter of March 28, 1980.

F. Review and Evaluation

Following the above portions of the training program, a period of a minimum of 40 hours will be utilized for review and an audit written and simulator operation examination will be given to evaluate the trainees ability to successfully perform for a licensing examination. Examination and results of the audit examination will be documented in the trainee's training file. If evaluation by management determines a need for additional training prior to the NRC licensing examination date, a reassignment for future license training will be made.

4.4 License Preparator, Senior Operator

Senior Reactor Operator (SRO) Training Program

This training may be conducted concurrent with the training described in 4.3 as necessary to assure adequate station operating staff.

A. Experience

Applicants for senior operator licenses shall have 4 years of responsible power plant experience. A maximum of 2 years power plant experience will be fulfilled by academic or related technical training, on a one-for-one time basis. Two years shall be nuclear power plant experience. At least 6 months of the nuclear power plant experience shall be at McGuire Nuclear Station.

B. Classroom Training

For a senior license candidate, the course of instruction will encompass an expanded depth in the areas of Section 4.3. Training will be approached from a supervisory aspect, with course length determined by experience and depth of knowledge of candidates, but will not be less than 6 weeks in length.

C. In-Plant Training

All senior operator license candidates will complete a minimum of 3 months in training on shift during which he will complete the appropriate task items.

D. Simulator Training

Simulator training will be similar to that described in 4.2, E with emphasis on the Administrative, Technical, and Leadership roles of the SRO. This training will be a minimum of 5 weeks in length.

E. Management and Supervisory Skills Training

Training in communications, problem solving, and stress management is provided to all SRO license candidates. This training includes simulator practical exercises involving candidate response to varying situations and a critique of his videotaped response. This topic is approximately one week in length.

F. Review and Evaluation

Following the above portions of the training program, a period of a minimum of 40 hours will be utilized for review and an audit written and simulator operation examination will be given to evaluate the trainees ability to successfully perform for a licensing examination. Examination and results of the audit examination will be documented in the trainee's training file. If evaluation by management determines a need for additional training prior to the NRC licensing examination date, a reassignment for future license training will be made.

5.0 RECORDS

5.1 Training records for each trainee will be maintained and shall contain the following:

A. Examination results - Unsatisfactory will include specifics

B. On-the-job training documentation

C. Records of reactivity changes

D. Evaluations made by training staff *

E. Evaluations made by simulator staff *

F. Startup certification *

G. Documentation of training participation

* Where Applicable