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September 20, 1985

Mr. Harold R. Denton, Director
Office of Nuclear Reactor Regulation
U. S. Nuclear Regulatory Commission
Washington, D. C. 20555

Attention: Ms E. G. Adensam, Chief
Licensing Branch No. 4

Subject: McGuire Nuclear Station
Docket Nos. 50-369 and 50-370
Replacement and Requalification Training Program Review

Dear Mr. Denton:

Mr. D. G. Eisenhut's letter of May 11, 1984 (NRC Generic Letter 84-14) stressed the need for an accurate description of each licensee's requalification training program and replacement operator training program in order to ensure that candidates for operator licensing examinations have completed the necessary qualifications and training prior to examination, and to ensure that requalification program audits by the regions are based on the requalification training program as implemented. Consequently, Duke submitted (via Tucker to Denton letter dated February 20, 1985) descriptions of McGuire Nuclear Station's requalification program for NRC licensed personnel (dated January 16, 1985) and operator replacement training program (dated February 15, 1985) for NRC review and approval.

Mr. T. M. Novak's July 24, 1985 letter (as supplemented by Ms. E. G. Adensam's July 26, 1985 letter) indicated that NRC staff Review of the February 20, 1985 submittal finds that additional information and program changes are needed for completion of their review, and requested the additional information / program changes. Accordingly, attached is the requested additional information as well as appropriately revised descriptions of the McGuire Nuclear Station Requalification Program for NRC Licensed personnel (dated August 9, 1985) and Operator Replacement Training Program (dated August 9, 1985) which are being submitted for approval.

Should there be any questions concerning this submittal, please advise.

Very truly yours,

H.B. Tucker /BS

Hal B. Tucker

PBN/hrp

Attachments

A003
1/1

cc: Dr. J. Nelson Grace, Regional Administrator
U. S. Nuclear Regulatory Commission
Region II
101 Marietta Street, NW, Suite 2900
Atlanta, Georgia 30323

Mr. W. T. Orders
NRC Resident Inspector
McGuire Nuclear Station

DUKE POWER COMPANY
McGuire Nuclear Station

Response to NRC Request for Additional Information and Program Changes
Requalification and Replacement Training Programs

1. REQUALIFICATION PROGRAM FOR NRC LICENSED PERSONNEL

CONCERN(a):

In Section 4.2 you state:

Licensed Training Staff are not required to attend the segment training but should participate in appropriate sections of requalification to assure they are cognizant of current operating history problems, station modifications, etc.

Enclosure 1, Part A.2.e. of the March 28, 1980 Denton letter contained within NUREG-0737 states that, "Instructors shall be enrolled in appropriate requalification programs to assure that they are cognizant of current operating history, problems, and changes to procedures and administrative limitations.

Your use of the term, "should participate," does not necessarily convey the same meaning as NUREG-0737. Clarify your intent as to the extent of the requirements for training staff participation in the requalification program.

RESPONSE:

Section 4.2 has been changed as per the following:

4.2 Licensed Training Staff are not required to attend the segment training but shall participate in appropriate sections of requal to assure they are cognizant of current operating history, plant problems, station modifications, changes to procedures, etc., and will participate in the portion of the segmented quizzes that pertain to these areas.

CONCERN (b):

In Section 4.4, you state:

Back-up licensees (licensed individuals who are not routinely assigned to normal shift rotation and provide back-up capability to the operating staff) by virtue of their job assignments come into more intimate contact with various aspects of power plant operation. These individuals should participate in the segmented requalification when possible, and take the segment quizzes, however, they can be exempted from this requirement in certain circumstances as management needs dictate.

Appendix A of 10 CFR 55 States:

Individuals who maintain operator or senior operator licenses for the purpose of providing backup capability to the operating staff shall participate in the requalification programs except to the extent that their normal duties preclude the need for specific retraining in particular areas.

Your statement that these individuals should participate except when exempted because of management needs does not appear to be consistent with the requirement that they shall participate unless the need is precluded because of their normal duties. Clarify whether your statement is intended to permit exemptions to be authorized on a basis other than a determination that the individuals normal duties preclude the need for specific retraining in particular areas.

RESPONSE:

Section 4.4 has been changed as per the following:

4.4 Backup licensees (individuals who maintain operator or senior licenses for the purpose of providing backup capability to the operating staff and not routinely assigned to shift rotation) by virtue of their job assignments come into more intimate contact with various aspects of power plant operation, thus backup licensees may be excluded from participation in some requalification lecture series preceding the annual exam segments if the need is precluded because of their normal duties. These individuals will be afforded the time and necessary materials to review the material presented in the lecture series prior to the annual examination. However, backup licensee self study should not be used for more than 20% of the scheduled series topics.

CONCERN (c):

Section 7.0 contains no mention of the qualification of training instructors. This section would appear to be the appropriate place in the program description to include the implementation of Action Plan Item I.A.2.3 of NUREG-0737, "Administration of Training Programs." Both this Action Plan Item and Enclosure 1, Part A.2.d. of the March 28, 1980 Denton Letter contained within NUREG-0737 call for SRO qualification for training center and facility instructors who teach systems, integrated responses, transient, and simulator courses. Include a description of instructor qualifications in this or other appropriate portions of the program description.

RESPONSE:

Section 7.5 has been added as per the following:

7.5 INSTRUCTOR QUALIFICATIONS

1. Instructional Staff will be qualified at the SRO level or be certified at the SRO Level per Production Training Services Directive (PTSD) 4.1.2 for the subjects they teach. They will also be enrolled in Requal as per Section 4.2.

2. Guest Lecturers must be subject matter experts in areas they teach.

NOTE: Attached for reference is the PTSD 4.1.2

2. OPERATOR REPLACEMENT TRAINING PROGRAM

CONCERN (a):

Section 4.3E states that each license candidate will participate in a minimum of eight weeks of simulator training, and during this time, the trainee will respond to normal, abnormal, and emergency conditions as listed in Enclosure 4 of the Denton letter of March 28, 1980 contained in NUREG-0737. This portion of your program description should indicate who will evaluate the license candidates' response and should define the method for documenting these responses, e.g., qualification cards.

RESPONSE:

Section 4.3 E2 has been added as per the following:

E. Simulator Training

1. 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.

2. The Simulator Instructional Staff will evaluate license candidate's performance. Satisfactory performance will be documented on simulator task lists.

CONCERN (b):

Section 4.4D states that simulator training for SRO's will be similar to that provided for RO's with an added emphasis on the Administrative, Technical, and Leadership roles of the SRO, and will be a minimum of 5 weeks in length. This portion of the program should indicate who will evaluate the responses as mentioned in Section 4.3.E of the RO program and should define the method of documenting the responses.

RESPONSE:

Section 4.4D has been changed as per the following:

D. Simulator Training

Simulator training will be similar to that described in 4.3.E-1 with emphasis on the Administrative, Technical and Leadership roles of the SRO. This training will be a minimum of 5 weeks in length. Evaluation and documentation will be as per Section 4.3.E-2.

CONCERN (c):

Section 4.4.C, "In-Plant Training," states that Senior Operator license candidates will complete a minimum of three months in training on shift. Enclosure 1 of the March 28, 1980, Denton letter states that SRO candidates "shall have three months training as an extra person on shift in the control room." Please clarify your statement to indicate whether or not the three months in training will be as an extra person on shift in the control room.

RESPONSE:

Section 4.4.C has been changed as per the following:

C. In-Plant Training

All senior operator license candidates will complete a minimum of 3 months in training as an extra person on shift. This phase of training will include the performance of the SRO Task Training list.

NOTE: This does not specify "in the control room" as your concern reads, but is in compliance with Mr. Dentons letter. The extra person on shift for the SRO must be able to leave the control room as required by the Shift Supervisor. Mr. Dentons letter does specify "in the control room" for the RO candidate, but only as an extra person on shift for the SRO as per Section 2.a of enclosure 1 of his letter.

Attachment 5.2

ADVANCED OPERATIONS INSTRUCTOR QUALIFICATIONS FOR CERTIFICATION

Name _____ Date _____
(Last) (First) (Middle)

Major Work Area _____ SS# _____
Years Exp.

Title _____

Initial Certification Date _____ Renewal Date _____

I. Instructional Skills:

		Verified By	Date
A.	Previous Instructor Experience	_____	_____
	No. Years _____ Where _____		
	Type of Instruction _____		
	_____		
B.	Instructor Training (TTS)	_____	_____
C.	Demonstrated adequate instructional techniques	_____	_____
D.	Training the trainer	_____	_____
	_____	_____	_____
	_____	_____	_____

II. Check the license/certification the instructor may hold:

A.	RO License No. _____	_____
B.	RO Certification	_____
C.	SRO License No. _____	_____
D.	SRO Certification	_____

Attachment 5.2 (Continued)

III Directions:

For each area, check the subjects and level of training the instructor is qualified to teach. Indicate the basis for the decision by selecting from the qualifications below and placing the letter(s) in the basis column.

Qualifications Basis:

A. Years of work experience
B. College degree
C. College Credit
D. Vendor Training
E. Cross training
F. License (RO/SRO)
G. Military Training
H. Other _____

Subject Areas

	Qualified	Basis	RO Verified Date By	SRO Verified Date By
Systems				
Components				
Instrument and Control				
Electrical				
Fuel Handling				
Radiation/Radiation Control				
Procedures				
Administrative Procedures and Controls				
Waste Systems				
Task Training				
Reactor Theory				
Chemistry				
Environmental				
Thermodynamics/Heat Transfer/Fluid Flow				
Plant Transient Response				
Simulator				
Management Supervisory Skills *				

DUKE POWER COMPANY

McGUIRE NUCLEAR STATION

REQUALIFICATION PROGRAM

FOR

NRC LICENSED PERSONNEL

AUGUST 9, 1985

(FIVE SHIFT ROTATION)

Revised _____

Approved _____

NRC Approval _____

McGUIRE NUCLEAR STATION
REQUALIFICATION PROGRAM

TABLE OF CONTENTS

DUKE POWER COMPANY
McGUIRE NUCLEAR STATION
REQUALIFICATION PROGRAM
FOR NRC LICENSED PERSONNEL

1.0 INTRODUCTION

Appendix A to 10CFR55 requires all licensed operators to participate in an NRC approved requalification program. The requalification program as herein described for McGuire Nuclear Station, is in accordance with the latest INPO guidelines as described in their released document of 11-3-80. This requalification program consists of pre-planned lecture series, skills training and evaluation, operational review, and an annual examination and evaluation.

The operator requalification program shall be conducted on a cyclical basis so that all program requirements are completed in a period not to exceed two years.

2.0 PRE-PLANNED LECTURE SERIES

The requalification program will include two types of lecture series as follows:

A. Fundamental Review Lecture Series

B. Operational Proficiency Lecture Series

2.1 FUNDAMENTAL REVIEW LECTURE SERIES

The Fundamentals Review lecture topics are selected on as-needed basis to reflect the results of the annual exam, as well as past performance of licensed personnel. The following topics are typical of what will be covered during this lecture series.

A. Theory and Principles of Reactor Operation
B. Heat Transfer, Fluid Flow and Thermodynamics
C. Features of Facility Design, including Plant Systems
D. General and Specific Plant Operating Characteristics including Expected response to Equipment Failure
E. Plant Instrumentation and Control Systems
F. Plant Protection Systems
G. Radiation Control and Safety
H. Engineered Safety Systems
I. Applicable Portions of Title 10, Chapter I, Code of Federal Regulations
J. Fuel Handling and Core Parameters
K. Plant Chemistry

2.2 OPERATIONAL PROFICIENCY LECTURE SERIES

The Operational Proficiency lecture topics are selected to ensure coverage of essential plant operational guidelines, and reflect operational changes and experiences. The following topics are typical of what will be covered during this lecture series:

A. Normal, Abnormal and Emergency Operating Procedures
B. Technical Specifications
C. Administrative Procedure, Conditions, and Limitations
D. Major Operational Evaluations
E. Facility Design and License Changes
F. Procedure Changes
G. Operating History and Problems
H. Related Nuclear Industry Operating Experience
I. Accident Mitigation of Degraded Core

2.3 REQUALIFICATION TRAINING TIME COMMITTMENTS

Total Pre-planned lecture series training time annually for each licensed operator will consist of a minimum of 100 contact hours of classroom instruction.

3.0 SKILLS TRAINING AND EVALUATION (SIMULATOR OR PLANT)

3.1 Each licensed individual shall demonstrate operational proficiency by participating in the following skill phases of requalification training.

A. Reactivity Manipulations

B. Plant Evolutions

C. Nuclear Plant Simulator Exercises

3.2 REACTIVITY MANIPULATIONS

On an annual basis, each licensed operator will participate in evolutions selected from the following list, either on the McGuire plant or at the Training Center simulator. A minimum of any five (5) such evolutions per year are required for satisfying this requirement. Items with an asterisk shall be performed on the Simulator annually.

*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. Plant shutdown to SR.

*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 opration.

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

3.3 PLANT EVOLUTIONS (ABNORMAL/EMERGENCY)

3.3.1 On an annual basis, each licensed operator will participate in exercises covering the following plant abnormal/emergency conditions either at a McGuire operating unit or on the McGuire simulator.

1. Reactor trip
2. Turbine generator trip
3. Loss of reactor coolant flow
4. Load Rejection
5. Loss of Steam Generator Feedwater (CF/CA)
6. Leakage Calculation (LOCA)
7. Plant Operations during natural circulation
8. Loss of Natural Circulation
9. NCS at Saturation
10. Inadvertent NC system depressurization
11. Actions required for ATWS event
12. Loss of control room
13. Significant S/G Tube Leaks
14. Small LOCA (Inside and Outside Containment)
15. Large LOCA

3.3.2 On a two-year cyclical basis, each licensed operator will participate in exercises covering the following plant abnormal conditions at an operating unit of McGuire or at the McGuire simulator.

1. Malfunction of Nuclear Instrumentation System
2. Boron dilution - Conditions Requiring Emergency Boration
3. Control Failures Affecting Reactivity
4. Inoperable control rod (Control Rod Misalignment, Control Rod Drop, and Inability to Drive Control Rods)
5. Loss of makeup or letdown
6. High activity in Reactor coolant
7. Loss of Instrument Air System
8. Loss of Electrical Power
9. Loss of Condenser Vacuum
10. Loss of Nuclear Service Water System
11. Loss of Component Cooling Water System
12. Hi Activity in Off Gas
13. Secondary Line Rupture (Inside & Outside Cont.)
14. Loss of Residual Heat Removal
15. Loss of Protective System Channel
16. Malfunction of NC Pressure/Volume Control Systems
17. Feedwater System Failures

3.4 NUCLEAR PLANT SIMULATOR EXERCISES

3.4.1 Licensed operators are required to participate in a structured simulator training program on an annual basis, and the following guidelines shall apply:

1. Team concept utilized, emphasizing individual roles in reporting, assignment of operational duties, use of plant procedures and use of technical specifications.

2. No more than four (4) licensed operators will be assigned to participate in a requalification training session which requires direct interaction with the plant control panel.

3.4.2 Simulator training will consist of a minimum of twenty (20) hours for each year, which includes all simulator training consisting of reactivity manipulations, plant evolutions, and an annual simulator examination.

4.0 REQUALIFICATION SCHEDULE AND SEGMENT QUIZZES

4.1 The requalification schedule for McGuire consists of 5 ten week segments. Each shift is scheduled for approximately 2 weeks of training during each segment.

4.1.1 The last segment will be utilized for administration of an annual requalification examination on subjects covered throughout the year, as well as general subjects as specified in Section 6.2.

4.1.2 Licensed personnel are required to achieve a grade of 80% on each segment quiz. A grade of less than 80% but greater than 70% will result in management counseling with the individual concerned. A grade of less than 70% will require remedial self study, and a new quiz retake for that segment.

4.2 Licensed Training Staff are not required to attend the segment training but shall participate in appropriate sections of requal to assure they are cognizant of current operating history, plant problems, station modifications, changes to procedures, etc., and will participate in the portion of the segmented quizzes that pertain to these areas.

4.3 Newly licensed personnel shall enter the Requalification Program upon receipt of their license.

4.4 Backup licensees (individuals who maintain operator or senior licenses for the purpose of providing backup capability to the operating staff and not routinely assigned to shift rotation) by virtue of their job assignments come into more intimate contact with various aspects of power plant operation, thus backup licensees may be excluded from participation in some requalification lecture series preceding the annual exam segments if the need is precluded because of their normal duties. These individuals will be afforded the time and necessary materials to review the material presented in the lecture series prior to the annual examination. However, backup licensee self study should not be used for more than 20% of the scheduled lecture series topics.

4.5 Licensed Reactor Operators (RO's) who are in training for a Senior license (SRO) will be exempt from all requalification requirements for the duration of their training. They will continue to be updated on changes in accordance with station administrative procedures. They will also receive training on emergency and abnormal procedures. Any RO who fails the SRO exam will be evaluated by Operations Department Managers (i.e. Superintendent of Operations, Operating Engineers, SRO's, Shift Supervisors) on their past and present job performance. A recommendation will be made based on this evaluation regarding the individual's return to licensed duties.

5.0 OPERATIONAL REVIEW PROGRAM

5.1 The Operational Review Program provides a system for review of selected operationally related events, reportable occurences, nuclear industry information, changes to existing operational guidance or equipment, etc., to maintain continued update of licensed personnel, and establishes a means of disseminating new or changing information on a short term basis, if needed.

5.1.1 The following items are typical of those covered by the Operational Review Program:

1. Plant design changes
2. Station modifications
3. Procedure changes
4. Technical Specification changes
5. Pertinent IE Bulletin Information
6. Incident Reports (Station and Industry)
7. Audit, evaluation, and inspection reports
8. Publications covering nuclear industry information
9. NSAC/INPO significant event reports

5.1.2 The Operational Review Program is administered per McGuire Station Directive 3.1.38 with the exception of Item 5.2.

5.2 The Operational Review Program shall also include a review of the contents of the Emergency Procedures and Abnormal Procedures. This review will be conducted on a two year cyclic basis and documented.

6.0 ANNUAL REQUALIFICATION EXAMINATION

6.1 An annual requalification written and simulator examination will be administered to all licensed individuals to determine their knowledge of topics covered in the segmented requal program.

6.2 The written examination will be grouped into at least six (6) categories for evaluation purposes, and will contain questions covering topics which were presented during the yearly requal training segments, as well as from general topics requiring operator knowledge. Some typical examples are as follows:

1. Theory and Principles of Reactor Operations
2. Heat Transfer, Fluid Flow and Thermodynamics
3. Features of Facility Design
4. General and Specific Plant Operating Characteristics
5. Plant Instrumentation and Control Systems
6. Plant Protection Systems
7. Engineered Safety Systems
8. Radiation Control and Safety
9. Applicable Portions of Title 10, Chapter I, Code of Federal Regulations
10. Fuel Handling and Core Parameters
11. Normal, Abnormal and Emergency Operating Procedures
12. Technical Specifications
13. Administrative Procedures, Conditions and Limitations
14. Nuclear Industry Operating Experience
15. Accident Mitigation of Degraded Core
16. Electrical Theory

6.3 A licensed operator receiving a grade of less than 70% in more than one examination category, or an overall grade of less than 80% shall be placed in an accelerated requal program consisting of self-study with instructor guidance and support, followed by an exam re-take. Failure of one category with less than 70% will require a category retake only, provided an 80% overall average is maintained.

6.4 An annual examination will be conducted on the simulator for each licensed operator during the last segment. A licensed operator receiving a grade of less than 80% on the Simulator exam shall receive additional training handouts with instructor guidance and support, followed by an exam retake using a different scenario.

6.5 Any licensed person who fails to meet the minimum grades stated in 6.3 and 6.4 will be removed from all licensed duties until such time as the requirements have been met.

6.6 Newly licensed individuals successfully completing their NRC licensing examination less than six (6) months prior to an annual requalification written examination, may be excused from taking the current annual requalification examination and the simulator examination.

7.0 ADMINISTRATIVE HANDLING OF REQUALIFICATION

7.1 INTRODUCTION

This section will define specific responsibilities and provide guidance in the implementation of the McGuire requalification program.

7.2 REACTIVITY MANIPULATIONS

1. A minimum of five (5) manipulations as defined in Section 3.0 will be accomplished per year with no more than two being of the same type.

2. Documentation of Reactivity Manipulations will be made at the plant or during simulator training with documentation forms transmitted to the Station Training Unit for formal record keeping of each licensed operator's performance. Each licensed operator is responsible to ensure his performance is adequately documented.

7.3 PLANT EVOLUTIONS

1. Training exercises as referred to in Section 3.3 are actual planned plant training drills, actual plant transients or simulated transients provided during the simulator phase of the requalification program.

2. Documentation of the exercises will be accomplished in the Control Room at the time of the event, or at the Training Center during the simulator phase of requalification training. Each licensed operator is responsible to ensure that required exercises are properly documented.

7.4 CLASSROOM/SIMULATOR TRAINING RECORDS

1. All classroom and simulator training results will be documented and transmitted to the Station Training Unit reflecting completion of each Requalification Segment.

2. Evaluations on personnel performance will be made by Training Services staff, and less than acceptable performance will result in plant management notification.

3. All records must be of auditable quality, and shall include the following:

   A. Written examination results for each individual

   B. Simulator training participation and evaluation

4. Records of training and qualification for current members of the station staff will be retained for the life of the station in accordance with Technical Specification 6.10.2.g. These records will include copies of written examinations administered, the answers given by the license, results of evaluations and documentation of any additional training administered in areas in which an operator or senior operator has exhibited dificiencies.

7.5 INSTRUCTOR QUALIFICATIONS

1. Instructional Staff will be qualified at the SRO level or be certified at the SRO level per Production Training Services Directive (PTSD) 4.1.2 for the subjects they teach. They will also be enrolled in Requal as per Section 4.2.

2. Guest Lecturers must be subject matter experts in areas they teach.

DUKE POWER COMPANY

MCGUIRE NUCLEAR STATION

OPERATOR REPLACEMENT TRAINING PROGRAM

AUGUST 9, 1985

Revised _____

Approved _____

NRC Approval _____

DUKE POWER COMPANY
MCGUIRE NUCLEAR STATION
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 intital 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's) 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 licene candidates will have a minimum of 2 years of power plant experience or related technical training. At least 1 year shall be nuclear plant exprience 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 Reponse (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. De ay Heat Removal System (ND) operation.

9. Incore monitoring system operation.

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

E. Simulator Training

1. 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.

2. The Simulator Instructional Staff will evaluate license candidates' performance. Satisfactory performance will be documented on simulator task lists.

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 further 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 week in length.

C. In-Plant Training

All senior operator license candidates will complete a minimum of 3 months in training as an extra person on shift. This phase of training will include the performance of the SRO Task Training list.

D. Simulator Training

Simulator training will be similar to that described in 4.3.E-1 with emphasis on the Administrative, Technical, and Leadership roles of the SRO. This training will be a minimum of 5 weeks in length. Evaluation and documentation will be as per Section 4.3.E-2.

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 further 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