TRAINING PROGRAM FOR

MILLSTONE UNIT 3 SHIFT ADVISORS

Approval:

Unit 3 Training Supervisor

Unit 3 Operations Supervisor

Manager, Operator Training

11/1/85

Unit 3 Superintendent

SECTION I

PURPOSE

The purpose of the Shift Advisor training program is to familiarize selected experienced and previously licensed SRO's from Connecticut Yankee and Millstone Unit 2 with Millstone Unit 3 Systems, Technical Specifications, and Operating Procedures used during Modes 1 and 2 operation. This program assumes that the prospective Shift Advisors are knowledgeable at the SRO level on such topics as nuclear power plant theory and plant transient and accident analysis because of their previous experience. It is not intended to train an individual to become a licensed RO or SRO. Successful completion of this program shall certify that, given their background, the Shift Advisors are sufficiently knowledgeable of Millstone Unit 3 to perform their designated functions and provide meaningful assistance to their assigned shifts.

SECTION 2

SCHEDULE

The training program for the Millstone Unit 3 Shift Advisors shall consist of ten days of training consisting of three segments: Classroom Training, Simulator Training, and a final examination/certification. The training program will commence approximately November 18, 1985. All segments of this program shall be completed prior to any individuals being installed on shift as shift advisors. The classroom segment of training shall be completed by December 6, 1985. The Simulator segment of training shall be completed by December 13, 1985.

All Shift Advisors holding an active license on Connecticut Yankee or Millstone Unit 2 shall maintain those licenses active. This will be accommodated by sending these individual Shift Advisors back to their respective units for license requalification training as required according to their units' training schedule.

Classroom Training

Each Shift Advisor will receive classroom training on the following Millstone Unit 3 systems:

- Reactor Coolant System
- Chemical and Volume Control System
- Emergency Core Cooling Systems
- Quench Spray System
- Rod Control System
- Nuclear Instrumentation System
- Main Steam System
- Feed and Condensate Systems
- Station Electrical Distribution

Systems training shall last approximately two and one-half days. This training shall cover, as a minimum, the topics listed for the systems in the Objectives section of this course description.

Each Shift Advisor will receive, as a minimum, classroom training on all technical specifications which apply at Millstone Unit 3 during Modes 1 and 2. Technical Specification training shall last approximately two days. This training shall cover, as a minimum, the topics listed for the systems in the Objectives section of this course description.

Each Shift Advisor will receive, as a minimum, classroom training on the following millstone Unit 3 Operating Procedures topics:

- OP 3292, Reactor Startup
- OP 3202, Plant Startup
- OP 3204, At Power Operations
- OP 3206, Plant Shutdown
- OP 3207, Reactor Shutdown
- AOP 3550, Turbine/Generator Trip
- AOP 3554, Failure of RCP Seal
- AOP 3555, Reactor Coolant Leak
- AOP 3556, Steam Generator Tube Leak
- AOP 3556, Immediate Boration
- AOP 3571, Instrument Failure Response
- EOP Format and Use
- EOP 35 E-0, Reactor Trip or Safety Injection
- EOP 35 E-1, Loss of Reactor or Secondary Coolant
- EOP 35 E-2, Faulted Steam Generator Isolation
- EOP 35 E-3, Steam Generator Tube Rupture

Operating Procedures training shall last approximately two and one-half days. This training shall cover, as a minimum, the topics listed for the systems in the Objectives section of the course description.

Each day of classroom training shall normally consist of four and one-half hours of lectures by a member of the Millstone Unit 3 Operator Training staff followed by three and one-half hours of self-study. The approximately 7 days of classroom training is not required to be completed in 7 consecutive days. That time frame may be interrupted to allow the prospective shift advisors to return to the units on which they hold licenses for license requalification training/examination, to conduct simulator training, or to allow for indoctrination at Millstone Unit 3.

Simulator Training

Each Shift Advisor will receive training on the Millstone Unit 3 plant specific simulator on the following evolutions:

- A reactor startup utilizing OP 3202
- A plant startup utilizing OP 3202
- A power increase of at least 25 percent above 20 percent power utilizing OP 3204
- A plant shutdown utilizing OP 3206
- A reactor shutdown utilizing OP 3207

Simulator training shall last approximately three days. This training shall cover, as a minimum, the topics listed for the evolutions in the Objectives section of the course description.

To provide the most effective training consistent with the role of the Shift Advisor, the prospective Shift Advisors shall observe the previously mentioned evolutions being performed on the Simulator rather than becoming involved with board manipulations or supervision. A member of the Millstone Unit 3 Operator/Simulator Training staff shall ensure, by the use of a supplied check-off form, that all the prospective shift advisors meet, as a minimum, the objectives listed for the evolutions in the Objectives section of this course description.

Each day of Simulator training shall normally consist of 5 hours of Simulator evolution observation followed by 3 hours of self study. The approximately 3 days of Simulator training is not required to be completed in 3 consecutive days. That time frame may be interrupted to allow the prospective Shift Advisors to return to the units on which they hold licenses for license re-qualification training/examination, to conduct classroom training, or to allow for indoctrination at Millstone Unit 3.

Examination/Certification

Each Shift Advisor shall pass a written examination based on the objectives presented in Section 3. This examination shall be administered upon the completion of the classroom segment of training and no later than December 6, 1985. The passing criteria for the examination is a score of 80 percent.

The results of these examinations along with recommendations for certification shall be forwarded to the Senior Vice President, Nuclear Engineering and Operations. The Senior Vice President, Nuclear Engineering and Operations shall then certify, in writing, those individuals who have passed the final examination. This certification document shall be maintained in the advisor's license training record.

SECTION 3

OBJECTIVES

REACTOR COOLANT SYSTEM OBJECTIVES:

The prospective Shift Advisor shall be able to:

1. Given a one-line diagram of the Reactor Coolant System, describe all major flowpaths.

2. Locate all Main Control Board mounted instrumentation from License Drawings 301-303 on those boards.

3. Describe all major flowpaths for the Reactor Coolant System using the Main Control Board mimic and controls.

4. State the values of the parameters listed on the Reactor Coolant System Required Data handout.

5. Locate all Main Control Board mounted instrumentation associated with the Reactor Coolant Pump Seals.

6. List all control functions for the Pressurizer Pressure and Level Control System.

7. State how the Reactor Coolant System is protected from an overpressure condition.

CHEMICAL AND VOLUME CONTROL SYSTEM OBJECTIVES

The prospective Shift Advisor shall be able to:

1. Given a one-line diagram of the Chemical and Volume Control System describe all major flowpaths for normal charging and letdown operations and for accident conditions as part of the ECCS System.

2. Locate all Main Control Board mounted instrumentation from License Drawing 304 on those boards.

3. Describe all major flowpaths for the Chemical and Volume Control System using the Main Control Board mimic and controls for both normal charging and letdown operations and for accident conditions as part of the ECCS System.

4. State the values of the parameters listed on the Chemical and Volume Control System Required Data handout.

5. Describe the flowpaths for the following boration/dilution operations using the Main Control Board mimic and controls:

    a. Auto

    b. Borate

    c. Dilute

    d. Gravity Borate

    e. Immediate Borate

EMERGENCY CORE COOLING SYSTEMS OBJECTIVES

The prospective Shift Advisor shall be able to:

1. Given a one-line diagram of an ECCS System, describe all major flowpaths during the injection and cold leg recirculation modes of emergency core cooling operations. The systems to be included are shown in License Drawings 304-307 and 309.

2. Locate all Main Control Board mounted instrumentation from License Drawings 304-307 and 309 on those boards.

3. Describe all major flowpaths during the injection and cold leg recirculation modes of emergency core cooling operation using the Main Control Board mimic and controls. The systems to be included are shown in License Drawings 304-307 and 309.

4. State the values of the parameters listed on the Emergency Core Cooling Systems Required Data handout.

5. State the automatic start signals for the Emergency Core Cooling System Pumps.

QUENCH SPRAY SYSTEM OBJECTIVES

The prospective Shift Advisor shall be able to:

1. Given a one-line diagram of the Quench Spray System describe all major flowpaths.

2. Locate all Main Control Board mounted instrumentation from License Drawing 308 on those boards.

3. Describe all major flowpaths for the Quench Spray System using the Main Control Board mimic and controls.

4. State the values of the parameters listed on the Quench Spray System Required Data handouts.

5. State the automatic start signals for the Quench Spray Pump.

ROD CONTROL SYSTEM OBJECTIVES

The prospective Shift Advisor shall be able to:

1. Given License Drawing 312, describe the operation of the Rod Control System.

2. State the values of the parameters listed on the Rod Control System Required Data handout.

3. List the Control Rod Banks and explain their sequence of withdrawal, including identification of which Control Rod Banks are moved in an overlapping pattern.

4. State the difference between the functions of Digital Rod Position Indicating System (DRPI) and the Bank Demand Step Counters.

5. Locate the DRPI panel and the Band Demand Step Counters on the Main Control Boards.

6. Given a Rod Control Interlock (C-1 through C-4, C-5, and C-11), give a brief description of that interlock, including the instrument which generates that interlock and its setpoint.

NUCLEAR INSTRUMENTATION SYSTEM OBJECTIVES

The prospective Shift Advisor shall be able to:

1. Locate all Main Control Board mounted instrumentation from Study Aid Drawings 1 - 3.

2. Given a Main Control Board mounted instrument found on Study Aid Drawing 1 - 3, give a brief description of the meaning of that instrument's output (e.g. the power range instruments display nuclear power in the narrow range of usable power).

MAIN STEAM SYSTEM OBJECTIVES

The prospective Shift Advisor shall be able to:

1. Given a one-line diagram of the Main Steam System, describe all major flowpaths.

2. Locate all Main Control Board mounted instrumentation from License Drawing 325 on those boards.

3. Describe all major flowpaths for the Main Steam System using the Main Control Board mimic and controls.

4. State the values of the parameters listed on the Main Steam System Required Data handout.

5. State how the Main steam System is protected from an overpressure condition.

6. Give a general description of steam dump operation for each of the following modes of operation:
   a) Steam Pressure
   b) Load Rejection
   c) Plant Trip

7. State the three arming signals for the steam dumps.

8. State the three blocking signals for the steam dumps.

FEED AND CONDENSATE SYSTEMS OBJECTIVES

The prospective Shift Advisor shall be able to:

1. Given a one-line diagram of the Feed and Condensate Systems describe all major flowpaths.

2. Locate all Main Control Board mounted instrumentation from License Drawing 326 on those boards.

3. Describe all major flowpaths for the Feed and Condensate Systems using the Main Control Board mimic and controls.

4. State the values of the parameters listed on the Feed and Condensate Systems Required Data handout.

5. Give a general description of the operation of the Steam Generator Water Level Control and Feedwater Pump Speed Control Systems.

6. Given a one-line diagram of the Auxiliary Feedwater System, describe all major flowpaths.

7. Locate all Main Control Board mounted instrumentation from License Drawing 310 on those boards.

8. Describe all major flowpaths for the Auxiliary Feedwater System using the Main Control Board mimic and controls.

STATION ELECTRICAL DISTRIBUTION OBJECTIVES

The prospective Shift Advisor shall be able to:

1. Given a one-line diagram of the Main Electrical Distribution, describe how electrical power is distributed from either the Main Generator or offsite to the 6.9 KV buses and the 480V buses.

2. Describe how electrical power is distributed from either the Main Generator or offsite to the 6.9 KV buses and the 480 V buses using the Main Control Board mimic and controls.

TECHNICAL SPECIFICATIONS OBJECTIVES

The prospective Shift Advisor shall be able to:

1. Given a component which is controlled/monitored from the Main Control Boards, state whether or not that piece of equipment is required by Technical Specifications to be operable/in operation during Modes 1 or 2 operation.

2. Identify any actions required to be taken by Technical Specifications in 30 minutes or less in Modes 1 or 2 for a given component or condition which is controlled/monitored at the main Control Board.

GENERAL OPERATING PROCEDURES OBJECTIVES

The prospective Shift Advisor shall be able to:

1. Discuss the precautions associated with OP 3202, Reactor Startup.

2. State the actions to be taken for a criticality below the rod insertion limit or above the maximum critical rod height.

3. Discuss the major precautions associated with OP 3203, Plant Startup, dealing with:

    a. Turning gear operation
    b. Turbine temperature limitations
    c. Turbine speed control limitations
    d. Condenser vacuum
    e. Reactivity and power changes
    f. Technical Specifications

4. Be able to place the following operations in their correct sequence of occurrence and discuss in general, each operation:

    a. Place the main turbine on the turning gear
    b. Draw a condenser vacuum
    c. Warmup the main steam headers
    d. Increase power to the point of adding heat

e. Turbine shell warming

f. Turbine chest warming

g. Rolling the turbine off the turning gear to rated speed

h. Synchronize the main generator to the grid

i. Shift to automatic rod control

j. Place the Moisture Separator Reheater in service

k. Shift to the Main Feedwater Flow Control Valves in Auto

5. Discuss the major precautions associated with OP 3204, At Power Operations, dealing with:

a. Rate of power level increase (memorization of associated figure is not required)

b. DNB limits

c. Tavg, Pzr Level, Pzr Press, SG Level, Control Rod Position

d. Parameters which limit turbine loading

e. AFD limits

f. QPTR limits

g. Boron concentration changes

h. Condensate demineralizer limits

i. Operations below rated frequency (only operating limits for indefinite operation need be memorized)

6. Discuss the procedural steps for Reduced Temperature Return To Power operations.

7. Discuss the precautions associated with OP 3206, Plant Shutdown.

8. State the power level at which the following are to occur:

    a. Placing rod control system in MANUAL
    b. Removing the MSR's from service
    c. Transferring SG level control to the bypass valves
    d. Tripping the Main Turbine

9. Discuss the precautions associated with OP 3207, Reactor Shutdown

ABNORMAL OPERATING PROCEDURES OBJECTIVES

The prospective Shift Advisor shall be able to:

1. State the action required by AOP 3550 for a failure of the turbine to trip.

2. State the action to be completed within 5 minutes on a failure of an RCP seal per AOP 3554.

3. State the value which reactor power must be below before tripping the affected RCP, per AOP 3554.

4. State when the reactor must be tripped on a Reactor Coolant Leak, per AOP 3555.

5. State when the reactor must be tripped on a Steam Generator Tube Leak, per AOP 3556.

6. State the Entry conditions for AOP 3566, Immediate Boration.

EMERGENCY OPERATING PROCEDURES OBJECTIVES

The prospective Shift Advisor shall be able to:

1. State the four basic categories of emergency transients combated by the Westinghouse ERG based Emergency Operating Procedures.

2. State the six Critical Safety Functions in order of priority.

3. State the "rules of usage" for the Critical Safety Function Status Trees.

4. State when a foldout page for the EOP's is applicable.

5. State the two procedures to which entry into the Emergency Response Procedures (EOP's) are limited.

6. Discuss the relationship between the EOP's and Technical Specifications.

7. State the high level summary of actions performed in EOP 35 E-0.

8. State the high level summary of actions performed in EOP 35 E-1, Loss of Reactor or Secondary coolant.

9. State the high level summary of actions performed in EOP 35 E-2, Faulted Steam Generator Summary.

10. State the high level summary of actions performed in EOP 35 E-3, Steam Generator Tube Rupture.

11. State the time limit to complete the portion of E-3 up to and including the stopping of the ECCS pumps and the reason for the time limit.

12. Discuss the use of the Reactor Coolant Loop Isolation Valves in the Unit 3 EOP's.

SIMULATOR TRAINING OBJECTIVES

The prospective Shift Advisor shall observe:

1. A reactor startup commencing with Control Bank D rods at a height of no greater than 0 steps.

2. A plant startup in accordance with OP 3203.

3. A load increase from 20 to 50 percent power using dilution to maintain Axial Flux Difference.

4. A load decrease of at least 25 percent power above 20 percent power using boration to maintain Axial Flux Difference.

5. A plant shutdown from 20 percent power through step 5.29 of OP 3206.

6. A reactor shutdown through step 5.7 of OP 3207.

Millstone Nuclear Power Station, Unit No. 3
Licensee Qualification Branch

QUESTIONS 630.15:

When available, provide a copy of written examination(s) administered to the Shift Advisors and the results of the examinations(s).

RESPONSE:

A copy of the written examination administered to the Shift Advisors and the results of that examination will be provided for NRC review upon program completion.

Millstone Nuclear Power Station, Unit No. 3
Licensee Qualification Branch

QUESTION 630.16:

When available, provide copies and notes of the oral/simulator evaluation administered to the shift advisors.

RESPONSE:

Copies of and notes of the oral/simulator evaluation administered to the Shift Advisors will be provided for NRC review upon program completion.

Millstone Nuclear Power Station, Unit No. 3
Licensee Qualification Branch

QUESTION 630.17:

Provide a description of the training program presented to the operating shift crews to assure that they understand the role of the Shift Advisors.

RESPONSE:

The operating shift crews will be briefed by the Operations Supervisors as to the responsibilities and duties of the Shift Advisor (SA). This briefing will include:

- Discussions of the requirement to have an SA on certain shifts.
- Identification that the SA reports in the line management to the Operations Supervisor and functionally to the Shift Supervisor (SS).
- Discussion of the SA's role as an advisor in terms of providing recommendations and assistance in decision making to ensure safe plant operations.
- Discussion of the SA's responsibility to contact the Operations Supervisor or Duty Officer in the event the SS or SA cannot reach agreement on a recommendation that the SA believes is important to safety.
- Discussion of the SS's responsibility to utilize the SA for shift activities.
- Discussion of the benefits of having a previously licensed SRO actively participating in shift activities.
- Identification that the SA shall not direct the activities of licensed operators or perform any manipulations requiring a licensed operator.

Millstone Nuclear Power Station, Unit No. 3
Licensee Qualification Branch

QUESTION 630.18:

Provide a statement regarding the medical qualification requirements for the Shift Advisors.

RESPONSE:

The Shift Advisor will be required to meet the medical requirements that are specified for Reactor Operators/Senior Reactor Operators. These medical requirements are outlined in ACP 1.17 "Medical Exam and Form 396 Requirements for Prospective and Previously Licensed Operators".

Millstone Nuclear Power Station, Unit No. 3
Licensee Qualification Branch

QUESTION 630.19:

Provide a description of the procedures that will be used to evaluate the performance of the Shift Advisors during plant start-up.

RESPONSE:

The performance of the Shift Advisors (SA) will be evaluated on a quarterly basis by the Shift Supervisor to whom he is assigned. The Operations Supervisor will review and approve the evaluations. The evaluations will be performed using the standard Northeast Utilities performance appraisal process. Emphasis will be placed on duties and responsibilities as delineated in Millstone Unit No. 3 Operating Procedure OP 3262, "Operations Shift Advisor."