

# GPJ Nuclear CONTROLLED COPY

Number  
6211-ADM-2611.02

Title  
TMI-I SENIOR REACTOR OPERATOR REPLACEMENT TRAINING PROGRAM

Revision No.  
1-00

Applicability/Scope  
SENIOR REPLACEMENT OPERATOR CANDIDATES

Responsible Office  
TMI TRAINING DEPT.

This document is important to safety  Yes  No

Effective Date  
March 21, 1983

### List of Effective Pages

1.0	1-00	23.0	1-00	45.0	1-00
2.0	1-00	24.0	1-00	46.0	1-00
3.0	1-00	25.0	1-00	47.0	1-00
4.0	1-00	26.0	1-00	48.0	1-00
5.0	1-00	27.0	1-00	49.0	1-00
6.0	1-00	28.0	1-00	50.0	1-00
7.0	1-00	29.0	1-00	51.0	1-00
8.0	1-00	30.0	1-00	52.0	1-00
9.0	1-00	31.0	1-00		
10.0	1-00	32.0	1-00		
11.0	1-00	33.0	1-00		
12.0	1-00	34.0	1-00		
13.0	1-00	35.0	1-00		
14.0	1-00	36.0	1-00		
15.0	1-00	37.0	1-00		
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*John P. Mgr.*  
*S. L. Newton*

	Signature	Concurring Organizational Element	Date
Originator	<i>Nelson Brown</i>		3-11-83
Concurred by	<i>Bruce Leonard</i>		3-11-83
Approved by	<i>S. L. Newton</i> <i>John P. Mgr.</i>	<i>Acting Mgr. Pt. Tomy, TMI</i> <i>MGR PLANT OPS</i>	3/14/83 3/21/83

FORM 1000 PCL 1218 01-1 (2-82)

A0001051 3-82

TITLE: TMI-I SENIOR REACTOR OPERATOR REPLACEMENT TRAINING PROGRAM1.0 PURPOSE

The purpose of the Senior Reactor Operator Replacement Training Program is to prepare licensed reactor operators to perform senior reactor operator duties, improve skills in situation and problem assessment, and develop supervisory skills.

2.0 SCOPE/APPLICABILITY

This procedure applies to all Senior Replacement Operator candidates designated by the Manager, Plant Operations.

3.0 DEFINITIONS

- 3.1 Candidate - An individual designated by the Manager, Plant Operations as a potential Senior Reactor Operator.
- 3.2 Extra-Person - A candidate assigned to an operating shift for on-the-job training whose presence is not required to perform specific, non-training related tasks.
- 3.3 a) Task Examiner - Any qualified SRO.  
b) Alternate Task Examiner - Those individuals assigned by the Shift Supervisor in writing as being authorized to conduct a checkout on a specific OJT task and to certify by his signature on the OJT sheet that the task has been satisfactorily completed. The alternate task examiner may be any individual who the Shift Supervisor determines through experience or personal knowledge possesses requisite knowledge of the task to properly conduct the checkout.
- 3.4 Instructor - A licensed or certified SRO member of the Operator Training Section of the Training Department or a "guest" instructor whose expertise in a specific subject area, e.g., a systems engineer, has resulted in his assignment, approved in writing by the Operator

Training Manager or Manager Plant Training to present material on that subject area.

With the exception of guest lecturers, senior licensed or certified instructors must teach systems, integrated responses and transient behavior to licensed operators.

#### 4.0 RESPONSIBILITIES

4.1 The Shift Supervisor is responsible for the following:

- a) Assignment of individuals as alternate task examiners. (A copy of this assignment list shall be forwarded to the Supervisor, Licensed Operator Training.)
- b) Designation of his shift foreman as the OJT final examiner (if applicable). (A copy of this authorization shall be forwarded to the Supervisor, Licensed Operator Training.)
- c) Verifying an adequate level of achievement and progress by the license candidates on the OJT phase of the program.

4.2 The Supervisor, Licensed Operator Training is responsible for the following:

- a) General supervision of the development and conduct of the Replacement SRO Training Program.
- b) Approval of the development, coordination, scheduling and administration of the Replacement SRO Training Program, including course outlines, lesson plans, student handouts, simulator training, and evaluation exams.
- c) Scheduling classes, students, classroom and facilities necessary to conduct the training program.
- d) Interfacing with the Operations Department in all matters impacting the training programs.
- e) Assuring that the program content is updated and revised to meet current requirements and supervising revision of the program content, descriptions, lesson plans, and exams.



- f) Evaluation of course instruction and license candidate progress to determine the effectiveness of the training program and reporting these evaluations to the Operator Training Manager.
  - g) Maintaining the necessary records and reports of training.
  - h) Developing and conducting oral exams.
  - i) Evaluation of candidate critiques of the training received.
- 4.3 The Operator Training Manager is responsible for the following:
- a) Assuring the quality of the Replacement SRO Training Program by written approval of materials including course outline, lesson plans, student handouts, simulator training, quizzes and exams and their compatibility with the Replacement SRO Training Program.
  - b) Certification of candidates in accordance with AP 1058.
- 4.4 The Manager, Plant Training is responsible for the following:
- a) To ensure that the training program is developed to meet the requirements established by the Director-TMI I, through the Manager, Plant Operations, and that proper records and documentation are provided and maintained.
  - b) Certification of candidates in accordance with AP 1058.
- 4.5 The Manager, Plant Operations is responsible for the following:
- a) To ensure that the overall level of training of plant operators is satisfactory through the approval of program content, schedules and administrative procedures.
  - b) To evaluate candidates at the completion of the simulator program on their proficiency to direct licensed activities.
  - c) Certification of candidates in accordance with AP 1058.
- 4.6 The Director-TMI I is responsible for the following:
- a) Final certification of candidate in accordance with AP 1058.



5.0 REFERENCES

- 5.1 American Nuclear Standard (ANS) 3.1, Rev. 01/17/78
- 5.2 Code of Federal Regulations, Section 10CFR55, Rev. 9/1/80
- 5.3 Administrative Procedure 1058

6.0 ATTACHMENTS

- 6.1 Appendix A - On the Job Checklists
- 6.2 Appendix B - Typical SRO Replacement Operator Training Schedule
  
- 6.3 Appendix C - Candidate Progress Report & Exam Summary Sheets
- 6.4 Appendix D - Simulator Training

7.0 PROGRAM DESCRIPTION

7.1 Prerequisites:

All candidates for Senior Reactor Operator shall:

- 1. Have a high school diploma or equivalency.
- 2. Meet (or will meet prior to SRO License application) current Regulatory Guide 1.8 requirements (if any) for minimum number of semester hours of college level education in designated technical subjects.
- 3. Meet the following experience requirements:
  - a) Have four 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. A maximum of two 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.
  - b) Three months of performing the duties of a Senior Reactor Operator while under instruction as an extra person in the control room; and



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- c) Have at least one year of experience as a licensed operator at TMI-I; or
  - d) At least an RO license or equivalent military experience at some other plant and at least six months in Unit I followed by a mock exam to determine capability of completing a Unit I SRO replacement program prior to entering the program; or
  - e) Possess a degree in engineering or applicable sciences.
4. Satisfactorily meet the minimum medical requirements for licensed personnel as specified in 10CFR55.

7.2 Sequence: (See Appendix B)

1. The program consists of the following:
- a) Classroom (approximately 14 weeks)
  - b) OJT - 3 months (Runs concurrent with classroom for 2 of the three months required. The additional month is made up before the program, after the program or as authorized by the Manager, Plant Operations.
  - c) Decision Analysis (3 days)
  - d) Supervisory Development (1 week)
  - e) Simulator Training (2 weeks)

The program concludes with the NRC examination.

7.3 Program Objectives:

1. Conduct training in the subject areas listed below to enable the trainee to demonstrate through written and oral examinations, completion of specified practical factors, and completion of an operating examination, the ability to direct the activities of licensed operators safely and competently and to obtain an NRC Senior Reactor Operator license.

Subject Areas

- a) Supervisory course in decision analysis/supervisory development.

- b) Supervisory control room and plant operating experience, directed by specific task assignments and licensed senior operators.
  - c) Reactor Theory
  - d) Plant Design and Operating Characteristics
  - e) Plant Control Systems
  - f) Radiation Control and Safety
  - g) Fluid Flow, Thermodynamics and Heat Transfer
  
  - h) Plant Transients
  - i) Recognizing and Mitigating Core Damage
  - j) Simulator Training
2. Certify the competency of applicants to direct the operation of the plant safely and efficiently by satisfactory achievement of specified learning objectives, which are administratively documented.

7.4 Outline:

1. On-the-Job Training

- a) Secondary Systems
- b) Primary Systems
- c) Administrative Procedures
- d) Normal, Abnormal and Emergency Operating Procedures
- e) Technical Specifications
- f) Shift Foreman Duties

2. Classroom Training

The primary purpose of the classroom training is to integrate previous system knowledge with overall plant operation and operating procedures.

- a) Reactor Theory Review  
 Neutrons and Neutron Interactions  
 Solving Exponential Equations  
 Multiplication Factors

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Reactor Kinetics

Reactivity

Subcritical Multiplication

Neutron Sources

Reactor Period and Start Up Rate

Problem Solving in Reactor Kinetics

Reactivity Coefficients

Flux Distribution

DNB,  $F_Q$ ,  $F_H$

Reactor Control

Fuel Assemblies and Control Rods

Transients and Effects on Fuel Assemblies & Control Rod

Fission Product Poisons

Reactor Transient Analysis

Excore Nuclear Instruments

Fission Product Gasses and Fission Products

b) Heat Transfer and Fluid Flow, Thermodynamics

Heat Transfer

Properties of Fluids

Steam Tables

Core and Plant Parameters, Normal and Transient

c) General Categories

Facility Incidents

Emergency Plan

Security

Technical Specifications

Administrative Procedures

Emergency, Abnormal and Normal Operating Procedures,

including Abnormal Transient Operating Guidelines

Primary and Secondary Chemistry Review



Recognition and Mitigation of Consequences of Severe Core  
Damage

Change Modifications

Code of Federal Regulations

d) Radiation Control and Safety

Radioactivity and Radiation

Effects of Radiation

Radiation Exposure Limits

Radiation Protection Problems

Radiation Instruments

e) Reactor Control

RCS Instrument Failures

Integrated Control System (ICS)

ICS Transients

7.5 Administration

7.5.1 Program Presentation

1. On-the-Job Training

- a) The on-the-job training program consists of preselected and day to day tasks which involve participation by the Senior Reactor Operator (SRO) License candidate in Shift Foreman related activities designed to reinforce classroom study, maximize new learning experiences, and stimulate interest. (4 hours per day)
- b) Primary verification of OJT tasks shall be by oral checkout of the SRO licensee candidate on individual task items by a task examiner or alternate task examiner as designated in writing by the Shift Supervisor using the Summary Sheet in Appendix C.



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- c) Final verification shall be by oral and written checkout of task sheet sections by the Shift Supervisor (or Shift Foreman as designated in writing by the Shift Supervisor, using the Summary Sheet in Appendix C.
  - d) During the OJT phase the license candidates shall be assigned to various shifts. During this phase, the candidate shall assume Shift Foreman duties under instruction and perform other tasks as assigned. (Example shown in Appendix B.)
2. Classroom Training
- a) The classroom training shall be approximately 14 weeks, (4 hours per day) in duration, with material presented by qualified instructors using approved lesson plans. All portions of classroom training requiring self study shall be monitored by a qualified instructor who shall be available for individual consultation. The schedule in Appendix B allows for self study but is not reflected on the schedules.
  - b) The SRO license candidate will be responsible for all material presented. If a candidate misses more than one consecutive week, the Supervisor, Licensed Operator Training will review the situation to determine if the candidate will be able to catch up with his class, and make a recommendation to the Operator Training Manager and the Manager, Plant Operations regarding continuation in the program.



3. Simulator

A two (2) week Simulator Program will be utilized to reinforce classroom and OJT concepts and to develop an understanding of integrated plant response. In the event of an excessively large class, the SRO license candidates will be divided into groups of suitable size for simulator operations, with rotation to plant operations as required.

Evolutions required during Simulator training are specified in Appendix E.

- a) Candidates for SRO will be evaluated by the Manager, Plant Operations at the completion of the simulator program on their proficiency to direct licensed activities. This evaluation is part of the certification process.

7.5.2 Evaluation Criteria

1. On-The-Job Training

- a) Comprehensive oral checkouts shall be administered by the task examiners for specific task sign-offs and documented by the examiner's signature.
- b) The ultimate responsibility for determining adequate achievement by the student rests with the Shift Supervisor who shall evaluate the performance of the SRO license candidate by final oral check out and/or written questioning on each task sheet, using the Oral Examination Summary Sheet in Appendix C. This form shall be retained in the candidate's permanent training file.
- c) All tasks which cannot be performed are to be simulated. Performance or simulation of a task

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shall not alone constitute successful completion of the task. Discussion and oral questioning by the task and final examiners must be included to substantiate successful completion of the task.

- d) Individuals failing to achieve a "pass" grade on "Final Verification" checkouts shall be:
  - 1. Informed of their weak areas and given direction on the material that they should study to upgrade their performance.
  - 2. Re-examined within two weeks of the initial failure.

NOTE: Details of weak areas and scheduled date for re-exam must be forwarded to the Supervisor, Licensed Operator Training.

If an individual fails the second section check-out the Manager, Plant Operations and the Operator Training Manager shall review the SRO license candidate's overall progress and performance and determine the corrective action to be taken.

2. Written Examinations

Written examinations shall be administered by representatives of the Operator Training Section on a weekly basis. Questions shall cover that material presented in the classroom, material specified for self study, and the material identified on the task sheets.

A passing grade of 80% is mandatory for all written examinations. A grade of less than 80% will require candidate counselling by the instructor responsible

standard (includes) PWS 5210-001 / 00 000



for noted weak area(s) on the candidate's exam with suggested corrective actions that will upgrade the individual's performance. A re-exam shall be administered within two weeks. If an individual fails the second exam the Manager, Plant Operations and the Operator Training Manager shall evaluate the SRO license candidate's performance and decide on the corrective action to be taken.

3. Final Examination

A comprehensive written and oral examination shall be administered by the Training Department at the conclusion of the training program. An 80% overall average and a 70% on individual sections is required for the satisfactory completion of the written phase. The oral examination should normally consist of two phases; a "walk through" phase, administered by an Instructor designated by the Supervisor, Licensed Operator Training, and a "board" composed of Instructors designated by the Supervisor, Licensed Operator Training, and the Manager, Plant Operations or his designated representative. A "pass" grade is required for the oral exam substantiated by documentation with the Oral Examination Summary Sheets in Appendix C.

Upon completion of these exams, the SRO license candidate's training files and Training Department recommendations shall be forwarded to the Director - TMI I, who shall certify the candidate for NRC examination or, in the case of unsatisfactory completion of the program, decide on the corrective action to be taken.

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## 7.6 Changes and Lesson Plan Correction

7.6.1 The program shall be maintained to reflect the following:

- a) Changes in regulatory requirements
- b) Changes in applicable codes, standards and guides
- c) Significant experiences at the facility
- d) Significant experience throughout the industry
- e) Remedial action recommended by review/audit findings
- f) Regularly scheduled participant critiques.

Changes will be incorporated per the applicable Training Department Procedure.

7.6.2 Changes in the program content may be necessitated on an individual basis due to the following:

- a) unplanned equipment failure or problems
- b) operational commitments
- c) procedural changes or deletions
- d) candidate qualifications and professional knowledge

The request for deletion(s) of any requirements from this program shall be submitted by the Supervisor, Licensed Operator Training with concurrence from the license candidate. Approval of the requested deletions shall be made by the Operator Training Manager and the Manager, Plant Operations. When approved the deletion letter shall be kept in the Training Department files.

Deletions due to equipment problems or plant operational commitments shall only be approved for situations where plant conditions cannot be established within a reasonable amount of time before required certification. In no case shall deletions be authorized during a qualification program when required conditions are expected prior to certification.

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When deletions are requested due to prior candidate experience an assessment of the candidates knowledge and previous operating experience and qualifications shall be made by the Supervisor, Licensed Operator Training. By signing the deletion letter, the Supervisor, Licensed Operator Training is verifying knowledge level and operating experience through oral or written examination and/or personal review of candidates records.

Any deletions to this program shall be made by the use of Deletion Letter format in Appendix "D".

#### 7.7 Program Scheduling

The program will normally be scheduled on an annual basis.

#### 7.8 Records and Reports

1. A Training Program Administrative form shall be completed and submitted to the Administrative Section for each classroom lecture or lesson by the instructor who presented the material.
2. Current and past schedules, lesson plans, student handouts, completed OJT task sheets, exam keys and completed exams and quizzes, both written and oral, as well as any additional pertinent qualification records shall be maintained on file in the Training Department.
3. A copy of the Candidate Progress Report from Appendix C shall be initiated on each candidate and updated as follows:
  - a) Following each week.
  - b) Following the completion of simulator training.
  - c) Following the final examination.

The Candidate Progress Report shall be maintained at the training center. Copies of the updated report shall be submitted by the Supervisor, Licensed Operator Training to the Manager, Plant Training and Manager, Plant Operations via the Operator Training Manager on a monthly basis, or more frequently



on a case-by-case basis if requested by any of the reviewing individuals.

## 7.9 Evaluation

1. At the conclusion of each month of training the license candidates will be asked to complete a training critique form to assist in program evaluation. The completed critiques shall be reviewed by the Supervisor, Licensed Operator Training and forwarded, along with recommendations or corrective action taken to the Manager, Plant Training, via the Operator Training Manager.
2. The Replacement SRO Training Program and its contents shall be reviewed and updated at the end of each program presentation by the instructors presenting the course and the Supervisor, Licensed Operator Training. He shall report the results of this review, along with recommendations or corrective action taken to the Manager, Plant Training, via the Operator Training Manager. During the presentation of the course no changes in course content shall be made without prior approval of the Operator Training Manager.
3. Annually an internal team will be formed by the Supervisor, Licensed Operator Training to review the Replacement SRO Training Program. The review team will consist of instructors from the Operator Training Section. The team will assess the adequacy of the program for:
  - Meeting new requirements
  - Adequacy of records
  - Quality of material and presentations
  - Effectiveness

In conducting the review, the team may use any records maintained by the Training or Operations Departments to assist them. These may include:

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NRC Inspections  
QA Audits  
Other Audits  
Regulatory Changes  
Industry Experience  
License Candidate Critiques

The review team shall report the results to the Manager, Plant Training and the Manager, Plant Operations via the Supervisor, Licensed Operator Training and the Operator Training Manager.

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APPENDIX A  
ON-THE-JOB TRAINING CHECKLISTS

This sheet lists Administrative Procedures which must be read, discussed and walked through on shift.

NAME: \_\_\_\_\_ DATE STARTED: \_\_\_\_\_

		<u>DATE</u>	<u>TASK EXAMINER SIGNATURE</u>
1.0	Read and discuss the following Administrative Procedures:		
1.01	Document Control 1001	_____	_____
1.02	Tagging 1002	_____	_____
1.03	Station Organization and Chain of Command 1009	_____	_____
1.04	Technical Specifications Surveillance Program 1001J	_____	_____
1.05	Shift Relief and Log Entries 1012	_____	_____
1.06	Bypass and Safety Functions and Jumper Control 1013	_____	_____
1.07	Operator at the Controls 1028	_____	_____
1.08	Conduct of Operations 1029	_____	_____
1.09	Record Retention 1024	_____	_____
1.10	Equipment Control 1011	_____	_____
1.11	Equipment Control (tagging) 1037	_____	_____

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Name/Date

\*Forward completed Oral Examination Summary to the Supervisor, Licensed Operator Training.

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APPENDIX A  
ON-THE-JOB TRAINING CHECKLISTS

This sheet lists Emergency and Abnormal Procedures which must be read, discussed and walked through on shift.

NAME: \_\_\_\_\_

DATE STARTED: \_\_\_\_\_

		<u>DATE</u>	<u>TASK EXAMINER SIGNATURE</u>
2.0	Walk through and discuss all Emergency & Abnormal Procedures:		
2.01	Unanticipated Criticality 1203-10	_____	_____
2.02	Steam Supply System Rupture 1203-23	_____	_____
2.03	OTSG Tube Rupture 1202-5	_____	_____
2.04	Loss of Intermediate Cooling 1202-17	_____	_____
2.05	Inadequate Core Cooling 1202-39	_____	_____
	a. Find all indications mentioned.		
	b. Locate all items used to verify that automatic actions have occurred.		
	c. Locate all controls necessary to perform all immediate manual and subsequent actions.		
	d. Insure you can walk through all Emergency and Abnormal Procedures and note indicators, check automatic actions, and simulate performing manual actions <u>from memory</u> .		

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This sheet lists Emergency and Abnormal Procedures which must be read,  
discussed and walked through on shift.

NAME: \_\_\_\_\_

DATE STARTED: \_\_\_\_\_

		<u>DATE</u>	<u>TASK EXAMINER SIGNATURE</u>
3.0	Walk through and discuss all Emergency and Abnormal Procedures:		
3.01	Loss of Instrument Air 1202-36	_____	_____
3.02	Cooldown Outside the Control Room 1202-37	_____	_____
3.03	Inadvertent Closure of Main Steam Isolation Valve 1202-42	_____	_____
3.04	High Activity in Reactor Coolant 1202-11	_____	_____
3.05	Excessive Radiation Levels 1202-12	_____	_____
	a. Find all indications mentioned.		
	b. Locate all items used to verify that automatic actions have occurred.		
	c. Locate all controls necessary to perform all immediate manual and subsequent actions.		
	d. Insure you can walk through all Emergency and Abnormal Procedure and note indicators, check automatic actions, and simulate performing manual actions <u>from memory</u> .		

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This sheet lists Emergency and Abnormal Procedures which must be read, discussed and walked through on shift.

NAME: \_\_\_\_\_

DATE STARTED: \_\_\_\_\_

		<u>DATE</u>	<u>TASK EXAMINER SIGNATURE</u>
4.0	Walk through and discuss all Emergency and Abnormal Procedures:		
4.01	Plant Response to Penetration of Protected Area 1202-13	_____	_____
4.02	Blackout 1202-2	_____	_____
4.03	Blackout 1202-2A	_____	_____
4.04	Fire 1202-31	_____	_____
4.05	Flood 1202-32	_____	_____
4.06	earthquake 1202-30	_____	_____
4.07	Low System (grid) Voltage 1203-41	_____	_____
	a. Find all indications mentioned.		
	b. Locate all items used to verify that automatic actions have occurred.		
	c. Locate all controls necessary to perform all immediate manual and subsequent actions.		
	d. Insure you can walk through all Emergency and Abnormal Procedure and note indicators, check automatic actions, and simulate performing manual actions <u>from memory</u> .		

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This sheet lists Emergency and Abnormal Procedures which must be read, discussed and walked through on shift.

NAME: \_\_\_\_\_ DATE STARTED: \_\_\_\_\_

		DATE	TASK EXAMINER SIGNATURE
5.0	Walk through and discuss all Emergency and Abnormal Procedures:		
5.01	Reactor Trip 1202-4	_____	_____
5.02	Turbine Trip 1202-3	_____	_____
5.03	Loss of RC flow/RCP trip 1202-14	_____	_____
5.04	Loss of Reactor Coolant Makeup 1203-15	_____	_____
5.05	CRD Equipment Failures 1202-8	_____	_____
	a. Find all indications mentioned.		
	b. Locate all items used to verify that automatic actions have occurred.		
	c. Locate all controls necessary to perform all immediate manual and subsequent actions.		
	d. Insure you can walk through all Emergency and Abnormal Procedure and note indicators, check automatic actions, and simulate performing manual actions <u>from memory</u> .		

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This sheet lists Emergency and Abnormal Procedures which must be read, discussed and walked through on shift.

NAME: \_\_\_\_\_

DATE STARTED: \_\_\_\_\_

	DATE	TASK EXAMINER SIGNATURE
6.0 Walk through and discuss all Emergency and Abnormal Procedures:		
6.01 Loss of RC/RC Pressure 1202-6A	_____	_____
6.02 Loss of RC/RC Pressure 1202-6B	_____	_____
6.03 Loss of RC/RC Pressure 1202-6C	_____	_____
6.04 Pressurizer Failure 1202-29	_____	_____
6.05 Loss of Feed to OTSG 1202-26A	_____	_____
6.06 Loss of Feed to OTSG 1202-26B	_____	_____
6.07 Load Rejection 1203-1	_____	_____
6.08 High Cation Conductivity in Condensate 1203-5	_____	_____
a. Find all indications mentioned.		
b. Locate all items used to verify that automatic actions have occurred.		
c. Locate all controls necessary to perform all immediate manual and subsequent actions.		
d. Insure you can walk through all Emergency and Abnormal Procedure and note indicators, check automatic actions, and simulate performing manual actions <u>from memory</u> .		

\*FINAL VERIFICATION \_\_\_\_\_  
Name/Date

\*Forward completed Oral Examination Summary to the Supervisor, Licensed Operator Training.

12000 10000 PWS 1216 04 / 08 82

APPENDIX A  
ON-THE-JOB TRAINING CHECKLISTS

This sheet lists Emergency and Abnormal Procedures which must be read, discussed and walked through on shift.

NAME: \_\_\_\_\_

DATE STARTED: \_\_\_\_\_

		<u>DATE</u>	<u>TASK EXAMINER SIGNATURE</u>
7.0	Walk through and discuss all Emergency and Abnormal Procedures:		
7.01	Loss of Decay Heat Removal 1202-35	_____	_____
7.02	SSCC System Failure 1203-21	_____	_____
7.03	Control Room HVAC 1203-24	_____	_____
7.04	Vibration and Loose Parts 1203-40	_____	_____
7.05	River Water Failure 1203-19	_____	_____
7.06	NSCC System Failure 1203-20	_____	_____
7.07	RC Pump & Motor Malfunctions 1203-16	_____	_____
	a. Find all indications mentioned.		
	b. Locate all items used to verify that automatic actions have occurred.		
	c. Locate all controls necessary to perform all immediate manual and subsequent actions.		
	d. Insure you can walk through all Emergency and Abnormal Procedure and note indicators, check automatic actions, and simulate performing manual actions <u>from memory</u> .		

\*FINAL VERIFICATION \_\_\_\_\_  
Name/Date

\*Forward completed Oral Examination Summary to the Supervisor, Licensed Operator Training.

FORM 1000 PWS 12/10/81 / 89 808





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REPLACEMENT TRAINING PROGRAM

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1-00

## APPENDIX A

### OJT CHECKLIST

Perform the following evolutions  
and attach completed reading sheets:

Candidates  
Signature Upon  
Completion

1. Take AO Outbuilding Readings  
For all shifts

(7-3)  
(3-11)  
(11-7)

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

2. Take AO Primary Plant Readings  
For all shifts

(7-3)  
(3-11)  
(11-7)

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

3. Take AO Secondary Plant Readings  
For all shifts

(7-3)  
(3-11)  
(11-7)

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

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REPLACEMENT TRAINING PROGRAM

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APPENDIX A

SHIFT FOREMAN TRAINEE DUTIES CHECKLIST

Signature  
(SF/SS)

1. Conduct shift relief as a shift foreman. \_\_\_\_\_
2. Make a left hand log entry in accordance with AP 1012. \_\_\_\_\_
3. Review one complete set of operator reading sheets. \_\_\_\_\_
4. Demonstate proper handling of a Chemical Deviation Sheet. \_\_\_\_\_
5. Demonstrate proper handling of Tech Spec surveillance data and schedules. \_\_\_\_\_
6. Demonstate proper handling of ops surveillance data and scheduling. \_\_\_\_\_
7. Demonstrate proper handling of ISI data in the alert range. \_\_\_\_\_
8. Demonstrate correct handling of work request (completion/initiation). \_\_\_\_\_
9. Demonstrate proper handling of QA hold point stamps. \_\_\_\_\_
10. Make the proper log and checklist entries necessary to complete a valve lineup change without a TCN. \_\_\_\_\_
11. Audit the TCN and STP books. \_\_\_\_\_
12. Properly issue a jumper or lifted lead. \_\_\_\_\_
13. Demonstrate knowledge of all communication systems including NRC phones NAWAS lines, and emergency planning phones. \_\_\_\_\_
14. Demonstrate proper method of recall of plant personnel including use of record-a-phone. \_\_\_\_\_
15. Properly approve and discuss testing requirements for ESAS component tag outs. \_\_\_\_\_
16. Conduct a crew turnover briefing. \_\_\_\_\_
17. Demonstrate knowledge of duties of members on the fire brigade. \_\_\_\_\_

11/20/84 10:50 PM 12/18/87 / D 8M



## APPENDIX B

## TYPICAL REPLACEMENT SRO TRAINING SCHEDULE

## WEEK 1

	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY
0700	REACTOR THEORY 11.2.01.025 11.2.01.036 11.2.01.058 11.2.01.075 11.2.01.076 11.2.01.077	REACTOR THEORY 11.2.01.123 11.2.01.124 11.2.01.133	REACTOR THEORY	REACTOR THEORY	REACTOR THEORY TEST
100	LUNCH	LUNCH	LUNCH	LUNCH	LUNCH
130	QJT	QJT	QJT	QJT	QJT
	SHIFT FOREMAN DUTIES	SHIFT FOREMAN DUTIES	SHIFT FOREMAN DUTIES	SHIFT FOREMAN DUTIES	SHIFT FOREMAN DUTIES
530					



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APPENDIX B

TYPICAL REPLACEMENT SRO TRAINING SCHEDULE

WEEK 2

	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY
0700	REACTOR COOLANT SYSTEM  11.2.01.129	REACTOR COOLANT SYSTEM  11.2.01.131	REACTOR COOLANT PUMPS & MOTORS  11.2.01.130	OTSG'S  11.2.01.086	WEEKLY TEST
1100	LUNCH	LUNCH	LUNCH	LUNCH	LUNCH
1130	OJT  REVIEW PREVIOUS WEEKS TEST	OJT  AP 1002 SWITCHING & TAGGING TEST	OJT  AP 1001 DOCUMENT CONTROL	OJT  AP 1012 SHIFT RELIEF AND LOGS  AP 1009 ORGANIZATION	OJT  SHIFT FOREMAN DUTIES
530					

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APPENDIX B

TYPICAL REPLACEMENT SRO TRAINING SCHEDULE

WEEK 3

	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY
0700	CONTROL ROD DRIVE 11.2.01.013	CONTROL ROD DRIVE	TECH SPECS - DEFINITIONS - SAFETY LIMITS - LIMITING - SAFETY SYS. SETTINGS	REACTOR PROTECTION SYSTEM 11.2.01.132	WEEKLY TEST
1100	LUNCH	LUNCH	LUNCH	LUNCH	LUNCH
1130	OJT REVIEW PREVIOUS WEEKS TEST	OJT OPS ADMIN TRAINING - MGR OPS	OJT SHIFT FOREMAN DUTIES	OJT OUT BLDG. LOGS	OJT AP 1001J T.S. SURV AP 1013 BYPASS, SAFETY & JUMPER AP 1028 OPER AT THE CONTROL
1530					

11/18/82 10:00 AM

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## APPENDIX B TYPICAL REPLACEMENT SRO TRAINING SCHEDULE

WEEK 4

	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY
0700	RADWASTE - LIQUID 11.2.01.120	RADWASTE - GAS 11.2.01.119	CFR TRAINING - 10CFR50 - 10CFR55 - 10CFR21 - 10CFR100	TECH SPECS 3.1.1 - 3.1.11 TABLE 4.1-3	WEEKLY TEST
100	LUNCH	LUNCH	LUNCH	LUNCH	LUNCH
130	OJT REVIEW PREVIOUS WEEKS TEST	OJT SHIFT FOREMAN DUTIES	OJT 1ST ORAL BOARD	OJT OTHER DEPT. HEAD INTERVIEWS	OJT E.P. & ABN QUAL CARD
530					

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APPENDIX B

TYPICAL REPLACEMENT SRO TRAINING SCHEDULE

WEEK 5

	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY
0700	LIQUID & GASEOUS RELEASES  11.2.01.059	IWTS & IWFS INDUSTRIAL WASTE SYSTEM  11.2.01.052	TECH SPECS  3.1.12 3.2 3.3 3.4 3.5	INCORE INSTR. -PEAKING FACTOR -SPND -FQ, AH -3D PWR MAP -PHYSICS TESTING  11.2.01.050	WEEKLY TEST
1100	LUNCH	LUNCH	LUNCH	LUNCH	LUNCH
130	OJT  REVIEW PREVIOUS WEEKS TEST	OJT  IWT & IWFS OPERATIONS	OJT  SHIFT FOREMAN DUTIES	OJT  SECONDARY LOGS	OJT  TURBINE TRAINING -EXCITATION -H2 SEAL OIL -STATOR COOL
530					

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## APPENDIX B

## TYPICAL REPLACEMENT SRO TRAINING SCHEDULE

## WEEK 6

	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY
0700	TECH SPECS 3.5.2 4.7 Table 4.1.2 (items 1&2)	FUEL HANDLING SYSTEMS *-W.Cotters Book 11:2.01.038	EMERGENCY DIESELS 11.2.01.027 11.2.01.022 11.2.01.023	RADIATION MONITORING SYSTEM 11.2.01.118	WEEKLY TEST
1100	LUNCH	LUNCH	LUNCH	LUNCH	LUNCH
1130	OJT	OJT	OJT	OJT	OJT
	REVIEW PREVIOUS WEEKS TEST	FUEL HANDLING OPERATIONS ON S.F. BRIDGE	OPS ADMIN TRAINING MGR OPS	SHIFT FOREMAN DUTIES	PRIMARY LOGS
530					



APPENDIX B  
TYPICAL REPLACEMENT SRO TRAINING SCHEDULE

WEEK 7

	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY
0700	RADIATION CONTROL - 10CFR20 - SHIELDING - CALCS.	N.N.I. 11.2.01.079 11.2.01.080	MITIGATING CORE DAMAGE 11.2.01.072 11.2.01.074	MITIGATING CORE DAMAGE RAD HAZARDS & MON RESP. 11.2.01.073	WEEKLY TEST
1100	LUNCH	LUNCH	LUNCH	LUNCH	LUNCH
1130	OJT REVIEW PREVIOUS WEEKS TEST	OJT SHIFT FOREMAN DUTIES	OJT OTHER DEPT. HEAD INTERVIEWS	OJT E.P.'S & ABNORMAL QUAL CARD	OJT MAIN TURB - EHC - LUBE OIL - LUBE OIL BOWSER
1530					

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APPENDIX B  
TYPICAL REPLACEMENT SRO TRAINING SCHEDULE

WEEK 8

	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY
0700	CHEMISTRY -GUIDE -PRIMARY -SECONDARY -REACTIONS  11.2.01.113	HEAT TRANSFER & FLUID DYNAMICS  11.2.01.049	PUMP THEORY & FLUID FLOW  11.2.01.114 11.2.01.115	TECH SPECS #s  3.7 3.9 3.10 3.14 thru 3.17 3.18.1 thru 3.18.7	WEEKLY TEST
1100	LUNCH	LUNCH	LUNCH	LUNCH	LUNCH
1130	OJT  REVIEW PREVIOUS WEEKS TEST	OJT  SHIFT FOREMAN DUTIES	OJT  2nd ORAL BOARD	OJT  EP'S & ABNORMAL QUAL. CARD	OJT  EP'S & ABNORMAL QUAL. CARD
530					

6211-ADM-2611.02 12/10/82



## APPENDIX B

## TYPICAL REPLACEMENT SRO TRAINING SCHEDULE

WEEK 9

	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY
0700	NI'S  11.2.01.082	RCS ELEV AND MANOMETER EFFECTS  11.2.01.117	RADWASTE EVAPS  11.2.01.122	SOLID PLANT OPS  REFER TO OP 1103-5 PRESSURIZER OPS	WEEKLY TEST
100	LUNCH	LUNCH	LUNCH	LUNCH	LUNCH
130	OJT  REVIEW PREVIOUS WEEKS TEST	OJT  SHIFT FOREMAN DUTIES	OJT  SHIFT FOREMAN DUTIES	OJT  EP'S AND ABNORMAL QUAL CARD.	OJT  EP'S AND ABNORMAL QUAL CARD.
530					



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APPENDIX B  
TYPICAL REPLACEMENT SRO TRAINING SCHEDULE

WEEK 10

	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY
0700	TECH SPECS #s 3.21.1 3.21.2 3.22.1.1 thru 3.22.1.4 3.22.2 3.22.2.2 thru 3.22.2.6 3.22.4	VITAL POWER  11.2.01.017 11.2.10.047	COMPUTER	MAKEUP & PURIFICATION 11.2.01.069  DECAY HEAT REMOVAL 11.2.01.019  CORE FLOOD 11.2.01.014	WEEKLY TEST
100	LUNCH	LUNCH	LUNCH	LUNCH	LUNCH
130	OJT  REVIEW PREVIOUS WEEKS TEST	OJT  SHIFT FOREMAN DUTIES	OJT  OPS ADMIN  MGR OPS	OJT  EP'S & ABNORMAL QUAL CARD.	OJT  SHIFT FOREMAN DUTIES
1530					

120000 10000 9000 8000 7000 6000 5000 4000 3000 2000 1000 0



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REPLACEMENT TRAINING PROGRAM

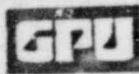
Revision No.  
1-00

## APPENDIX B TYPICAL REPLACEMENT SRO TRAINING SCHEDULE

WEEK 11

	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY
0700	TECH SPECS #s 5.1 thru 5.5 6.2.2 6.6 thru 6.8 6.9.2A 6.9.2B 6.10 6.13	HEAT TRANSFER  11.2.01.047 11.2.01.048	TECH SPECS  ENV T.S. & NPDS PERMIT	ICCW 11.2.01.056  BS 11.2.01.127  DCC & DR 11.2.01.018 11.2.01.020	WEEKLY TEST
1100	LUNCH	LUNCH	LUNCH	LUNCH	LUNCH
1130	OJT  REVIEW PREVIOUS WEEKS TEST	OJT  SHIFT FOREMAN DUTIES	OJT  3rd ORAL BOARD	OJT  EP'S & ABNORMAL QUAL CARD	OJT  QUAL CARD
530					

FORM 1000 PUB 12-66-01 / 02 021



## APPENDIX B TYPICAL REPLACEMENT SRO TRAINING SCHEDULE

WEEK 12

	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY
0700	ESAS  11.2.01.029 11.2.10.013	EFW 11.2.01.028  RR 11.2.01.139  NSCC 11.2.01.084	H2 & N2 11.2.01.083 VALVES 11.2.01.156 11.2.01.157	VENTILATION 11.2.01.110  CT 11.2.01.012 RB 11.2.01.128 11.2.01.125 11.2.01.126	WEEKLY TEST
100	LUNCH	LUNCH	LUNCH	LUNCH	LUNCH
130	OJT  REVIEW PREVIOUS WEEKS TEST	OJT  STUDY	OJT  4th ORAL BOARD	OJT  EP'S & ABNORMAL QUAL CARD	OJT  STUDY
1530					

Standard Form 608 12 1964-05 608



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APPENDIX B

TYPICAL REPLACEMENT SRO TRAINING SCHEDULE

WEEK 13

	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY
0700	ICS RESPONSE  11.2.01.055 11.2.01.030	ICS RESPONSE	OJT QUAL CARD	WEEKLY TEST	E-PLAN TRAINING
1100	LUNCH	LUNCH	LUNCH	LUNCH	LUNCH
1130	OJT  REVIEW PREVIOUS WEEKS TEST	OJT  SHIFT FOREMAN DUTIES	OJT  QUAL. CARD	OJT  SHIFT FOREMAN DUTIES	OJT  E-PLAN TRAINING
530					

Standard Form 88-1 12/16/65 / 10 828

APPENDIX B  
TYPICAL REPLACEMENT SRO TRAINING SCHEDULE

WEEK 14

	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY
0700	PLANT H/U REVIEW  11.2.01.109	PLANT S/D REVIEW	PLANT OPS. REVIEW	NRC QUESTION REVIEW	NRC QUESTION REVIEW
100	LUNCH	LUNCH	LUNCH	LUNCH	LUNCH
130	QJT  PLANT S/U REVIEW	QJT  PLANT C/D REVIEW	QJT  SHIFT FOREMAN DUTIES	QJT  COMPLETE QUAL. CARD	QJT  COMPLETE QUAL. CARD
530					

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APPENDIX B

TYPICAL REPLACEMENT SRO TRAINING SCHEDULE

WEEK 15

	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY
0700	SHIFT FOREMAN DUTIES	DECISION ANALYSIS	DECISION ANALYSIS	DECISION ANALYSIS	SHIFT FOREMAN DUTIES
100					
130					
530					

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APPENDIX B  
TYPICAL REPLACEMENT SRO TRAINING SCHEDULE

WEEK 16

	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY
0700	SUPERVISORY DEVELOPMENT	SUPERVISORY DEVELOPMENT	SUPERVISORY DEVELOPMENT	SUPERVISORY DEVELOPMENT	SUPERVISORY DEVELOPMENT
100	LUNCH	LUNCH	LUNCH	LUNCH	LUNCH
130	SUPERVISORY DEVELOPMENT	SUPERVISORY DEVELOPMENT	SUPERVISORY DEVELOPMENT	SUPERVISORY DEVELOPMENT	SUPERVISORY DEVELOPMENT
530					

FORMS 10000 PUB 1276-010 / 00 0-1

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1-00

APPENDIX B  
TYPICAL REPLACEMENT SRO TRAINING SCHEDULE

WEEK 17

	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY
0700	REVIEW STUDY	REVIEW STUDY	MOCK NRC WRITTEN EXAM	MOCK NRC ORAL EXAM	SHIFT FOREMAN DUTIES
1100					
1130	LUNCH	LUNCH			
1530					

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APPENDIX B

TYPICAL REPLACEMENT SRO TRAINING SCHEDULE

WEEK 18

	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY
0700	SIMULATOR TRAINING	SIMULATOR TRAINING	SIMULATOR TRAINING	SIMULATOR TRAINING	SIMULATOR TRAINING
1100					
130					
530					

11/10/82 11:00 AM 12/10/82 12:00 PM



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TMI-I SENIOR REACTOR OPERATOR  
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APPENDIX B

TYPICAL REPLACEMENT SRO TRAINING SCHEDULE

WEEK 19

	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY
0700	SIMULATOR TRAINING	SIMULATOR TRAINING	SIMULATOR TRAINING	SIMULATOR TRAINING	SIMULATOR TRAINING
100					
130					
1530					

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IMI-1 SENIOR REACTOR OPERATOR  
REPLACEMENT TRAINING PROGRAM

Revision No.

1-00

APPENDIX C.

1. Candidate Progress Report  
Name \_\_\_\_\_ Employee No. \_\_\_\_\_ SSN \_\_\_\_\_

2.

WEEK	EXAM GRADE	OJT SIGNATURES WEEK/TOTAL	TRAINING COMMENTS	ORAL EXAMS
1				XXXXXXXXXXXXXXXXXX
2				XXXXXXXXXXXXXXXXXX
3				XXXXXXXXXXXXXXXXXX
4				
5				XXXXXXXXXXXXXXXXXX
6				XXXXXXXXXXXXXXXXXX
7				XXXXXXXXXXXXXXXXXX
8				
9				XXXXXXXXXXXXXXXXXX
10				XXXXXXXXXXXXXXXXXX
11				XXXXXXXXXXXXXXXXXX
12				
13				XXXXXXXXXXXXXXXXXX
14				XXXXXXXXXXXXXXXXXX

3. SIMULATOR TRAINING (2 weeks)  
Date Completed: \_\_\_\_\_ Date \_\_\_\_\_ Pass/Fail \_\_\_\_\_  
Mgr., Plant Operations

4. OJT Completed: \_\_\_\_\_ Date \_\_\_\_\_  
Supv., Licensed Oper. Trng.

5. FINAL EXAMINATIONS  
Written \_\_\_\_\_ Date \_\_\_\_\_ pass/fail \_\_\_\_\_ Oral \_\_\_\_\_ Date \_\_\_\_\_ pass/fail \_\_\_\_\_

Section Results	Board Members
6. _____	_____
7. _____	_____
8. _____	_____
9. _____	_____
10. _____	_____
Average _____	

Submitted: \_\_\_\_\_ Supv., Lic. Oper. Trng. Reviewed: \_\_\_\_\_ Operator Training Manager

Reviewed: \_\_\_\_\_ Manager, Plant Trng. \_\_\_\_\_ Manager, Plant Operations

612000 10000 PWS 12/5/89 / 03 826



Title TMI-I SENIOR REACTOR OPERATOR  
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1-00

APPENDIX C  
ORAL EXAM SUMMARY SHEET

Candidate: \_\_\_\_\_ Examiner: \_\_\_\_\_ Date \_\_\_\_\_

Purpose: ( ) OJT Section Final Verification  
( ) Final Examination  
( ) Other \_\_\_\_\_

Grade: ( Pass/Fail )

Summary of Questions Asked:

_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____

Weak Areas Noted:

_____
_____
_____
_____
_____

Overall Evaluation: ( Pass/Fail )

Further Action Required (if none, so state)

_____
_____

Signature of Examiner\*

Reviewed by: \_\_\_\_\_

Supv., Licensed Oper. Trng.

\*Forward completed summary to Supervisor, Licensed Operator Training.

11/20/88 10:00 AM 12/16/01 / 02 0/0



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APPENDIX C

DESIGNATION OF ALTERNATE TASK EXAMINERS

Date \_\_\_\_\_

The below listed individuals are hereby designated as alternate task examiners for the OJT phases of the Replacement SRO Training Program for Shift \_\_\_\_\_ (Letter)

TASK	NAME	TASK	NAME	TASK	NAME
1.01		3.01		5.05	
1.02		3.02		6.01	
1.03		3.03		6.02	
1.04		3.04		6.03	
1.05		3.05		6.04	
1.06		4.01		6.05	
1.07		4.02		6.06	
1.08		4.03		6.07	
1.09		4.04		6.08	
1.10		4.05		7.01	
1.11		4.06		7.02	
2.01		4.07		7.03	
2.02		5.01		7.04	
2.03		5.02		7.05	
2.04		5.03		7.06	
2.05		5.04		7.07	

Other (specify): \_\_\_\_\_

\_\_\_\_\_  
Shift Supervisor / Date

cc: Operator Training Section

FORM 1000-1000 12/16/88 / 00 020





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APPENDIX C

DESIGNATION OF FOREMAN AS FINAL OJT EXAMINER

DATE: \_\_\_\_\_

Shift \_\_\_\_\_, are hereby designated to serve as the  
Shift \_\_\_\_\_ Shift Foreman  
final verification examiner for Replacement SRO's on \_\_\_\_\_ shift for the  
Letter

OJT sections noted below:

List Sections: \_\_\_\_\_

Shift \_\_\_\_\_, Shift Supervisor

cc: Operator Training Section



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Appendix D

Deletion Letter to Senior Reactor Operator Training Program

Date:  
Subject: Deletion of Training Program Requirements for Replacement Senior  
Reactor Operator  
To: Manager, Plant Operations  
Operator Training Manager

Ref: (a) Applicable section of training program

In accordance with reference (a) it is requested that the following  
requirements be deleted from the Senior Reactor Operator Replacement Training  
Program for \_\_\_\_\_  
(Candidates Name)

Item

Reason

120006 (Rev. 10-80) PMS 12764-01 / 01 820



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1-00

When approved, the candidate shall mark each affected item "Deleted per 6211- (Letter Number)." A copy of this letter shall be kept by the candidate and this letter filed in the candidates training record in the Training Department.

Submitted \_\_\_\_\_  
Supervisor Licensed Operator Trng.

Concurred \_\_\_\_\_  
License Candidate

Approved \_\_\_\_\_  
Operator Training Manager

Approved \_\_\_\_\_  
Manager, Plant Operations

- Distribution:
- Candidate
  - Candidates Training Records
  - Manager Plant Operations
  - Operator Training Manager
  - Supervisor Licensed Operator Training

6211-ADM-2611.02 (Rev. 12/10/81) / 10 000

APPENDIX "D"  
SIMULATOR TRAINING

A nuclear plant simulator provides a means of training individuals to control the plant during routine conditions and to cope with nuclear plant transients and accidents. This training should prepare the candidate to supervise proficiently routine evolutions and carryout abnormal/emergency actions for the control room. Candidates shall practice manipulating the controls of an applicable simulator as described in reference 5.6.

As a minimum the license candidate shall participate in training sessions that include those listed below. The simulator training should emphasize the senior reactor operator's role in transient and accident response.

The following control manipulations and plant evolutions are required. Those control manipulations which cannot be performed at the plant shall be performed on a simulator.

- (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 steam generators or feedwater, or both, during startup and shutdown.
- (4) Any significant (10 percent) power changes due to manual changes in control rod position or recirculation flow.
- (5) Loss of coolant including:
  - (a) Significant steam generator tube leaks
  - (b) Inside and outside primary containment
  - (c) Large and small, including leak determination
  - (d) Saturated reactor coolant response
- (6) Loss of core coolant flow/natural circulation.
- (7) Loss of all feedwater (normal and emergency).
- (8) Boration or dilution, or both during power operation.
- (9) Any reactor power change of 10 percent or greater where load change is performed with load limit control.
- (10) Loss of instrument air (if simulated plant specific).
- (11) Loss of electrical power (or degraded power sources, or both)
- (12) Loss of condenser vacuum.
- (13) Loss of service water if required for safety.
- (14) Loss of shutdown cooling.
- (15) Loss of component cooling system or cooling to an individual component.
- (16) Loss of protective system channel.
- (17) Mispositioned control rod or rods (or rod drops).

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- (18) Inability to drive control rod.
- (19) Condition requiring use of emergency boration or standby liquid control system.
- (20) Fuel cladding failure or high activity in reactor coolant or off gas.
- (21) Turbine or generator trip.
- (22) Loss of normal feedwater or normal feedwater system failure.
- (23) Malfunction of automatic control system(s) which affect reactivity.
- (24) Malfunction of reactor coolant pressure/volume control system.
- (25) Reactor trip.
- (26) Main steam line break (inside or outside containment).
- (27) Nuclear instrument failure(s).

Participation at simulator shall be in groups of no more than four (4) people manipulating the controls or directing the activities of individuals during plant exercises.

An examination using the simulator shall be conducted while at operating power with plant malfunctions while starting up the reactor. The certification examination shall demonstrate the candidates ability to:

- (1) Manipulate the controls in a safe and competent manner.
- (2) Predict instrument response and use instrumentation available.
- (3) Follow the facility procedures, and
- (4) Understand alarms and annunciators and take proper actions, and
- (5) Communicate properly and effectively.

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