Facility: Nine Mile Point # 2 Examination Level (circle one): **RO**		Date of Examination: 12/06/99 Operating Test Number: Cat A Test 1
Administrative Topic/Subject Description		Describe method of evaluation: 1. ONE Administrative JPM, OR 2. TWO Administrative Questions
A.1	Shift Turnover	Question: 1. Given watchstanding history, medical data and training data, determine requirements to stand watches. (Active license requirements). K/A 2.1.3
		Question: 2.. Determine if it is acceptable to work without violating control of working hours guidelines and Tech Specs. K/A 2.1.1
	Start Up Requirements	Question: 1. What rod movement restrictions apply to control rods during a reactor startup, based on procedural requirements after SRM count rates have reached the four doubling value? K/A 2.2.1, 2.2.2, 2.2.34
		Question: 2. What actions are required if the reactor criticality data recorded, the doubling time is 40 seconds? K/A 2.1.23, 2.2.1, 2.2.2
A.2	Piping and Instrument Drawings	Question: 1. Using the PIDs, trace the Fire Protection Water flow path from the motor driven fire water pump 2FPW-P2, to the RPV using RHS Train A. 2RHS*MOV24A is available for injection. Where necessary, add EOP equipment to be used. K/A 2.1.24 *PRA (IPE: Fire Water – RHR Crosstie)*
		Question: 2. Using a PID drawing, describe how the motor operated Testable Check Bypass Valve RHS*MOV67B will respond to a LOCA signal. K/A 2.1.24
A.3	Radiation Work Permits	Question 1. Review the attached Survey 68 for Turbine Building 277' Condensate Demin Valve Aisle and identify the radiological hazard(s). K/A 2.3.10
		Question 2. Review a Radiation work Permit (22, Revision 313), and identify sign in requirements for Auxiliary Operators, protective clothing requirements and actions to be taken if while passing through an area you check your Electronic Dosimeter (ED) and it is reading 120 mrem/hr. What action are required? K/A 2.3.10
A.4	Emergency Classification	Question 1. What are the actions required during a Station Evacuation, while EOP actions are being implemented.? K/A 2.4.12, 2.4.29, 2.4.34, 2.4.41
		Question 2. During a Hydrogen fire at the Generator seals, personnel are known to be missing. How will search and rescue be organized with the OSC manned? K/A 2.4.39, 2.4.29, 2.4.42

Nine Mile Point 2 Category "A" - Examination Outline Cross Reference	
Operating Test Number	Cat "A" Test: 1
Examination Level	RO
Administrative Topic	A.1
Subject Description:	Shift Turnover
Question Number:	1

Question:

Use <u>today's date</u>.
Assume you are 42 years old when answering this question.

Evaluate the following information and determine what requirements must be met before you fill a CSO position on January 1, 2000.

- You filled a shift CSO position this year until September 1, when you were assigned to Operations Support until the end of the year. Since the assignment, you have stood the following 12-hour watches as CSO:

  September: Three (3) 12-hour watches
  October: Three (3) 12-hour watches
  November: NO watches
  December: NO watches and none scheduled

- Medical exam and respiratory physical is completed on 11/30/98. Documented in accordance with station procedures on 11/30/98.

- SCBA and Scott full-face qualification including a fit-test for each is completed on 6/6/99. Documented in accordance with station procedures on 6/10/99.

- With the exception of completing the remediation for a requal cyclic written exam failure last Friday, you have completed all training and passed all other evaluations.

Answer:

Must complete the training remediation, then stand at least two (2) 12-hour watches as the RO or CSO by 12/31/99.

Technical Reference(s):

S-ODP-TQS-0101, Rev 01
Section 3.10, 4.2, 4.4

Nine Mile Point 2 Category "A" - Examination Outline Cross Reference	
Operating Test Number	Cat "A" Test: 1
Examination Level	RO
Administrative Topic	A.1
Subject Description:	Shift Turnover
Question Number:	1

K/A #:	Importance:
2.1.3	3.0

Comments:

NIAGARA MOHAWK POWER CORPORATION

NINE MILE POINT NUCLEAR STATION

OPERATIONS ADMINISTRATIVE PROCEDURE

S-ODP-TQS-0101

REVISION 01

ADMINISTRATIVE CONTROLS FOR MAINTAINING ACTIVE LICENSE STATUS AT NINE MILE POINT

Approved by: D. F.Topley	Manager Operations Unit 1	8/18/98 Date
Approved by: D. P. Bosnic	for D Bosnic Manager Operations - Unit 2	8/19/98 Date

CONTROLLED

Effective Date: 08/24/98

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1.0 PURPOSE

To provide administrative controls and guidance for maintenance of "active" Reactor Operator (RO), Senior Reactor Operator (SRO), and Limited Senior Reactor Operator (LSRO) Licenses at Nine Mile Point. To give guidance and conditions necessary for an "inactive" license holder to become "active."

1.1 Applicability

This procedure is applicable to all NRC Licensed Operators at Nine Mile Point.

2.0 PRIMARY RESPONSIBILITIES

2.1 Plant Manager

Responsible for certifying inactive license holders to active status as an authorized representative of the facility.

2.2 Manager Operations

2.2.1 Responsible for ensuring the administrative requirements of this procedure for Licensed Operator qualifications are met.

2.2.2 Responsible for removing Licensed Operators from licensed duties prior to a license qualification expiring.

2.2.3 Responsible for reviewing the active license status for all Licensed Operators AND for forwarding that status to the Plant Manager AND the General Supervisor Operations Training.

2.3 Operations Training Coordinator

2.3.1 Has overall responsibility for ensuring that active Licensed Operators qualifications are kept current.

2.3.2 Responsible for keeping the Manager Operations informed of the status of Licensed Operators that are within 30 days and/or 7 days of a license requirement expiring.

2.3.3 Responsible for generating reports used for tracking and scheduling Licensed Operator physical exams, fit tests, and Scott Air Pak (SCBA) training.

2.3.4 Responsible for interfacing with Operations and the Training Department for facilitating completion of required Licensed Operator Requalification training.

2.3.5 Responsible for notifying a Licensed Operator's supervisor to submit a completed Facility Operator's Report, (NTP-TQS-400, Attachment 7) to the Medical Services Group within 30 days prior to an assigned Licensed Operator's scheduled NRC physical examination.

2.4 General Supervisor Operations Training

Maintains list of "active" and "inactive" license holders. Maintains training records of Licensed Operators.

2.5 Operations Clerical Staff

2.5.1 Responsible for recording which license holders performed the duties of the SSS, ASSS, CSO, OR ATCRO and NAOE for the shift of record on the "License Requirements Data Sheet" each working day for each shift. This Report is forwarded to the Operations Manager at the end of each quarter (Attachment 1).

2.5.2 Assists the Training Coordinator as required in scheduling Licensed Operator physicals and fit tests.

2.6 Station Shift Supervisor (SSS)

2.6.1 Responsible to determine if a watchstander under their direction stood a full shift to meet the license proficiency requirements of 10CFR55.

2.7 Licensed Operator's Supervisor

2.7.1 Responsible for assuring assigned Licensed Operators complete all required physicals, fit tests and training as scheduled and always prior to requirement expiration.

2.7.2 Responsible for notifying the Operations Training Coordinator when physicals, fit tests and/or training for themselves or their assigned Licensed Operators can not be completed as scheduled.

2.7.3 Responsible for submitting a completed Facility Operator's Report, (NTP-TQS-400, Attachment 7) to the Medical Services Group within 30 days prior to an assigned Licensed Operator scheduled NRC physical examination.

2.8 Licensed Operators

2.8.1 Responsible for completing all required physicals, fit tests and training prior to requirement expiration.

2.8.2 Responsible for notifying their supervisors when physicals, fit tests and/or training cannot be completed as scheduled.

2.8.3 Responsible for having corrective lenses available for use in (SCBA) Scott Air Paks.

3.0 PROCEDURE

3.1 The SSS OR ASSS, with permission of the SSS, shall log the on-duty SSS AND ASSS, in the SSS log book for the hours they are on duty.

3.2 The CSO OR ATCRO shall log the on-duty CSO OR ATCRO AND NAOE in the CSO log book for the hours they are on duty.

3.3 IF a watchstander completes a full 8-hour OR 12-hour shift from watch relief to watch relief with only "normal" breaks taken, the Control Room Clerk will record this information on the License Requirements Data Sheet each working day for each shift and shall forward this report to the Operations Manager AND Training at the end of EACH quarter (Attachment 1).

3.4 IF the Control Room Clerk has a question on what constitutes "normal" breaks, the SSS for that shift of record will be consulted and will make the final decision.

3.5 Approximately 60 days into the calendar quarter, the Operations Manager OR designee will perform an audit of watchstanding shifts stood to ensure compliance with 10CFR55.53(e).

- If it is discovered that personnel will become delinquent, they should be scheduled to satisfy the requirements of 10CFR55.53(e).

3.6 Personnel NOT meeting the required number of shifts in an active role shall be declared inactive and shall not perform active license duties until they have met the requirements specified in Section 3.9.

3.7 An updated list of "active" AND "inactive" license holders will be forwarded to the Plant Manager AND General Supervisor Operations Training at the end of EACH calendar quarter, OR more often as needed to change the status of a license holder (Attachment 2).

3.8 <u>Licensed Senior Reactor Operators Limited to Refueling</u>

Maintenance of the LSRO License will be performed in accordance with Section 3.9, 3.10, AND 3.11 of this procedure.

3.9 Inactive License Holders

Inactive license holders shall be certified by the Plant Manager to have met the conditions of 10CFR55.53(f) by a License Reactivation Form (Attachment 3 or 4). These requirements include:

3.9.1 That the qualifications AND status of the licensee are current as specified in sub-section 3.10

AND

3.9.2 A minimum of 40 hours of shift functions under the direction of an operator OR senior operator, as appropriate AND in the position to which the operator will be assigned is completed. The 40 hours must have included a complete tour of the plant AND review of all required shift turnover procedures. The 40 hours shall be in the same calendar quarter.

OR

3.9.3 For SRO limited to fuel handling one shift shall have been completed.

3.10 Additional Requirements on an Active License Holder

For Licensed Operators to fill a Technical Specification required on-shift position, the following minimum requirements shall be complied with in addition to the requirements of subsection 3.9:

- Meet requalification training requirements per NTP-TQS-102, Licensed Operator Requalification Training.
- Be currently trained on use of (SCBA) Scott Air Paks, (annual requirement).
- Have a current (SCBA) Scott Air Pak fit test on file, (biennial requirement).
- Have a current Scott Full Face fit test on file, (biennial requirement which applies to Unit 1 only).
- Have a current form NRC-396 on file (NRC Medical examination) (biennial requirement).
- Have a current respiratory physical examination on file, (biennial requirement if less than 45 years of age, otherwise annual).
- Have corrective lenses available for use in (SCBA) Scott Air Paks.
- Logged in SSS Log.

3.11 Maintaining the additional Requirements on an Active License Holder

NOTE: Notification via Voice-Mail is **NOT** considered an acceptable method of communication in accomplishing this procedure.

3.11.1 Once per month, on OR about the last working day of the month, the Operations Training Coordinator should generate a report showing which Licensed Operators are due in the next 3 months for:

- NRC Medical examinations
- Respiratory physical examinations
- Scott Air Pak (SCBA) fit tests
- Scott Full Face fit test (Unit 1 only)
- Scott Air Pak (SCBA) training

3.11.2 The monthly report should identify the expiration dates for EACH listed individual for the requirements listed in 3.11.1.

3.11.3 The Manager Operations, OR designee should perform an independent review of the report to confirm that all items required in 3.11.1 have been identified.

3.11.4 The Operations Training Coordinator should use the monthly reports to schedule physicals AND fit tests as follows:

- Scheduling should be done so the requirement is completed at least 30 days PRIOR to expiration.
- IF the required physical(s) OR fit test can NOT be scheduled at least 30 days PRIOR to expiration, the Operations Training Coordinator shall notify the Manager Operations of the scheduled date AND reason.

3.11.5 The monthly report is typically developed from the information contained in the following:

- Respiratory Status Reports
- Training Cycle Completion Reports
- NRC Physical Expires Due Report maintained by the Training Dept

3.11.6 WHEN an NRC physical exam has been scheduled the Operations Training Coordinator should notify the Licensed Operator's supervisor to submit a completed Facility Operator's Report, (NTP-TQS-400, Attachment 7) to the Medical Services Group within 30 days PRIOR to the assigned Licensed Operator's scheduled NRC physical examination.

3.11.7 Licensed Operator's supervisors should complete AND submit a Facility Operator's Report, (NTP-TQS-400, Attachment 7) to the Medical Services Group within 30 days PRIOR to an assigned Licensed Operator's scheduled NRC physical examination.

3.11.8 Licensed Operators should complete all required physical exams, SCBA fit tests AND training as scheduled UNLESS otherwise authorized by the Manager Operations.

3.11.9 Licensed Operators should notify their supervisor upon completion of scheduled physicals AND fit tests OR IF the items can NOT be completed as scheduled.

3.11.10 Senior Reactor Operators should notify the Operations Training Coordinator upon completion of scheduled physicals AND fit tests for themselves AND their assigned Licensed Operators.

3.11.11 The Operations Training Coordinator should use the monthly reports to arrange SCBA training with the Training Department PRIOR to the training expiration date.

3.11.12 The Operations Training Coordinator should track completed physicals AND fit tests to ensure that active Licensed Operators qualifications are kept current.

3.11.13 The Operations Training Coordinator should inform the Manager Operations of a change in status for Licensed Operators that are within 30 days AND 7 days of a license requirement expiration.

3.12 Corrective Lens License Restriction

NOTE: Only the face piece spectacles designed for use in (SCBA) Scott Air Paks OR contact lenses meet the requirement for corrective lenses.

3.12.1 Licensed Operators with the corrective lens restriction are required to have corrective lenses available for use in (SCBA) Scott Air Paks.

3.12.2 PRIOR to resuming license duties, Licensed Operators that have obtained corrective lenses for the first time shall be examined by the Site Medical Department to determine if a corrective lens restriction is required.

3.12.3 IF at any time a licensed operator receives a corrective lens restriction, the requirements listed above in step 3.12.1 shall be satisfied PRIOR to resuming license duties.

4.0 DEFINITIONS

4.1 Approved Watchstanding Positions at Nine Mile Point

- SSS
- ASSS
- CSO OR ATCRO
- Control Room NAOE
- Refuel SRO

4.2 Calendar Quarter

For purpose of this procedure Calendar Quarters will be as follows:

- 1st Quarter January 1 to March 31
- 2nd Quarter April 1 to June 30
- 3rd Quarter July 1 to September 30
- 4th Quarter October 1 to December 31

4.3 Actively Performing the Function of a Licensed Operator

Individual has a position on a shift crew that requires the individual to be licensed, as defined in the facility's Technical Specifications, and that the individual carries out, and is responsible for the duties covered in that position, including log keeping and shift turnover responsibilities.

4.4 10CFR55.53 Conditions of Licenses

To maintain active status, the licensee shall actively perform the functions of an operator or senior operator on a minimum of seven 8-hour or five 12-hour shifts per calendar quarter.

4.5 NMPC Interpretation of 10CFR55.53(e)

4.5.1 It is NMPC policy that to maintain license proficiency, watchstander station requirements for performing the duties of Station Shift Supervisor (SSS), Assistant Station Shift Supervisor (ASSS), Chief Shift Operator (CSO) OR At The Controls Reactor Operator (ATCRO), Nuclear Auxiliary Operation E (NAOE) and Refuel SRO are as follows:

LICENSE PROFICIENCY WATCH STANDER STATION	REQUIREMENT
STATION SHIFT SUPERVISOR (SSS)	SRO
ASSISTANT STATION SHIFT SUPERVISOR (ASSS)	SRO
CHIEF SHIFT OPERATOR (CSO) OR AT THE CONTROLS REACTOR OPERATOR (ATCRO)	RO
NUCLEAR AUXILIARY OPERATOR E (NAOE)	RO
REFUEL SRO	LSRO (min req.)

NOTE: When additional watchstanders are required to satisfy the minimum shift crew composition per Technical Specification requirements, the only three cases where more than two senior operators and two operators can be taken credit for are as follows:

a. During a reactor startup, credit for time performing the duties of a licensed operator may be taken by one additional Chief Shift Operator or Nuclear Auxiliary Operator - E (RO) when assigned to the Control Room.

b. During refuel floor activities where the Senior Reactor Operator and reactor operator(s) may take credit for time performing fuel movement activities.

c. During assignments for training or reactivation of license on shift under the direction of an active license holder.

4.5.2 It is NMPC's policy in the shutdown condition that two licensed senior operators and two Licensed Operators are required to maintain safe operation of the Units. This may be reduced on a case-by-case basis with Management concurrence.

4.6 NUREG 1262

4.6.1 The guide defines active participation as an individual who has a position on a shift crew that requires the individual to be licensed as defined in the facility's Technical Specifications, and that the individual carry out, and is responsible for the duties of that position.

4.6.2 The guide provides explicit direction that the seven 8-hour or five 12-hour shifts performed to maintain active license status means from watch relief to watch relief.

4.6.3 The guide provides specific guidance that Inactive License Holders who perform the required actions to regain Active License status, including the 40 hours of on-shift time under instruction, are proficient for that calendar quarter. The Inactive Licensed Holder does NOT have to serve 40 hours under instruction plus stand the seven 8-hour or five 12-hour shifts in that quarter.

5.0 REFERENCES AND COMMITMENTS

- 10CFR55.53(c)(e)(f) Title 10 Code of Federal Regulations (CFR) Part 55.53 Conditions of Licenses.
- NUREG 1262 Answer to Question at Public Meeting Regarding Implementation of Title 10CFR Part 55 on Operator License, Generic Letter 87-07.
- NIP-FFD-02, Fitness for Duty (Special Medical Standards/Examinations)
- NTP-TQS-102, Licensed Operator Requalification Training
- NTP-TQS-400, Scheduling Operator Physical Exams and Instructions for completing and Processing the Medical Certification - NRC Form 396
- S-FFD-16, Schedule, Perform, Process, and Transmit Results for Physical Examinations on Licensed Reactor Operators and License Candidates
- S-FFD-17, Requirements for Conducting Physical Examinations for NMPC Employees and Contractors

6.0 RECORDS REVIEW AND DISPOSITION

6.1 The following records generated by this procedure shall be maintained by Records Management for the Permanent Plant File in accordance with NIP-RMG-01, Records Management:

- Attachment 2: Active/Inactive License Holders Memo

6.2 The following records generated by this procedure are not required for retention in the Permanent Plant File:

- Attachment 1: License Requirements Data Sheet
- Attachment 3: SRO License Reactivation Form Inactive License
- Attachment 4: RO License Reactivation Form Inactive License

LAST PAGE

ATTACHMENT 1: LICENSE REQUIREMENTS DATA SHEET

_____QT 19___

SRO/RO LICENSE

NAME	DATE	DATE	DATE	DATE	DATE	DATE	DATE	COMMENTS

ATTACHMENT 2: ACTIVE/INACTIVE LICENSE HOLDERS MEMO

DATE:

FROM: MANAGER OPERATIONS Unit ☐ 1 ☐ 2

TO: PLANT MANAGER AND GENERAL SUPERVISOR OPS TRAINING

SUBJECT: Review of Active License Status for the Operations Department.

Quarter Ending _____

I have reviewed station records and certify that the following list of active and inactive license holders applies for the next quarter, in accordance with 10CFR55.53(e).

Active Watchstanders

Inactive Watchstanders

ATTACHMENT 3: SRO LICENSE REACTIVATION FORM INACTIVE LICENSE

Individual _____ Quarter Ending _____

WATCHSTANDING REQUIREMENTS

1. Under Instruction Watches

Date	Shift	Time	Signature (SRO)	Total Hours

2. Shift Turnover (should accompany all under instruction watches)

   Date _____ Shift _____ _____
   SRO Signature

3. Plant Tour

   Date _____ Shift _____ _____
   SRO Signature

TRAINING AND QUALIFICATION

1. Licensee meets additional license requirements specified in sub-section 3.10 of this procedure.

   _____ _____
   Manager Operations Unit ☐ 1 ☐ 2 Date

2. The Plant Manager certifies by his signature below, that the above named individual has completed a minimum of 40 hours on-shift under the instruction of an SRO, and the qualifications and status of the individual's license are current and valid.

   _____ _____
   Plant Manager Unit ☐ 1 ☐ 2 Date

ATTACHMENT 4: RO LICENSE REACTIVATION FORM INACTIVE LICENSE

Individual _____ Quarter Ending _____

WATCHSTANDING REQUIREMENTS

1. Under Instruction Watches

Date	Shift	Time	Signature (RO)	Total Hours

2. Shift Turnover (should accompany all under instruction watches)

   Date _____ Shift _____ _____
   RO Signature

3. Plant Tour

   Date _____ Shift _____ _____
   RO Signature

TRAINING AND QUALIFICATION

1. Licensee meets additional license requirements specified in sub-section 3.10 of this procedure.

   _____ _____
   Manager Operations Unit ☐ 1 ☐ 2 Date

2. The Plant Manager certifies by his signature below, that the above named individual has completed a minimum of 40 hours on-shift under the instruction of an RO, and the qualifications and status of the individual's license are current and valid.

   _____ _____
   Plant Manager Unit ☐ 1 ☐ 2 Date

Nine Mile Point 2 Category "A" - Examination Outline Cross Reference	
Operating Test Number	Cat "A" Test: 1
Examination Level	RO
Administrative Topic	A.1
Subject Description:	Shift Turnover
Question Number:	2

Question:

Following 4 days off, you work dayshift (12-hour shifts) for 5 consecutive days, Thursday through Monday. You are called Monday night and asked to come in and work 12 hours on Tuesday day-shift. Your next scheduled shift is Friday on dayshift (0600).

Determine if it is acceptable to work Tuesday including why or why not.

Answer:

The individual can work 12 hours on Tuesday.
Wednesday must be a day off. Upon completion of work Tuesday, the worker will have worked 72 hours in a 6-day period. The limit is 72 hours in any 7-day period.

Technical Reference(s):
GAP-FFD-02, Section 3.2

K/A #:	Importance:
2.1.1	3.7

Comments:

NIAGARA MOHAWK POWER CORPORATION

NINE MILE POINT NUCLEAR STATION

GENERATION ADMINISTRATIVE PROCEDURE

GAP-FFD-02

REVISION 06

CONTROL OF WORKING HOURS

TECHNICAL SPECIFICATION REQUIRED

CONTROLLED

Approved by:
R. G. Smith

Plant Manager - Unit 1

7/22/98
Date

Approved by:
K. A. Dahlberg

Plant Manager - Unit 2

7/24/98
Date

Effective Date: 07/29/98

3.1.2 (Cont)

c. To respond to a Limiting Condition for Operation (LCO)

d. To complete a work activity where it is safer to complete than to secure.

3.1.3 Except for unusual and unanticipated circumstances, overtime should be planned in advance.

3.1.4 All paid overtime should be approved by authorized supervision before the overtime is worked.

3.2 Individual Overtime Guidelines

3.2.1 Individuals identified in Section 1.1 should not be permitted to work, excluding shift turnover time and nonworking lunch breaks, more than:

- 16 hours straight
- 16 hours in any 24 hour period
- 24 hours in any 48 hour period
- 72 hours in any 7 day period

NOTE: The above periods are consecutive rolling periods and are not based on calendar work weeks.

3.2.2 Turnover time of greater than 1 hour for any individual tour of duty should be specifically identified on the employee's time sheet to document compliance with the guidelines.

3.2.3 Individuals subject to the requirements of Section 3.2.1 should have at least an 8 hour break (which may include shift turnover time) between work periods.

3.2.4 Individuals working a 12 hour shift schedule who, as a result of transition in and out of daylight savings time, will exceed the 24 hours in any 48 hour period guideline, are authorized to deviate from the guideline for the one hour transition period. No Overtime Deviation Request is required to be completed for this deviation.

3.2.5 Deviation from the above guidelines NOT properly authorized per Section 3.3 shall be:

a. Documented on a DER per NIP-ECA-01, Deviation/Event Report

b. Reviewed by SORC as a violation of Technical Specification Section 6.0, Administrative Controls.

3.3 Overtime Deviation Requests

3.3.1 Deviations from the Individual Overtime Guidelines (Section 3.2) should not occur except in the event of unforeseen circumstances which can not be avoided.

Nine Mile Point 2 Category "A" - Examination Outline Cross Reference	
Operating Test Number	Cat "A" Test: 1
Examination Level	RO
Administrative Topic	A.1
Subject Description:	Startup Requirements
Question Number:	1

Question:

A reactor startup is in progress using Startup Control Rod Sequence A2UP. SRM readings recorded prior to the startup:

SRM A = 100 cps *SRM B = 120 cps*
SRM C = 130 cps *SRM D = 110 cps*

RWM Step 8 was just completed. SRM count rates are:

SRM A = 1800 cps *SRM B = 1900 cps*
SRM C = 1920 cps *SRM D = 1610 cps*

What rod movement restrictions apply to control rods in RWM step 9.

Answer:

When any SRM count rate reaches four doublings (SRM A is beyond four doubles), control rod withdrawals shall be performed in the single notch mode until the reactor is critical, unless otherwise directed by the Reactor Engineer.

Technical Reference(s):

N2-OP-101A, Section 2.13.15

K/A #:	Importance:
2.2.1	3.7
2.2.2	4.0
2.2.34	2.8

Comments:

NIAGARA MOHAWK POWER CORPORATION

NINE MILE POINT NUCLEAR STATION UNIT 2

OPERATING PROCEDURE

N2-OP-101A

REVISION 11

PLANT START-UP

TECHNICAL SPECIFICATION REQUIRED

Approved by:
J. T. Conway

Manager Operations - Unit 2

6/22/95
Date

PERIODIC REVIEW, 04/27/1999, NO CHANGE

PERIODIC REVIEW, 04/17/97, NO CHANGES

Effective Date: 6/29/95

PERIODIC REVIEW DUE DATE APRIL 2001

Initials/Date

E. STARTUP (Cont)

2.12 AFTER withdrawal of first in-sequence control rod perform N2-OSP-RMC-@004, Rod Sequence Control System operability. ____/_____

2.13 WHEN any control rod is moved in accordance
(COMM 7) with the Startup Control Rod Sequence, verify the following conditions and limitations are satisfied.

2.13.1 Each startup shall use a verified copy of Master Startup Control Rod Sequence.

2.13.2 All reactivity changes shall be directly supervised by a Senior Reactor Operator. In order to provide this oversight the SRO will be stationed at the Controls Area of the Control Room.

2.13.3 During control rod motion the following indications shall be monitored:

a. Neutron Flux

b. Control rod position

c. Reactor period

2.13.4 Shift Technical Advisors (STA) OR Reactor Engineer should monitor control rod motion.

2.13.5 WHEN control rod movement specified in each Startup Control Rod Sequence OR Rod Worth Minimizer group has been completed, a licensed Reactor operator OR other technically qualified member of the technical staff shall independently verify correct control rod position by selecting each rod in the group moved and compare four rod display indication to Startup Control Rod Sequence.

Initials/Date

E. STARTUP (Cont)

2.13.6 WHEN below the Low Power Setpoint, Banked Position Withdrawal Sequence (BPWS) shall be adhered to.

2.13.7 WHEN above the Low Power Setpoint, BPWS should be followed as far as practical UNTIL local peaking OR other factors require deviation.

2.13.8 [T/S] AFTER a control rod is withdrawn to position 48, verify its coupling integrity by applying a continuous withdraw signal AND perform the following:

a. Observe Annunciator 603444, ROD OVERTRAVEL remains clear.

b. Observe control rod FULL OUT indicating light illuminated on Full Core Display.

c. Observe position 48 indication remain illuminated on the Four Rod Display.

d. Record coupling integrity check performed by initialing the appropriate block on the Startup Control Rod Sequence OR in accordance with applicable Operating Surveillance Procedures.

2.13.9 Deviation from control rod sequence is permitted IF BOTH SRO AND the Reactor Engineer concur, initial all changes on working copy AND document reason in Reactor Engineer Log Book.

2.13.10 WHEN a control rod is withdrawn to the bank withdraw limit AND the SRO AND Reactor Engineer desire to insert it, use the Insert column.

E. STARTUP (Cont)

2.13.11 WHEN a control rod is inserted to the bank insert limit AND the SRO AND Reactor Engineer desire to withdraw it, use the Withdraw column.

NOTE: When determined by the Reactor Engineer, significant deviations from the Startup Control Rod Sequence are required. Use of the Startup Sequence Sheets will be discontinued and rod movements will be controlled by approved Control Rod Movement Sheets.

2.13.12 WHEN Single Rod Scram Timing OR other testing requires deviations from the Startup Control Rod Sequence, the Reactor Engineer OR STA shall ensure all control rods are in sequence BEFORE resuming startup.

2.13.13 WHEN commencing a shutdown PRIOR to completing Startup Sequence, insert control rods in reverse order using the Shutdown column.

(C6) 2.13.14 During control rod withdrawal, IF any problems operating a specific control rod occur, refer to N2-OP-30 Subsection F.13.0 AND document the problem accordingly.

(C7) 2.13.15 WHEN any SRM count rate reaches four doublings (value recorded in Step 1.12.b and marked on SRM meters), control rod withdrawal shall be performed in the single notch mode UNTIL the Reactor is critical, UNLESS otherwise directed by Reactor Engineering.

2.14 Begin Control Rod withdrawal in accordance with the verified copy of the approved Startup Control Rod Sequence UNTIL Reactor criticality is indicated by the following:

2.14.1 Rising neutron count rate

Nine Mile Point 2 Category "A" - Examination Outline Cross Reference	
Operating Test Number	Cat "A" Test: 1
Examination Level	RO
Administrative Topic	A.1
Subject Description:	Startup Requirements
Question Number:	2

Question:

A reactor startup is in progress using Startup Control Rod Sequence A2UP; currently performing RWM step 9. Control rod 34-55 is withdrawn to position 18 and the reactor is declared critical. When the reactor criticality data is recorded, the doubling time is 40 seconds.

What actions are required?

Answer:

Insert control rod 34-55 to position 14.
Notify the CRS.
Request further direction from Reactor Engineering.

Note: the reactor period is less than 60 seconds requiring operator action. The requirement is to insert the last control rod wihdrawn one notch past its previous position. The previous position was 16.

Technical Reference(s):

Ref: N2-OP-101A, Section 2.18

K/A #:	Importance:
2.1.23	3.9
2.2.1	3.7
2.2.2	4.0

Comments:

E. STARTUP (Cont)

2.14.2 NO control rod motion

2.14.3 Constant positive period ____/____

2.15 Maintain a count rate between 10^2 AND 10^5 CPS by withdrawing SRM's as required. ____/____

2.16 WHEN Reactor criticality is indicated, announce the following:

"Attention all personnel the Reactor is critical." ____/____

2.17 Record the following Reactor criticality information below:

2.17.1 Time Criticality was achieved _____

2.17.2 Rod Number _____

2.17.3 RWM Step _____

2.17.4 Rod Position _____

2.17.5 Reactor Period (1.44 x Doubling Time) _____

2.17.6 Reactor Water Temperature (Operating Recirc Pump Suction Temperature) _____

2.17.7 Person Pulling Critical _____

2.17.8 Log information in Steps 2.17.1 and 2.17.7 in the CSO Log. ____/____

2.18 Establish a stable positive period greater than 60 seconds using control rods as required. ____/____

2.18.1 IF a positive period of less than 60 seconds is experienced, perform the following:

N/A, period of less than 60 seconds has NOT been experienced . . . . . (__)

a. Insert the last control rod which was withdrawn, to a position one notch further inserted than its previous notch position (UNLESS the rod will be at position 00) . (__)

Initials/Date

E. STARTUP (Cont)

2.18.1 (Cont)

b. Notify the Control Room Supervisor . . . . . (__)

c. Request further direction from Reactor Engineering . . . . . (__) ____/_____

2.19 IF Reactor startup is following operating cycle outage, request Reactor Engineering perform N2-RESP-10, Subcooled Critical Comparison. SDM Calculations are required IF N2-RESP-9 was NOT completed during the previous refuel outage AND RESP-10 has NOT been previously completed for the current fuel load.

N/A, Startup is NOT following refueling outage . . . . . (__) ____/_____

STARTUP CONTROL ROD SEQUENCE
NINE MILE POINT UNIT TWO
A2UP

Bank Insert Limit: **12**

RSCS Group: 2/1

Bank Withdraw Limit: **FULL OUT**

RWM Step: 9

Control Rod	STARTUP From	STARTUP To (Initials)	STARTUP Complete Initial	STARTUP Coupling Check	STARTUP Full Out Light	INSERT To (Initials)	INSERT Complete Initial	WITHDRAW To (Initials)	WITHDRAW Complete Initial	WITHDRAW Coupling Check	WITHDRAW Full Out Light	SHUTDOWN To (Initials)	SHUTDOWN Complete Initial	Comments
58-31	12	FULL OUT				12		FULL OUT				12		
02-31	12	FULL OUT				12		FULL OUT				12		
34-55	12	FULL OUT				12		FULL OUT				12		
26-55	12	FULL OUT				12		FULL OUT				12		
26-07	12	FULL OUT				12		FULL OUT				12		
34-07	12	FULL OUT				12		FULL OUT				12		
50-39	12	FULL OUT				12		FULL OUT				12		
10-39	12	FULL OUT				12		FULL OUT				12		
10-23	12	FULL OUT				12		FULL OUT				12		
50-23	12	FULL OUT				12		FULL OUT				12		
Reselect and Verify Rod Position by Independent Verifier														

Note: Shaded areas are not to be filled in.

Prepared By: Michael G. Wade 10/23/96

Approved By: J. Durnwald 10/29/96

Nine Mile Point 2 Category "A" - Examination Outline Cross Reference	
Operating Test Number	Cat "A" Test: 1
Examination Level	RO
Administrative Topic	A.2
Subject Description:	Piping and Instrument Drawings
Question Number:	1

Question:

Using the PIDs, trace the Fire Protection Water flow path from the motor driven fire pump, 2FPW-P2, to the RPV using RHS Train A. 2RHS*MOV24A is available for injection. Where necessary, add EOP equipment to be used.

Answer:

PID 43A, J-7	2FPW-P2, motor driven fire pump
PID 43A, L3, L-4	exit to PID 43B, K-3
PID 43B, K-3	fire water from PID 43A
PID 43B, I-4	exit to PID 43G, J-9
PID 43G, J-9	fire water from PID 43B
PID 43G, H-9	exit to PID 43F, E-9
PID 43F, E-9	fire water from PID 43G
PID 43F, G-6	disconnect fire hose from FHR (fire hose reel) 93 and connect EOP fire hose to FHR 93. Connect the EOP fire hose reel to Condensate Makeup and Transfer System blind flange (PID 4B, G-8)
PID 4B, G-8	fire water from PID 43F Blind flange for connecting EOP fire hose using equipment in EOP toolbox.
PID 4B, H-8	exit to PID 31A, A-1
PID 31A, A-1	fire water from PID 4B
PID 31A, C-5	fire water injection to the RPV using 2RHS*MOV24A

NOTE: It is not necessary to identify the valves on PIDs which are closed or verified closed to perform this evolution. (i.e., 2RHS*MOV33A [C-2] and 2RHS*MOV38A [B-6] on PID 31C, 2RHS*MOV12A [I-6] on PID 31D, 2RHS*MOV8A [B-3] on PID 31F).

Nine Mile Point 2 Category "A" - Examination Outline Cross Reference	
Operating Test Number	Cat "A" Test: 1
Examination Level	RO
Administrative Topic	A.2
Subject Description:	Piping and Instrument Drawings
Question Number:	1

Technical Reference(s):
N2-EOP-06, Att. 6, Rev 05, Section 3.1 PID 43A, B, G, F PID 4B PID 31A

K/A #:	Importance:
2.1.24	2.8

Comments:

ATTACHMENT 6
RHR FIRE WATER SYSTEM CROSS-TIE

1.0 PURPOSE

1.1 To provide instruction for cross connection of the Fire Water System (FPW) and Residual Heat Removal (RHS) System as an alternate injection source into the RPV and Primary Containment. This will be accomplished using temporary fire hoses and connecting them from Fire Hose Reel (FHR) Stations to permanent plant piping.

1.2 Applicability

1.2.1 When used to support RPV injection for N2-EOP-RPV, RPV CONTROL; N2-EOP-C3, STEAM COOLING; N2-EOP-C4, RPV FLOODING; or N2-EOP-C5, FAILURE TO SCRAM.

1.2.2 When used to support RPV injection or containment sprays for N2-SAP-1, PRIMARY CONTAINMENT FLOODING or N2-SAP-2, RPV, CONTAINMENT AND RADIOACTIVITY RELEASE CONTROL.

1.2.3 When used to support containment sprays for N2-EOP-PC, PRIMARY CONTAINMENT CONTROL, or N2-EOP-PCH, HYDROGEN CONTROL.

2.0 TOOLS AND MATERIALS

ITEM	QTY	LOCATION
Firehose 2 1/2" Diameter 50 Ft Length	2	(RHR A X-Conn) EOP Gangbox on Rx Bldg El289 between the North stair tower and 2HVR*UC413. (RHR B X-Conn) EOP Gangbox on Rx Bldg El289 outboard between the South stairtower door and the CRD maintenance room wall. (Quantities shown are for the number of items in <u>each</u> gangbox)
Flange Adapter	1	
Gasket	1	
Bolts	4	
Wrenches(1 1/16")	2	
Spanner Wrenches	2	
Flathead Screwdriver	1	Control Room EOP Toolbox

CONTINUED ON NEXT PAGE

2.0 (Cont)

ITEM	QTY	LOCATION
Electrical Tape (roll)	1	Control Room EOP Toolbox
EOP Jumper #24	1	2CEC*PNL623 (For RHS A)
EOP Jumper #35	1	2CEC*PNL705 (For RHS A)
EOP Jumper #36	1	2CEC*PNL705 (For RHS A)
EOP Jumper #9	1	2CEC*PNL622 (For RHS B)
EOP Jumper #22	1	2CEC*PNL623 (For RHS B)
EOP Jumper #33	1	2CEC*PNL704 (For RHS B)
EOP Jumper #34	1	2CEC*PNL704 (For RHS B)
F2-57 Key	1	Control Room EOP Toolbox
PL-3 Key	1	Control Room EOP Toolbox
L660 Key	1	Control Room EOP Toolbox
PA235 Key Note 2	2	Control Room CSO Desk

NOTES:

1. Subsections 3.1 and 3.2 may be performed independently, separately or concurrently.
2. Keys PA235, PA1235, and PA2235 are interchangeable.

3.0 PROCEDURE

3.1 Injection of FPW via RHS Train A

N/A, Subsection 3.1, FPW via RHR A will **NOT** be used. . . . . (____)

3.1.1 Verify RHS A is **NOT** in operation . . . . . (__)

3.1.2 Place RHS*P1A, PMP 1A control switch in PULL-TO-LOCK *(2CEC*PNL601)*. . . . . (__)

3.1.3 Verify closed the following valves*(2CEC*PNL601)*:

- RHS*MOV15A, OUTLET TO DRYWELL SPRAY . . . . . (__)
- RHS*MOV12A, HEAT EXCHANGER 1A OUTLET VLV. . . . . (__)
- RHS*MOV8A, HEAT EXCHANGER 1A INLET BYPASS VLV. . . . . (__)
- RHS*MOV33A, OUTLET TO SUPPR POOL SPRAY. . . . . (__)
- RHS*FV38A, RETURN TO SUPPR POOL COOLING. . . . . (__)
- RHS*MOV24A, LPCI A Injection VLV. . . . . (__)

(T) 3.1.4 Using a PA235 key verify closed RHS*MOV40A, SDC A Return *(2CEC*PNL601)* . . . . . (__)

(T) **NOTE**: F2-57 key required to open EOP gangbox. The toolbox is equipped with a breakway lock for entry if a F2-57 key is not readily available.

3.1.5 Verify closed 2RHS*V70, CONDENSATE FLUSH TO A CONTMT SPRAY HDR. (*Rx Bldg EL 289*). . . . . (__)

3.1.6 Close 2CNS-V621, CNS TO RHR SUPPLY ISOL. (*Rx Bldg, Northside EL289 above 2RHS*MOV24A, LPCI Injection Valve*). . . . . (__)

(T) 3.1.7 Remove test connection blind flange from between valves 2CNS-V621 **AND** 2RHS*V70. (*Rx Bldg EL 289*) . . . (__)

(T) 3.1.8 Install adapter **AND** connect firehose to test connection flange. . . . . (__)

(T) 3.1.9 Disconnect firehose at FHR 93 **AND** connect 2½" firehose, from EOP gangbox, to FHR 93. (*Rx Bldg, EL 289, near North stairwell entrance)* . . . . . (__)

3.1.10 Open 2FPW-V391, FHR 93 ANGLE VALVE . . . . . (__)

(T) 3.1.11 Using the PL-3 Key, unlock **AND** open 2RHS*V70 . . . . . (__)

NOTES: 1. Step 3.1.12 will initiate FPW injection into the Reactor Pressure Vessel (RPV).

2. Step 3.1.13 will initiate FPW injection to the Primary Containment.

3. Steps 3.1.12 and 3.1.13 may be performed independently, separately or concurrently

3.1.12 FPW Injection Flow To The RPV

N/A, FPW injection to RPV is **NOT** required. . . . (____)

a. Ensure RPV pressure is less than FPW pressure (*2CEC-PNL849, 2FPW-PI215*) . . . . . (__)

NOTE: Step 3.1.12.b OR 3.1.12.c will inject FPW into the RPV. Level should rise based on differential pressure.

b. **IF** available, open RHS*MOV24A, LPCI A INJECTION VLV to commence injection. (*2CEC*PNL601*) . . . . . (__)

N/A, 2RHS*MOV24A IS **NOT** available . . . . . (____)

c. **IF** 2RHS*MOV24A is **NOT** available, commence injection through RHS*MOV40A, SDC A Return Valve as follows:

N/A, 2RHS*MOV24A is available . . . . . (____)

NOTES: 1. The following substeps will defeat Group 5 Isolation.

2. A L660 Key is required to gain entry to 2CEC*PNL623. *(Control Room)*

(T) 1. Install EOP Jumper #24 between terminal points BB-49 **AND** AA-72 at 2CEC*PNL623. . . . (__)

(T) 2. Lift **AND** tape the lead on terminal point BB-58 at 2CEC*PNL623 . . . . . (__)

(T) 3. Using a PA235 key Open RHS*MOV40A, SDC A RETURN (*2CEC*PNL601*) . . . . . (__)

3.1.13 FPW Injection Flow To The Primary Containment

N/A, FPW injection to Primary Containment **NOT** required. . . . . (____)

a. Perform one of the following substeps *(2CEC*PNL601)*:

NOTE: Suppression chamber sprays may be used ONLY while suppression chamber pressure remains greater than 0 psig.

1. Open RHS*MOV33A, OUTLET TO SUPPR POOL SPRAY **OR**. . . . . (__)

NOTE: Drywell sprays may be used ONLY when conditions exist that require drywell sprays **AND** the Drywell Spray Initiation Limit, is satisfied.

2. **IF** Drywell pressure is greater than 1.68 psig **AND** it is required to defeat 2RHS*MOV15A/25A valve interlocks, perform the following:

N/A, Drywell pressure is less than 1.68 psig **OR** interlocks do **NOT** need to be defeated . . . . (____)

(T) • At 2CEC*PNL705, Bay B, Install EOP Jumper #35 from terminal strip TC201, TB2 terminal 6 to terminal strip TC201, TB2 terminal 8 (*Control Room*) . . . . . (__)

(T) • At 2CEC*PNL705, Bay B, Install EOP Jumper #36 from terminal strip TC201, TB1 terminal 10 to terminal strip TC201, TB1 terminal 14 (*Control Room*). . . . . (__)

3. Open RHS*MOV15A, OUTLET TO DRYWELL SPRAY
AND
RHS*MOV25A, OUTLET TO DRYWELL SPRAY
OR . . . . . (__)

4. Open RHS*FV38A, RETURN TO SUPPR POOL COOLING. . . . . (__)

b. **IF** FPW Header pressure lowers to below Containment pressure, perform Subsection 3.3 . . (__)

3.2 Injection of FPW via RHS Train B

N/A, Subsection 3.2, FPW via RHS B will NOT be used. . . . . .(____)

3.2.1 Verify RHS B is **NOT** in operation . . . . . (__)

3.2.2 Place RHS*P1B, PMP 1B control switch in PULL-TO-LOCK *(2CEC*PNL601)*. . . . . (__)

3.2.3 Verify closed the following valves *(2CEC*PNL601)*:

- RHS*MOV15B, OUTLET TO DRYWELL SPRAY . . . . . (__)
- RHS*MOV12B, HEAT EXCHANGER 1B OUTLET VLV. . . . . (__)
- RHS*MOV8B, HEAT EXCHANGER 1B INLET BYPASS VLV . . (__)
- RHS*MOV33B, OUTLET TO SUPPR POOL SPRAY. . . . . (__)
- RHS*FV38B, RETURN TO SUPPR POOL COOLING . . . . . (__)
- RHS*MOV24B, LPCI B INJECTION VLV. . . . . (__)

(T) 3.2.4 Using a PA235 Key verify closed the following valves *(2CEC*PNL601)*:

- RHS*MOV104, RHR B TO REACTOR HEAD SPRAY . . . . . (__)
- RHS*MOV40B, SDC B RETURN. . . . . (__)

3.2.5 Close 2CNS-V622, CNS TO RHR SUPPLY ISOL *(Rx Bldg, EL289 Southside across from CRD maintenance room)*. . . . . (__)

3.2.6 Verify closed 2RHS*V79, CONDENSATE FLUSH TO HEAD SPRAY HDR ISOL. *(Rx Bldg EL 289)* . . . . . (__)

(T) 3.2.7 Remove test connection blind flange from between valves 2CNS-V622 **AND** 2RHS*V79. *(Rx Bldg EL 289)* . . . (__)

NOTES: 1. FHR 78 (*Rx Bldg EL 289 near South stairwell entrance*) or FHR 86 (*Rx Bldg EL 289 Across from SLS Tank*) may be used to supply firewater to LPCI B.

(T) 2. F2-57 key required to open EOP gangbox. The toolbox is equipped with a breakway lock for entry if a F2-57 key is not readily available.

(T) 3.2.8 Disconnect firehose at FHR 78 **OR** FHR 86 **AND** connect 2½" firehose, from EOP gangbox, to FHR 78 **OR** FHR 86. (*Rx Bldg EL 289, near South stairwell entrance*). . . . (__)

(T) 3.2.9 Install adapter **AND** connect firehose to test connection flange. . . . . (__)

3.2.10 Open 2FPW-V375, FHR 78 ANGLE VALVE **OR** 2FPW-V383, FHR 86 ANGLE VALVE . . . . . (__)

(T) 3.2.11 Using the PL-3 Key, unlock **AND** open 2RHS*V79 . . . . . (__)

NOTES: 1. Step 3.2.13, FPW Injection To Primary Containment may be performed prior to or concurrently with Steps 3.2.12.a, 3.2.12.b, or 3.2.12.c depending on the injection path(s) required.

2. The preferred injection path for FPW to the RPV is through 2RHS*MOV24B, LPCI B Injection. If it is available it should be used.

3. In Steps 3.2.12.a, 3.2.12.b and 3.2.12.c the N/A option should be checked for the steps that are not performed.

4. Steps 3.2.12.a, 3.2.12.b, 3.2.12.c will inject FPW to the RPV. Level should rise based on differential pressure.

3.2.12 FPW Injection Flow To The RPV

N/A, FPW injection to RPV is **NOT** required. . . . (____)

- IF RHS*MOV24B, LPCI INJECTION VLV is available, go to Step 3.2.12.a. . . . . (__)
- IF RHS*MOV40B, SDC B RETURN is to be used, go to Step 3.2.12.b . . . . . (__)
- IF RHS*MOV104, RHR B TO REACTOR HEAD SPRAY is to be used, go to Step 3.2.12.c. . . . . (__)

a. IF injection is through 2RHS*MOV24B:

N/A, 2RHS*MOV24B is **NOT** available . . . . . (____)

1. Verify RPV pressure is less than FPW pressure . . . . . (__)
(*2CEC-PNL849*, *2FPW-PI215*)

2. Open RHS*MOV24B, LPCI B INJECTION VLV to commence injection (*2CEC*PNL601*). . . . . (__)

b. IF injection is through 2RHS*MOV40B:

N/A, will **NOT** be injecting through 2RHS*MOV40B . . . . . .(____)

1. Verify RPV pressure is less than FPW pressure (*2CEC-PNL849*, *2FPW-PI215*. . . . . (__)

NOTES: 1. The following substeps will defeat Group 5 isolation.

T 2. A L660 Key is required to gain entry to 2CEC*PNL622 *(Control Room)*

T 2. Install EOP Jumper #9 between terminal points BB-41 **AND** BB-60 at 2CEC*PNL622. . . . (__)

T 3. Lift **AND** tape the lead on terminal point BB-62 at 2CEC*PNL622 . . . . . (__)

T 4. Using a PA235 key open RHS*MOV40B, SDC B RETURN (*2CEC*PNL601*) . . . . . (__)

3.2.12.b (Cont)

c. IF injection is through 2RHS*MOV104:

N/A, will **NOT** be injecting through 2RHS*MOV104 . . . . . .(____)

1. Ensure RPV pressure is less than FPW pressure (*2CEC-PNL849*, *2FPW-PI215*) . . . . . (__)

NOTES:
1. The following substeps will defeat Group 5 isolation.
2. A L660 Key is required to gain entry to 2CEC*PNL623 *(Control Room)*.

(T) 2. Install EOP Jumper #22 between terminal points AA-8 **AND** BB-20 at 2CEC*PNL623 . . . . (__)

(T) 3. Lift **AND** tape the lead on terminal point BB-22 at 2CEC*PNL623 . . . . . (__)

(T) 4. Using a PA235 key open RHS*MOV104, RHR TO REACTOR HEAD SPRAY (*2CEC*PNL601*). . . (__)

3.2.13 FPW Injection Flow To Primary Containment

N/A, FPW injection to Primary Containment **NOT** required. . . . . (____)

a. Perform one of the following:

NOTE: Suppression chamber sprays may be used only while suppression chamber pressure remains greater than 0 psig.

1. Open RHS*MOV33B, OUTLET TO SUPPR POOL SPRAY **OR**. . . . . (__)

NOTE: Drywell sprays may be used only when conditions exist that require drywell sprays **AND** the Drywell Spray Initiation Limit is satisfied.

3.2.13.a (Cont)

2. **IF** Drywell pressure is greater than 1.68 psig **AND** it is required to defeat 2RHS*MOV15B/25B valve interlocks, perform the following:

N/A, Drywell pressure is less than 1.68 psig **OR** interlocks do NOT need to be defeated . . . . (____)

(T) • At 2CEC*PNL704, Bay A, Install EOP Jumper #33 from terminal strip TC110, TB2 terminal 7 to terminal strip TC112, TB2 terminal 19 (*Control Room*). . . . . (__)

(T) • At 2CEC*PNL704, Bay A, Install EOP Jumper #34 from terminal strip TC108, TB1 terminal 2 to terminal strip TC108, TB1 terminal 4 (*Control Room*) . . . . . (__)

3. Open RHS*MOV15B, OUTLET TO DRYWELL SPRAY
AND
RHS*MOV25B, OUTLET TO DRYWELL SPRAY
OR . . . . . (__)

4. Open RHS*FV38B, RETURN TO SUPPR POOL COOLING. . . . . (__)

b. **IF** FPW Header pressure lowers to below Containment pressure , perform Subsection 3.3 . (__)

3.3 Loss of FPW Header Pressure

N/A, Subsection 3.3, Loss of FPW header pressure will NOT be used. . . . . .(____)

NOTE: All hoses and piping should be treated as contaminated.

3.3.1 For RHS A, close the following:

• 2FPW-V391, FHR 93 ANGLE VALVE (*Rx Bldg, EL 289, near North stairwell entrance*). . . . . (__)

• 2RHS*V70, CONDENSATE FLUSH TO A CONTMT SPRAY HDR (*Rx Bldg EL 289, between 2RHS*MOV24A and 2HVR*UC413B*). . . . . (__)

3.3.2 For RHS B, close the following:

- 2FPW-V375, FHR 78 ANGLE VALVE **OR** 2FPW-V383, FHR 86 ANGLE VALVE *(Rx Bldg, EL 289, near South stairwell entrance or across aisle from SLS Storage Tank)*. . . . . (__)

- 2RHS*V79, CONDENSATE FLUSH TO HEAD SPRAY HDR ISOL *(Rx Bldg EL 289)*. . . . . (__)

3.3.3 Notify the EOP Director/SSS that FPW to RHS has been isolated. . . . . (__)

Nine Mile Point 2 Category "A" - Examination Outline Cross Reference	
Operating Test Number	Cat "A" Test: 1
Examination Level	RO
Administrative Topic	A.2
Subject Description:	P&IDs
Question Number:	2

Question:

The plant is operating at power, when a LOCA signal is received.

Using RESIDUAL HEAT REMOVAL PRINT PID-31A-13, describe how the motor operated Testable Check Bypass Valve RHS*MOV67B is lined up during power operations and how the valve will respond to the LOCA signal.

Answer:

Valve is closed and will remain closed.
Per Note 9, The power supplies to the motor operator are opened to preclude spurious actuation during a control room fire.

Technical Reference(s):
PID-31A-13, Note 9

K/A #:	Importance:
2.1.24	2.8

Comments:

NIAGARA MOHAWK POWER CORPORATION

NINE MILE POINT NUCLEAR STATION

O2-OPS-001-205-2-00 Revision: 2

TITLE: RESIDUAL HEAT REMOVAL SYSTEM (RHR)

	SIGNATURE	DATE
PREPARER	G Bobka	6/19/98
CONFIGURATION CONTROL COORDINATOR (if applicable) LA	D Bridges	6/22/98
GENERAL SUPERVISOR TRAINING	[illegible]	7/15/98
PLANT SUPERVISOR/ USER GROUP SUPERVISOR	[illegible]	7/17/98
PLANT SUPERVISOR/ USER GROUP SUPERVISOR (if appropriate)	N/R	N/R

MASTER CONTROLLED DOCUMENT

(Effective Date: 7/20/98)

Number of Pages: 113

Summary of Affected Pages

Document	Date	Pages
Lesson Plan	June 1998	1 - 24
Attachment 1	June 1998	1 - 89

B. Controls

EO-4.c

The RHS Heat Exchanger Pressure Controller regulates heat exchanger pressure in the steam condensing mode by positioning of the steam pressure control valves (PV21A/B). Each controller allows automatic pressure control between 0 and 500 psig.

The heat exchanger level and RCIC suction pressure are controlled by the MOV-17A/B valves when in steam condensing mode. The MOV-17 valves are controlled to maintain heat exchanger level and condensate to RCIC return line pressure. The choice of which parameter controls LV-17 is done automatically. When heat exchanger level rises above its setpoint the control valve will open to restore level. When condensate discharge pressure rises above its setpoint (0 -200 psig), the control valve will throttle closed. As long as heat exchanger level control does not cause discharge pressure to rise above its setpoint, level will be the controlling parameter.

Figure 4

When valve controllers are in manual, the operator has remote control of the valve and system parameter. When transferring controllers from manual to auto , ensure signals are matched to provide a "bumpless transfer."

H. EO-1.0

Pushbuttons for manual initiation of LPCI are located on Panel 601. The Division I pushbutton initiates LPCI 'A' and LPCS. The Division II pushbutton initiates LPCI 'B' and 'C'. Manual initiation of a Division will also start the associated Emergency Diesel Generator.

C. Interlocks

Each division of LPCI is automatically initiated by a one-out-of-two twice logic scheme of triple-low reactor water level (17.8 inches) and/or high drywell pressure (1.68 psig) signals. These conditions indicate that a LOCA has occurred.

The Containment Isolation System (ISC) provides isolation signals to RHS system valves used for Sampling and Radwaste Discharge (Group 4), Shutdown Cooling and Head Spray (Group 5).

To prevent inadvertent draining of the reactor vessel, the shutdown cooling suction valves (MOV-2A and B) are interlocked with the suppression pool suction valves (MOV-1A and B), the test return valves (FV-38A and B), and the suppression pool spray valves (MOV-33A and B). If the suppression pool suction valve, the test return valve, and the suppression pool spray valve are not fully closed, the shutdown cooling suction valve to that loop cannot be opened.

Also, in order to open the suppression pool suction valves (MOV-1A and B) the shutdown cooling suction valves (MOV-2A and B) must be fully closed. A similar interlock exists such that the suction valve and suppression pool spray valve cannot be open unless the shutdown cooling suction valve is shut.

RHS pump controls (A and B) are interlocked with the valves which can isolate the suction path for each pump. Pump starting is prohibited unless one of the following combinations of valves are fully open: suction from the reactor recirc loop for shutdown cooling (MOV-112, MOV-113, and MOV-2A or B) or, suction from the suppression pool (MOV-1A or B). If a RHS pump is running and its suction valve leaves its fully open position, the pump trips.

The shutdown cooling containment isolation valves (MOV-112 and 113), the reactor head spray valve (MOV-104), the shutdown cooling return valves (MOV 40A and B), and the shutdown cooling bypass valves (MOV 67A and B) shut on the following signals (Group 5 isolation)

- high reactor pressure of 128 psig
- low reactor level of 159.3 inches
- high RHS area temperature of 135°F

- high reactor building temperature of 130.2°F
- high reactor building pipe chase temperature of 135°F

In the steam condensing mode, the pressure control valve bypass valves (MOV-23A/B) close if reactor pressure is above 465 psig. This prevents exceeding RHS design pressure.

The LPCI injection valves (MOV-24A/B/C) cannot be opened (manual or automatic) unless the differential pressure across the valve is less than 130 psid. On a LPCI initiation, once the valve is full open, it can be shut, and the amber manual override light will illuminate.

The suppression pool cooling valve (FV-38A/B) cannot be opened during a LOCA unless the respective LPCI injection valve (MOV-24) is shut. If open, it will automatically shut on a LPCI initiation.

The suppression pool spray valve (MOV-33A/B) cannot be opened during a LOCA unless the respective LPCI injection valve (MOV-24) is shut, high drywell pressure exists and an initiation signal is sealed in. It will automatically shut when the high drywell pressure clears. If open, it will automatically shutdown a LPCI initiation.

Drywell spray isolation valves (MOV-25A/B and MOV-15A/B) cannot be opened simultaneously unless the conditions are met to initiate containment spray cooling. The conditions are, an initiation signal is sealed in, a high drywell pressure signal exists, and the associated LPCI injection valve is shut. They have no auto closure features. If high drywell signal clears while valves are traveling open, they will stop right where they are.

The heat exchanger bypass valve (MOV-8A/B) will open/stay open for 10 minutes following an initiation signal. This allows full system flow following an initiation.

Nine Mile Point 2 Category "A" - Examination Outline Cross Reference	
Operating Test Number	Cat "A" Test: 1
Examination Level	RO
Administrative Topic	A.3
Subject Description:	Radiation Work Permits
Question Number:	1

Question:

Review the attached Survey 68 for Turbine Building 277' Condensate Demin Valve Aisle and identify the radiological hazard(s).

Answer:

a. Contaminated areas identified by lines with Xs on the left hand side of the room with contamination levels of (from bottom of page) 720dpm/100cm^2 , 3000dpm/100cm^2, and 3100dpm/100cm^2 .

b. High radiation levels in the bottom left hand side of the Valve aisle with radiation levels of 115mr/hr, 130mr/hr and 120 mr/hr.

Technical Reference(s):
S-RAP-RPP-0103, Sect. 4.0

K/A #:	Importance:
2.3.10	2.9

Comments:

68	Turbine Building 277' Condensate Demin Valve Aisle	Survey # 215-16734 Date: 9/28/99 Page 2 of 2

- mRem/hr general area
β - mRad/hr general area
@ 30cm - dose rate @ 30cm from component
@ cont - dose rate @ contact with component

-contamination in dpm/100cm²
-contamination on component in dpm/100cm²
- location of LAW
- - - - boundary
⊕ = <100dpm/100cm²

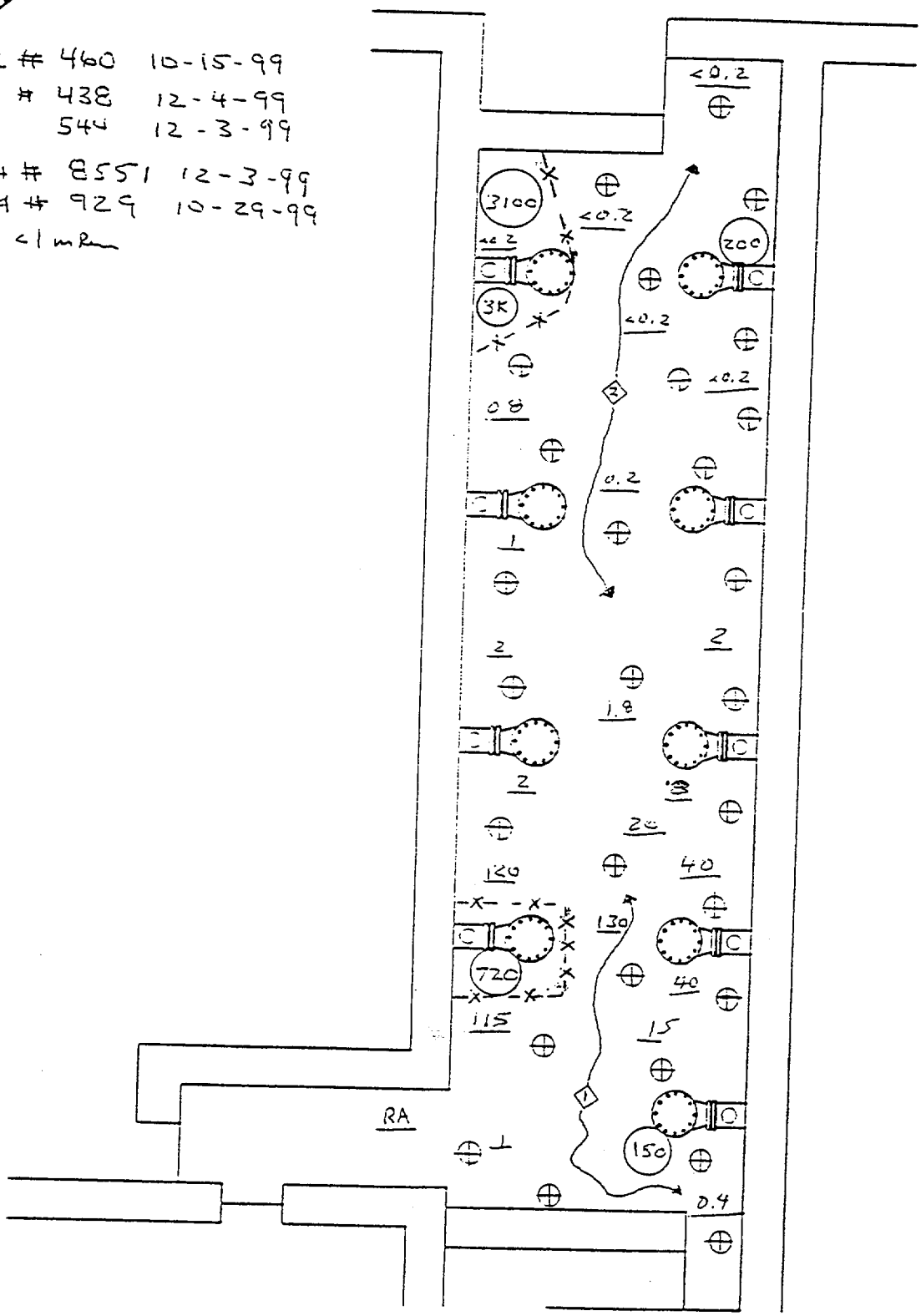
No β detected unless otherwise noted.
10 % of all smears >100dpm/100cm² were counted for α with results <10dpm/100cm² unless otherwise noted

LAW 2 were < BKGD of 100 cpm/15cm2 Direct Frisk

Rx power level: 100 %
Surveyed by: O. Allison

N

Ro 2 # 460 10-15-99
Sc 4 # 438 12-4-99
544 12-3-99
Im 14 # 8551 12-3-99
Stc 4 # 929 10-29-99
OA <1 mRem



NIAGARA MOHAWK POWER CORPORATION

NINE MILE POINT NUCLEAR STATION

RADIATION PROTECTION ADMINISTRATIVE PROCEDURE

S-RAP-RPP-0103

REVISION 09

POSTING RADIOLOGICAL AREAS

Approved by:
V. L. Schuman

Manager Radiation Protection - Unit 1

31 Mar 99
Date

Approved by:
D. W. Barcomb

Manager Radiation Protection - Unit 2

3-31-99
Date

Effective Date: 04/08/99

3.3.4 (Cont)

d. Radiation Protection should observe and assist workers with personal monitoring prior to entering the Green Area.

e. Surveying the transport cart for RCA release should be performed per station procedure with the inside of the cart being surveyed at least once per shift when in use to ensure radiological cleanliness. Personal belongings inside the cart may be transferred to and from the Green Area without being surveyed.

4.0 DEFINITIONS

4.1 Accessible

Floor level up to approximately 6 feet and permanently installed platforms capable of being reached by a portion of the whole body. Does not include overhead areas that require climbing on plant structures or the use of portable ladders, scaffolding, etc.

4.2 Airborne Radioactivity Area

A room, enclosure, or area in which airborne radioactive materials, composed wholly or partly of licensed material, exist in concentrations:

a. In excess of the derived air concentrations (DACS) specified in Appendix B, to §§ 20.1001 - 20.2401, or

b. To such a degree that an individual present in the area without respiratory protective equipment could exceed, during the hours an individual is present in a week, an intake of 0.6 percent of the annual limit on intake (ALI) or 12 DAC hours.

4.3 Boundary

A means of limiting access by use of ropes, step-off-pads, tape, and other physical structures used to border a radiologically controlled area. The vertical planes formed by rope or other structures should define the area of control unless otherwise specified by RP Supervision.

4.4 Contaminated Area

Areas accessible to personnel where surface contamination exceeds:

4.4.1 400 dpm/100 cm^2 removable beta-gamma; OR

4.4.2 20 dpm/100 cm^2 removable alpha.

4.5 Deep Dose Equivalent

The dose equivalent at a tissue depth of 1 cm which applies to external whole body exposure.

4.6 Hands Off Inspection

Inspections conducted in radiologically controlled areas limiting physical contact with plant components and structures to that necessary to maintain individual safety (e.g., hand rails, railings).

4.7 Locked High Radiation Area

An area, accessible to individuals, in which radiation levels could result in an individual receiving a dose equivalent in excess of 1000 mrem in one hour at 30 cm from the radiation source or from any surface that the radiation penetrates.

4.8 High Radiation Area

An area, accessible to individuals, in which radiation levels could result in an individual receiving a dose equivalent in excess of 100 mrem in one hour at 30 cm from the radiation source or from any surface that the radiation penetrates.

4.9 Hot Particle Area

Work area within the RCA where hot particles have been identified.

4.10 Hot Spot

A locally intense source of radiation in which whole body exposure is greater than 25 mRem/hr at 30 cm and exceeds general area radiation levels by a factor of 5.

4.11 Derived Air Concentration

The concentration of a given radionuclide in air which, if breathed by the reference man for a working year of 2,000 hours under conditions of light work (inhalation rate 1.2 cubic meters of air per hour), results in an intake of one Annual Limit of Intake (ALI). DAC values are given in Table 1, Column 3, of appendix B to §§ 20.1001 - 20.2401.

4.12 Neutron Radiation Area

Areas accessible to personnel in which there exists neutron radiation at levels such that a major portion of the body could receive a neutron dose equivalent in excess of 2 mrem in one hour.

4.13 Posted Area

Room, area, component, etc., that has a sign bearing the radiation caution symbol and a warning of the radiological conditions in the room or area.

4.14 Radiation Area

Areas accessible to individuals in which there exists radiation at such levels that an individual could receive a dose equivalent in excess of 5 mrem in any one hour at 30 cm from the radiation source or from any surface that the radiation penetrates.

4.15 Radioactive Material

For the purposes of tagging or labeling items or containers, radioactive materials are:

4.15.1 Any item or liquid removed from a contaminated area or system until sampled or surveyed by Radiation Protection personnel or other designated qualified individual.

4.15.2 Material inside the RCA that exceeds 18000 cpm/15 cm^2 (5 mRad/hr) fixed contamination or removable contamination in excess of 400 dpm/100 cm^2 beta-gamma or 20 dpm/100 cm^2 alpha.

4.15.3 Material (other than natural uranium or thorium) determined by Radiation Protection to exceed the applicable quantities listed in 10CFR20 Appendix C.

4.15.4 Material consisting only of natural uranium or thorium determined by Radiation Protection to exceed 10 times the applicable quantities listed in 10CFR20 Appendix C.

4.15.5 Any liquid determined to exceed the applicable concentrations listed in IOCFR20, Appendix B.

4.15.6 Material for release from the RCA determined by Radiation Protection to exceed the applicable quantities listed in 10CFR20 or as per requirements of S-RPIP-3.3.

4.16 Radioactive Material Storage Area

Areas designated for storage of radioactive materials in accordance with GAP-INV-02, Control of Material Storage Areas which:

4.16.1 Contain Radioactive Material that exceeds Restricted Area Control Limits of 18000 cpm/15 cm^2 fixed contamination or removable contamination of 400 dpm/100 cm^2 beta-gamma or 20 dpm/100 cm^2 alpha.

4.16.2 Contain Radioactive Materials in excess of 10 times (or natural uranium or thorium in excess of 100 times) the quantity of materials specified in IOCFR20, Appendix C, or 12 NYCRR, Table 7.

4.17 Radiologically Controlled Area (RCA)

Major plant areas access to which is limited for the purpose of protecting personnel from exposure to radiation and contamination. Examples include the Reactor, Turbine, Radwaste and Offgas Buildings.

Other radiologically controlled areas may be established with protective requirements specified by RP Supervision. Examples might include Radioactive Material Storage Areas at the warehouse or elsewhere on site.

4.18 Temporary Shielding

Any material authorized by the RP Supervisor or Designee to reduce beta, gamma or neutron exposure.

4.19 Very High Radiation Area

Areas accessible to personnel in which radiation levels could result in an individual(s) receiving an absorbed dose in excess of 500 rads in one hour at one meter from the source or any surface that the radiation penetrates.

Potential VHRA include, but are not limited to:

- TIP Rooms
- Upper Elevations of the Drywell during fuel moves
- Spent Fuel Pool during diving operations

4.20 Whole Body

Head, trunk (including male gonads), arms above the elbows, or legs above the knee.

4.21 Green Area

A low dose clean area, normally <0.2 mRem/hr and $\leq$100 dpm/100 cm^2 smearable, temporarily set up within the RCA to f7acilitate on going work.

4.22 Ready for Transport

When a package/vehicle is properly packaged, labeled, marked and placarded in accordance with all applicable regulations, shipping papers are in possession of the driver or attached to the package, and the carrier has taken possession of the package/vehicle.

Nine Mile Point 2 Category "A" - Examination Outline Cross Reference	
Operating Test Number	Cat "A" Test: 1
Examination Level	RO
Administrative Topic	A.3
Subject Description:	Radiation Work Permits
Question Number:	2

Question:

Review the attached Radiation Work Permit (22, Revision 313) and identify the following:

a. Sign in requirements for Auxiliary Operators.

b. What protective clothing is required?

c. While passing through an area you check your Electronic Dosimeter (ED) and it is reading 120 mRem/hr. As you leave the area your ED reading lowers to 5 mRem/hr. No alarm was received. What action is required?

Answer:

a. Auxiliary Operators should sign in at the beginning and end of their shift.

b. Worker Type 1 is No protective clothing required.

c. The ED should have alarmed at 50 mRem/hr, immediately contact or report to Rad. Protection.

Technical Reference(s):

S-RAP-RPP-0202, Attachment 1
GAP-RPP-07, Sect. 3.5

K/A #:	Importance:
2.3.10	2.9

Comments:

Niagara Mohawk

Tuesday, June 29, 1999

APPROVED FOR WORK

Radiation Work Permit: 22 revision: 313

OPERATIONS DEPARTMENT (STANDING RWP)
Perform Rounds/Markups/Valve Lineups/Minor
High Radiation Area

Survey Data:

Maximum Walk Through to Work Area <100 mRem/hr, <40,000 dpm/100cm2, <0.3 DAC
Maximum Work Area <100 mRem/hr, <40,000 dpm/100cm2, <0.3 DAC
As Posted and/or per RP Briefing

[redacted]

TASK: 1 revision: 73

Normal Rounds/Markups/Observations and Inspections

Dose Alarm: 50 mRem
Dose Rate Alarm: 100 mRem/hr

Protective Clothing Requirements: Worker Type 1

TLD, Electronic Dosimeter

Instructions:

1) Exposure guide = 50 mRem/day. RP Approval required to exceed the daily guide.
2) Personnel shall sign in/out on this RWP for each RCA entry.Shift personnel requiring frequent, routine or immediate access may sign in/out once per shift.
3) Keep RP informed of work activities in progress.
4) Access the RCA at ACB 261' or as approved by RP.
5) Protective clothing requirements as posted or required by RP.
6) No entry above arms reach or access to unsurveyed permanently installed platforms without RP approval.
7) As approved by RP for High Radiation Area entries.
8) Stay time limited to 1 minute in areas > 1000 mRem/hr, unless specifically approved otherwise by RP.

No entry into the following unless specifically approved approved by RP: Very High Radiation Areas, High Radiation Areas, Neutron Radiation Areas, Airborne Radiation Areas, Contaminated Areas > 40,000 dpm/100cm2.

Scanning or entering RWP and Task number signify that I have read, understand and will comply with the RWP

NIAGARA MOHAWK POWER CORPORATION

NINE MILE POINT NUCLEAR STATION

GENERATION ADMINISTRATIVE PROCEDURE

GAP-RPP-07

REVISION 05

INTERNAL AND EXTERNAL DOSIMETRY PROGRAM

TECHNICAL SPECIFICATION REQUIRED

Approved by:
R. G. Smith

Plant Manager - Unit 1

12/28/98
Date

Approved by:
N. C. Paleologos

Plant Manager - Unit 2

12/23/98
Date

THIS IS A FULL REVISION

Effective Date: 12/31/1998

3.3.5 (Cont)

b. The Radiation Protection Computer System (RPCS) will serve as the database/tracking system for determining compliance with all occupational dose limits

c. RP Supervision shall perform an assessment of the doses accrued by individuals who exceed their administrative dose limit

3.4 Normal Use and Placement of Dosimetry

3.4.1 Whole Body dosimetry shall be placed on the body in a manner such that its measurement represents uniform exposure of the whole body, including the extremities, unless the extremities or other Whole Body areas are specifically monitored as per S-RPIP-5.1

3.4.2 Normal use and placement of dosimetry on the body of monitored individuals is as follows:

a. Should be attached to a lanyard.

b. Worn on the outermost (personal) garment.

c. Worn on the front torso, on or above the beltline and below the neck.

d. Rad Protection will determine the need for other requirements, as per S-RPIP-5.1.

3.4.3 Workers should verify Electronic Dosimeters are activated prior to RCA entry and should periodically check their SRDs while in the RCA

3.5 Problems or Questions with Dosimetry

3.5.1 Workers shall immediately report to Rad Protection when a problem with dosimetry is suspected

3.5.2 Workers who have lost or damaged dosimetry shall, immediately upon discovery, contact Rad Protection who will provide instructions as per S-RPIP-5.1

3.5.3 Workers whose SRD alarms or reads offscale (where applicable) shall immediately leave the area and contact Rad Protection

3.5.4 Rad Protection shall determine the need for an evaluation of exposure received as per S-RPIP-5.25

3.5.5 Personnel visiting other Nuclear Sites where occupational radiation exposure is expected to be received, shall contact Radiation Protection, and have their dosimetry dispositioned as per S-RAP-RPP-0704

3.6 Internal and External Dose Determination

3.6.1 External Dose Determination

a. TLDs shall be prepared and returned to the TLD Processor for external dose determination, and dose results received by Dosimetry, as per S-RAP-RPP-0704

b. TLD results LESS THAN 10 mRem shall be recorded in personnel exposures files as '0' mRem

c. Skin dose assessments resulting from contamination of the skin shall be made as per S-RPIP-5.5

d. The external exposure received by the embryo/fetus of a declared pregnant woman shall be equal to the Deep Dose Equivalent (DDE) of the declared pregnant woman.

e. Neutron dose estimates shall be made by Rad Protection as per S-RPIP-5.3.

3.6.2 Internal Dose Determination

a. In-Vivo Bioassay (ie Whole Body Counting) of individuals shall be performed as per S-RPIP-5.12 or S-RTP-122, where applicable

b. In-Vitro Bioassay (eg Urine) sample collection shall be performed as per S-RPIP-5.7

c. Bioassay results shall be evaluated, as necessary, as per S-RPIP-5.7

d. Internal dose results LESS THAN 10 mRem shall be recorded in personnel exposures files as '0' mRem, or other similar assignments (eg NC for not calculated)

e. Embryo/fetus internal exposures shall be determined using the guidance provided by Reg. Guide 8.36 (7/92), unless otherwise specified by RP Supervision.

   1. The dose to the maternal uterus resulting from radioactivity burdens in the declared pregnant woman, should be assumed to represent the internal exposure received by the embryo/fetus.

3.6.3 Controlled Area dose assessments shall be performed as per S-RAP-ALA-0103

NIAGARA MOHAWK POWER CORPORATION

NINE MILE POINT NUCLEAR STATION

RADIATION PROCEDURE ADMINISTRATIVE

S-RAP-RPP-0202

REVISION 04

SELECTION, DONNING, AND REMOVAL OF PROTECTIVE CLOTHING

CONTROLLED

Approved by: V. L. Schuman	Manager Radiation Protection - Unit 1	22 Apr 99 Date
Approved by: D. W. Barcomb	Manager Radiation Protection - Unit 2	4-20-99 Date

Effective Date: 04/30/1999

ATTACHMENT 1: PROTECTIVE CLOTHING GUIDE

INSPECTIONS & OBSERVATIONS		HEAVY WORK ACTIVITY	
DRYWORK	WETWORK	DRYWORK	WETWORK
* (dpm/100cm^2)	*(dpm/100cm^2)	*(dpm/100cm^2)	*(dpm/100cm^2)
<400 A	<400 A	<400 A	<400 A
400 - 40,000 C(B)	400 - 40,000 C	400 - 100,000 D	400 - 400,000 F
>40,000 D	>40,000 F	>100,000 E	>400,000 G

* Removable surface contamination

Code	Minimum Clothing Guide
A	*Worker type 1*
B	• 400 - 1,000 dpm/100 cm^2 *Worker type 2*(see Notes 4,5 and 6) • 1,000-25,000 dpm/100 cm^2 *Worker type 2*(See Notes 4,5 and 6) • 25,000 dpm/100 cm^2, C applies
C	*Worker type 3* (see Note 1)
D	*Worker type 3* 40,000 - 100,000 dpm/100cm^2 determine need to prescribe E requirements
E	*Worker type 4* (see Note 2)
F	Plastic wet suit(see Notes 2 and 3) **PLUS** *Worker type 3* Assistance should be available for undressing
G	*Worker type 3* **PLUS** Air-line bubble suit or equivalent Assistance should be available for undressing

Worker Type 1: *No Protective Clothing required.*

Worker Type 2: *Cotton liners, Rubber gloves, Cotton booties, Rubber shoe covers.*

Worker Type 3: *Cotton liners, Rubber gloves, Cotton booties, Rubber shoe covers, Cotton coveralls, Cotton cap, Cotton hood.*

Worker Type 4: *Cotton liners, Rubber gloves(2 pair), Cotton booties(2 pair), Rubber shoe covers, Cotton coveralls(2 Pair), Cotton cap. Cotton hood.*

Worker Type 5: *As defined by Radiation Protection Personnel*

NOTES:

1. Cap should cover hair. A hood should be worn over the respirator straps unless water is overhead. If so, a plastic hood should be required.

2. Personnel should be required to wear some form of facial skin protection such as face shields in highly contaminated areas or when working in tight, confined spaces (e.g. between exposed turbine blades).

3. If work is to continue after removing plastic clothing, the protective cloth clothing should be changed to prevent migration of contaminants.

4. Lab coats may be specified as part of minimum clothing requirements to preclude personal clothing contaminations from inadvertent contact with surroundings.

5. Type of gloves should be consistent with expected contamination state (e.g. rubber for wet environment, rubber or cloth for dry environment).

6. If the activity involves repeated handling or rubbing against objects (e.g., cable pulls, overhead work, crawling or climbing, etc.), consider the use of scrub suits, or alternatives (Tyveks).

Code	Minimum Clothing Guide
A	*Worker type 1*
B	• 400 - 1,000 dpm/100 cm^2 *Worker type 2*(see Notes 4,5 and 6) • 1,000-25,000 dpm/100 cm^2 *Worker type 2*(See Notes 4,5 and 6) • 25,000 dpm/100 cm^2, C applies
C	*Worker type 3* (see Note 1)
D	*Worker type 3* 40,000 - 100,000 dpm/100cm^2 determine need to prescribe E requirements
E	*Worker type 4* (see Note 2)
F	Plastic wet suit(see Notes 2 and 3) **PLUS** *Worker type 3* Assistance should be available for undressing
G	*Worker type 3* **PLUS** Air-line bubble suit or equivalent Assistance should be available for undressing

Worker Type 1: *No Protective Clothing required.*

Worker Type 2: *Cotton liners, Rubber gloves, Cotton booties, Rubber shoe covers.*

Worker Type 3: *Cotton liners, Rubber gloves, Cotton booties, Rubber shoe covers, Cotton coveralls, Cotton cap, Cotton hood.*

Worker Type 4: *Cotton liners, Rubber gloves(2 pair), Cotton booties(2 pair), Rubber shoe covers, Cotton coveralls(2 Pair), Cotton cap. Cotton hood.*

Worker Type 5: *As defined by Radiation Protection Personnel*

Nine Mile Point 2 Category "A" - Examination Outline Cross Reference	
Operating Test Number	Cat "A" Test: 1
Examination Level	RO
Administrative Topic	A.4
Subject Description:	Emergency Classification
Question Number:	1

Question:

The station is currently at an ALERT due to an ATWS. The OSC is operational.

You are performing the actions to vent the scram air header as directed by the Control Room when the Station Evacuation alarm is sounded and the required announcements for a Station Evacuation are made.

What are your actions in response to the Station Evacuation?

Answer:

Contact the SSS/SED and request direction to continue the activity, report to the Control Room, or report to the OSC.

Technical Reference(s):

EPIP-EPP-22, Rev 03, Section 3.8

K/A #:	Importance:
2.4.12	3.4
2.4.29	2.6
2.4.34	3.8
2.4.41	2.3

Comments:

NIAGARA MOHAWK POWER CORPORATION

NINE MILE POINT NUCLEAR STATION

EMERGENCY PLAN IMPLEMENTING PROCEDURE

EPIP-EPP-22

REVISION 03

DAMAGE CONTROL

TECHNICAL SPECIFICATION REQUIRED

Approved by:
R. G. Smith

Plant Manager - Unit 1

6/16/98
Date

Approved by:
K. A. Dahlberg

Plant Manager - Unit 2

6/12/98
Date

THIS IS A FULL REVISION

PERIODIC REVIEW, 05/19/1999, NO CHANGE

Effective Date: 06/30/98

PERIODIC REVIEW DUE DATE MAY 2000

1.0 PURPOSE

To define the actions which provide for the assessment, repair, and maintenance of equipment/components during a declared emergency.

2.0 RESPONSIBILITIES

2.1 Station Shift Supervisor (SSS)/Site Emergency Director

2.1.1 Directs DCT actions necessary to ensure the mitigation of the event prior to the OSC being activated.

2.1.2 Provides priorities for damage control activities to the SED based on nuclear safety and the overall operation of the plant.

2.2 Site Emergency Director (SED) evaluates and approves the use of Damage Control Teams to minimize, control, or terminate the emergency condition.

2.3 Technical Support Center (TSC) Maintenance Coordinator

2.3.1 Approves damage control efforts and coordinates efforts between the SED, OSC Coordinator and SSS.

2.3.2 Provides technical and administrative direction to the Damage Control Teams through the Damage Control Coordinator or OSC Coordinator.

2.4 Operations Support Center (OSC) Coordinator coordinates and supervises the overall emergency response operations of the (OSC).

2.5 Damage Control Team Coordinator (OSC)

2.5.1 Provides technical and administrative direction to Damage Control Teams as directed by the OSC Coordinator or the (TSC) Maintenance Coordinator.

2.5.2 Assesses necessary personnel or equipment needs to effect emergency repairs.

2.6 Damage Control Team (DCT) provides initial assessment of station damage and performs emergency repairs required to mitigate the effects of the accident.

2.7 Radiation Protection Team Coordinator (OSC) provides briefings on the radiological conditions associated with the Damage Control effort.

2.8 Radiological Assessment Manager (TSC) approves Damage Control Team efforts and manages on-site radiological assessment aspects of an emergency.

2.9 Operations Personnel not assigned damage control team (DCT) or control room activities report to the OSC upon activation of the OSC.

3.0 PROCEDURE

NOTE: Checklists found in this procedure are intended to be used as guides.

3.1 **The OSC Coordinator** should oversee coordination of damage control activities through use of checklists in this procedure as appropriate.

3.2 **The (TSC) Maintenance Coordinator** should utilize the checklist in Attachment 1.

3.3 **The (OSC) Damage Control Team Coordinator** should utilize the checklist in Attachment 2.

3.4 **The Damage Control Team** should utilize the checklist in Attachment 3.

3.5 **The (OSC) Radiation Protection Team Coordinator** should provide briefings to Damage Control Teams on radiological topics identified in Attachment 3.

3.6 **The SSS/SED** should:

3.6.1 Direct available operations/maintenance personnel to perform required damage control activities until OSC activation or event termination.

3.6.2 Upon OSC activation, direct operations personnel not actively participating in either damage control or control room activities to report to the OSC.

3.6.3 Ensure damage control actions accomplished and or underway are included in SED turnover.

3.6.4 Provide priorities and direction of damage control teams through the TSC/SED.

3.7 During a declared emergency, **Operations personnel** NOT actively participating in damage control or control room activities should:

3.7.1 Perform DCT activities as directed by the SSS/SED prior to the OSC activation

3.7.2 Upon activation of the OSC, report to the OSC

3.7.3 Standby for assignment to DCT.

3.7.4 When assigned to DCT:

- Participate in DCT briefing.
- Ensure DCT understands mission necessity from operations standpoint.
- Coordinate needed manipulations of plant systems/equipment through the CSO.
- Ensure plant/system/equipment manipulations are carried out in accordance with approved procedures.

3.8 Upon OSC activation, **operations personnel** directly involved with damage control or control room activities should:

3.8.1 Contact the SSS/SED and request directions to:

- either continue activities or
- return to control room or
- report to the OSC

3.8.2 Continue activities as directed.

4.0 DEFINITIONS

None

5.0 REFERENCES AND COMMITMENTS

5.1 Technical Specifications

None

5.2 Licensee Documentation

Site Emergency Plan

5.3 Standards, Regulations, and Codes

None

5.4 Policies, Programs and Procedures

5.4.1 EPIP-EPP-15, Emergency Health Physics Procedure

5.4.2 EPMP-EPP-02, Emergency Equipment Inventories and Checklists

Nine Mile Point 2 Category "A" - Examination Outline Cross Reference	
Operating Test Number	Cat "A" Test: 1
Examination Level	RO
Administrative Topic	A.4
Subject Description:	Emergency Classification
Question Number:	2

Question:

During a Hydrogen fire at the Generator seals two (2) maintenance personnel are missing. With the fire still burning the OSC becomes operational. You are directed to execute the CSO Search/Rescue Operations Checklist.

How will the search and rescue be organized?

Answer:

The Fire Brigade should report to the OSC for Search and Rescue operations. This is NOT an Appendix R fire.

Technical Reference(s):

10CFR50, App R, EPIP-EPP-03

K/A #:	Importance:
2.4.26	2.9

Comments:

ATTACHMENT 1: CHIEF SHIFT OPERATOR (CSO) SEARCH/RESCUE OPERATIONS CHECKLIST

NAME:	DATE:	UNIT: 1 ☐ 2 ☐

NOTE: If at any time during the conduct of this checklist the missing person is located or the trapped or disabled individual is rescued, proceed to step 18. (NA may be used as applicable)

		COMPLETE	N/A
1.	This is/is not a drill	☐	☐
2.	Notified by (name and Dept. of caller)_____	☐	☐
3.	Name and department of missing person(s)_____	☐	☐
4.	Last known location(s)_____	☐	☐
5.	Apparent condition of individual (if trapped or disabled)_____	☐	☐
6.	Any circumstances that may affect search and rescue operations, such as fire, explosion, or high radiation levels._____	☐	☐
7.	Notify the SSS/SED of missing, injured, or trapped individual	☐	☐
8.	Missing person's supervisor(s) notified (name)_____	☐	☐
9.	Security notified/ACAD run requested	☐	☐
	a. Individual(s) positively determined to have left site, proceed to step 18 and terminate	☐	☐
	b. Individual(s) shown to be on-site, continue with step 10	☐	☐
10.	Page the missing person using the Merge Mode (have the individual contact the applicable Unit Control Room)	☐	☐
11.	Wait for 2 minutes	☐	☐
12.	If no response, page missing person again	☐	☐

		COMPLETE	N/A
13.	If the individual does not reply after an additional 2 minutes, then make the following announcement at your Unit using the Merge mode: *"This (is/is not) a Drill"* Sound the Station Alarm *"Attention, attention all personnel, if anyone knows the present location of _____ (name and department of missing individual(s)) please contact the Unit 1/2 Control Room immediately. I repeat this (is/is not) a drill*	☐	☐
	Repeat the station alarm and the announcement	☐	☐
14.	If the OSC is not operational and a confirmed fire is NOT in progress, make the following announcement using the Merge Mode: *"This (is/is not) a Drill"* Sound the Station Alarm and announce: *"Attention, attention all personnel. The Fire Brigade shall report to the Control Room for Search and Rescue Operations". "I repeat this (is/is not) a drill".*	☐	☐
	Repeat the station alarm and the announcement	☐	☐
14a.	If the OSC is operational and a 10CFR 50 Appendix R fire is NOT in progress, make the following announcement using the Merge Mode: *"This (is/is not) a drill"* Sound the Station Alarm *"Attention, attention all personnel, The Fire Brigade shall report to the OSC for Search and Rescue Operations". "I repeat this (is/is not) a drill".*	☐	☐
	Repeat the station alarm and the announcement	☐	☐
15.	Direct the Search and Rescue Team Leader to coordinate search and rescue activities with Security until individual is located	☐	☐

		COMPLETE	N/A
16.	If Fire Brigade/Search and Rescue Team Leader requests offsite assistance for rescue contact Oswego County 911 Center at 911 OR 349-8501 OR radio AND request rescue assistance	☐	☐
	a. Notify Security of request for offsite assistance. . . .	☐	☐
17.	When informed by the Fire Brigade/Search and Rescue Team Leader that the individual has been located, inform the other Unit CSO that the missing individual has been found .	☐	☐
18.	IF Search/Rescue operations are complete, make the following alarm and announcement using the Merge Mode: *"This (is/is not) a drill"* Sound the Station Alarm and announce: *"Attention, attention all personnel. Search and Rescue operations are completed. I repeat Search and Rescue operations are completed"*	☐	☐
20.	Terminate from Search and Rescue operations, route paperwork to the EP Department as required by this procedure	☐	☐

NIAGARA MOHAWK POWER CORPORATION

NINE MILE POINT NUCLEAR STATION

EMERGENCY PLAN IMPLEMENTING PROCEDURE

EPIP-EPP-03

REVISION 03

SEARCH AND RESCUE

TECHNICAL SPECIFICATION REQUIRED

Approved by:
R. G. Smith

For RG Smith Alan DeGracia AD
Plant Manager - Unit 1

6/5/98
Date

Approved by:
K. A. Dahlberg

Plant Manager - Unit 2

6/8/98
Date

THIS IS A FULL REVISION

PERIODIC REVIEW, 06/10/1999, NO CHANGE

Effective Date: 06/30/98

PERIODIC REVIEW DUE DATE JUNE 2000

LIST OF EFFECTIVE PAGES

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1.0 PURPOSE

To provide guidance to identify and rescue missing or trapped on-site personnel.

2.0 RESPONSIBILITIES

2.1 The **Station Shift Supervisor (SSS)/ Site Emergency Director (SED)** maintains overall control of search and rescue activities.

2.2 The **Chief Shift Operator (CSO)** implements actions required by the CSO Checklist (Attachment 1).

2.3 **Nuclear Operators** assist search and rescue activities as directed.

2.4 When the Operations Support Center (OSC) is operational the **OSC Coordinator** coordinates search and rescue operations from the OSC.

2.5 **Radiation Protection personnel** provide radiological support for search and rescue activities as required.

2.6 The **Search and Rescue Team Leader** (normally the Fire Brigade Leader) directs search and rescue operations (except during 10CFR50 Appendix R fires, during which time this position may be filled by any Damage Control Team member).

2.7 The **Security Site Supervisor**

2.5.1 Assists the CSO in determining location of missing personnel, as requested.

2.5.2 Performs duties of Accountability Coordinator in accordance with EPIP-EPP-05 when required.

2.5.3 Assigns Security Force members to search and rescue teams, as requested.

2.8 All **Station Personnel** listen to announcements concerning search and rescue operations and provide assistance to the Search and Rescue Team Leader as requested.

* *

CAUTION

For fires on-site, 10CFR50 Appendix R requires that fighting the fire shall take precedence over all other activities involving the Fire Brigade Leader and Fire Brigade Members. The Fire Brigade Leader may in his/her judgement assign Fire Brigade Members duties associated with this procedure if it is determined that sufficient Fire Brigade Members are available to ensure the protection of Safe Shutdown equipment.

* *

3.0 PROCEDURE

3.1 Notification of Missing or Trapped Persons

3.1.1 Any individual aware of missing or trapped personnel shall immediately report the situation to the Control Room.

3.1.2 IF individuals are considered missing following the accountability process, then the Personnel Accountability Coordinator shall provide the name(s) of these personnel to the Security Liaison in the Technical Support Center (TSC) if available, or the SSS/SED.

3.2 Initiation of Search/Rescue Operations

3.2.1 IF notified of a missing person, THEN the CSO shall obtain and complete a Chief Shift Operator (CSO) Search/Rescue Operations Checklist (Attachment 1).

3.2.2 IF notified of a trapped individual, THEN the CSO should direct the Search and Rescue Team Leader to report to the area.

3.3 Personnel Actions During Search/Rescue Operations

3.3.1 If the OSC is NOT operational, the SSS shall:

a. Acknowledge receipt of notification by the CSO.

b. Provide assistance as required.

NOTE: The Search and Rescue Team Leader is normally the Fire Brigade leader. This function may be assigned to any Damage Control Team member, if necessary.

c. Assign and direct Search and Rescue Team Leader as necessary.

3.3.2 If the OSC IS operational and/or the missing personnel are identified as a result of accountability the SSS/SED shall direct the OSC Coordinator to:

a. Direct the CSO to complete the Chief Shift Operator (CSO) Search/Rescue Operations Checklist.

3.3.2 (Cont)

NOTE: The Search and Rescue Team Leader is normally the Fire Brigade leader. This function may be assigned to any Damage Control Team member, if necessary.

b. Assign a Search and Rescue Team Leader

c. Direct Search and Rescue Team Leader to coordinate search and rescue operations as necessary to locate all missing personnel.

d. When all individuals are located report same to SED and CSO.

e. Direct CSO to terminate Search and Rescue operations.

3.3.3 The Search and Rescue Team Leader Shall:

a. Contact respective Control Room and acknowledge receipt of the emergency announcement.

b. If a person is **MISSING**, proceed to respective Control Room (or OSC if operational) and support the Search and Rescue operations as follows:

1. Gather information from station staff and security to determine potential search locations.

2. Organize a search group or support organization to locate the missing person.

3. Assign Search and Rescue Team members to search specific areas, including the individual's department or company work area.

c. If the person is found to be **TRAPPED**:

1. Report/Verify location and status of individual to respective Control Room.

2. Direct Search and Rescue Team members to report to area.

3. If the area is known to be contaminated, or a High Radiation Area request Control Room send Radiation Protection personnel to provide radiological assistance.

d. Obtain equipment from the OSC Rescue Cabinet or other sources as appropriate, and proceed to the area with necessary equipment.

3.3.3 (Cont)

e. Direct the rescue operation.

f. Request the CSO call for additional assistance, if needed (i.e., off-site Fire/Rescue personnel via Oswego County 911 Center).

g. Request assistance of station personnel, as necessary, via the Control Room, or OSC if operational, to free trapped individual.

3.3.4 Search and Rescue Team members shall:

* *

CAUTION

Only qualified Fire Brigade Members should provide rescue operations of injured/trapped personnel.

* *

a. Report to the area specified in the emergency announcement (the Control Room or the OSC if operational) for assignment of search/rescue duties as directed.

b. If a person is known to be trapped or injured, proceed to that location if the emergency situation allows.

c. Assess the search/rescue scene.

d. Retire to a safe area and plan the method of search/rescue.

3.3.5 Nuclear Operators should:

a. If directed, report to the Search and Rescue Team Leader and assist in coordinating search and rescue activities with the Control Room.

3.3.6 Radiation Protection personnel should:

a. Report to the Search and Rescue Team Leader.

b. Provide radiological assistance during rescue operations as necessary.

c. Obtain appropriate respiratory protection equipment as required.

3.3.7 Security Site Supervisor should:

a. Implement the Security Site Supervisor Search/Rescue Operations Checklist (Attachment 2).

3.4 Termination of Search/Rescue Emergency Actions

3.4.1 The Search and Rescue Team Leader shall:

a. Once the individual has been found, rescued and/or freed, notify both Control Rooms of the individual's status.

b. Implement EPIP-EPP-04 Personnel Injury or Illness as necessary.

4.0 DEFINITIONS

None

5.0 REFERENCES AND COMMITMENTS

5.1 Technical Specifications

None

5.2 Licensee Documentation

Site Emergency Plan

5.3 Standards, Regulations, and Codes

10CFR20, Standards for Protection Against Radiation

10CFR50, Appendix R, Fire Prevention Program for Nuclear Power Facilities Operating Prior to January 1, 1979.

5.4 Policies, Programs, and Procedures

5.4.1 EPMP-EPP-02, Emergency Equipment Checklists and Inventories

5.4.2 EPIP-EPP-04, Personnel Injury or Illness

5.4.3 EPIP-EPP-05, Station Evacuation

5.4.4 EPIP-EPP-28, Fire Fighting

5.5 Commitments

None

6.0 RECORDS REVIEW AND DISPOSITION

6.1 The following records generated by this procedure shall be maintained by Records Management for the Permanent Plant File in accordance with NIP-RMG-01, Records Management:

6.1 (Cont)

NOTE: This only applies if records are generated as the result of an actual declared emergency at the Nine Mile Point Nuclear Station.

- CHIEF SHIFT OPERATOR (CSO) SEARCH/RESCUE OPERATIONS CHECKLIST
- SECURITY SITE SUPERVISOR SEARCH/RESCUE OPERATIONS CHECKLIST

6.2 The following records generated by this procedure are not required for retention in the Permanent Plant File:

NOTE: This only applies when records are not the result of an actual declared emergency.

- CHIEF SHIFT OPERATOR (CSO) SEARCH/RESCUE OPERATIONS CHECKLIST
- SECURITY SITE SUPERVISOR SEARCH/RESCUE OPERATIONS CHECKLIST

ATTACHMENT 2: SECURITY SITE SUPERVISOR SEARCH/RESCUE OPERATIONS CHECKLIST

NAME:	DATE:	UNIT: 1 ☐ 2 ☐

		COMPLETE	N/A
1.	This (is/ is not)_____a drill. Note location of rescue operations here:	☐	☐
	_____		
	_____		
2.	Acknowledged receipt of alarm to CSO	☐	☐
3.	Dispatch a Nuclear Security Force Member with a radio to the rescue scene command post to coordinate communications between the Nuclear Security Department and the Search and Rescue Team Leader	☐	☐
4.	If off-site rescue assistance requested, dispatch a Nuclear Security Force Member and vehicle to Private Road to escort responding rescue vehicles	☐	☐
5.	Contact SSS/SED and determine if Security Safeguards need to be waived.	☐	☐
6.	If a medical emergency exists, refer to EPIP-EPP-04, Personnel Injury or Illness for responsibilities	☐	☐
7.	If Ambulance and Fire Kit used, notify the EP Department . .	☐	☐
8.	Route all paperwork completed as a result of an actual Search and Rescue Operation to the EP Department	☐	☐

Criterion 3 of Appendix A to this part specifies that "Structures, systems, and components important to safety shall be designed and located to minimize, consistent with other safety requirements, the probability and effect of fires and explosions."

When considering the effects of fire, those systems associated with achieving and maintaining safe shutdown conditions assume major importance to safety because damage to them can lead to core damage resulting from loss of coolant through boiloff.

The phrases "important to safety," or "safety-related," will be used throughout this Appendix R as applying to all safety functions. The phrase "safe shutdown" will be used throughout this appendix as applying to both hot and cold shutdown functions.

Because fire may affect safe shutdown systems and because the loss of function of systems used to mitigate the consequences of design basis accidents under postfire conditions does not per se impact public safety, the need to limit fire damage to systems required to achieve and maintain safe shutdown conditions is greater than the need to limit fire damage to those systems required to mitigate the consequences of design basis accidents. Three levels of fire damage limits are established according to the safety functions of the structure, system, or component:

Safety function	Fire Damage Limits
Hot Shutdown	One train of equipment necessary to achieve hot shutdown from either the control room or emergency control station(s) must be maintained free of fire damaged by a single fire, including an exposure fire.[1]
Cold shutdown	Both trains of equipment necessary to achieve cold shutdown may be damaged by a single fire, including an exposure fire, but damage must be limited so that at least one train can be repaired or made operable within 72 hours using onsite capability.
Design Basis Accidents	Both trains of equipment necessary for mitigation of consequences following design basis accidents may be damaged by a single exposure fire.

[1]*Exposure Fire*. An exposure fire is a fire in a given area that involves either in situ or transient combustibles and is external to any structures, systems, or components located in or adjacent to that same area. The effects of such fire (e.g., smoke, heat, or ignition) can adversely affect those structures, systems, or components important to safety. Thus, a fire involving one train of safe shutdown equipment may constitute an exposure fire for the redundant train located in the same area, and a fire involving combustibles other than either redundant train may constitute an exposure fire to both redundant trains located in the same area.

The most stringent fire damage limit shall apply for those systems that fall into more than one category. Redundant systems used to mitigate the consequences of other design basis accidents but not necessary for safe shutdown may be lost to a single exposure fire. However, protection shall be provided so that a fire within only one such system will not damage the redundant system.

II. General Requirements

A. *Fire protection program.* A fire protection program shall be established at each nuclear power plant. The program shall establish the fire protection policy for the protection of structures, systems, and components important to safety at each plant and the procedures, equipment, and personnel required to implement the program at the plant site.

The fire protection program shall be under the direction of an individual who has been delegated authority commensurate with the responsibilities of the position and who has available staff personnel knowledgeable in both fire protection and nuclear safety.

The fire protection program shall extend the concept of defense-in-depth to fire protection in fire areas important to safety, with the following objectives:

To prevent fires from starting;

To detect rapidly, control, and extinguish promptly those fires that do occur;

To provide protection for structures, systems, and components important to safety so that a fire that is not promptly extinguished by the fire suppression activities will not prevent the safe shutdown of the plant.

B. *Fire hazards analysis.* A fire hazards analysis shall be performed by qualified fire protection and reactor systems engineers to (1) consider potential in situ and transient fire hazards; (2) determine the consequences of fire in any location in the plant on the ability to safely shut down the reactor or on the ability to minimize and control the release of radioactivity to the environment; and (3) specify measures for fire prevention, fire detection, fire suppression, and fire containment and alternative shutdown capability as required for each fire area containing structures, systems, and components important to safety in accordance with NRC guidelines and regulations.

C. *Fire prevention features.* Fire protection features shall meet the following general requirements for all fire areas that contain or present a fire hazard to structures, systems, or components important to safety.

1. In situ fire hazards shall be identified and suitable protection provided.

2. Transient fire hazards associated with normal operation, maintenance, repair, or modification activities shall be identified and eliminated where possible. Those transient fire hazards that can not be eliminated shall be controlled and suitable protection provided.

[1]Clarification and guidance with respect to permissible alternatives to satisfy Appendix A to BTP APCSB 9.5–1 has been provided in four other NRC documents:

"Supplementary Guidance on Information Needed for Fire Protection Evaluation," dated October 21, 1976;

"Sample Technical Specification," dated May 12, 1977;

"Nuclear Plant Fire Protection Functional Responsibilities, Administrative Control and Quality Assurance," dated June 14, 1977;

"Manpower Requirements for Operating Reactors," dated May 11, 1978.

A Fire Protection Safety Evaluation Report that has been issued for each operating plant states how these guidelines were applied to each facility and identifies open fire protection issues that will be resolved when the facility satisfies the appropriate requirements of Appendix R to Part 50.