NIAGARA MOHAWK POWER CORPORATION

NINE MILE POINT NUCLEAR STATION

UNIT II OPERATIONS

02-REQ-006-344-02-09 Revision 4

TITLE: EMERGENCY OPERATING PROCEDURES

SECONDARY CONTAINMENT CONTROL - SECTION SCR

	SIGNATURE	DATE
PREPARER	[signature] with TCO-02-REQ-90-178	10/11/90
TRAINING SUPPORT SUPERVISOR	J. Lyst for J. LeClair	10/12/90
TRAINING AREA SUPERVISOR	[signature]	10/12/90
PLANT SUPERVISOR/ USER GROUP SUPERVISOR	[signature]	10/12/90

Summary of Pages

(Effective Date: 10/12/90)

Number of Pages: 14

Date Pages

October 1990 14

TRAINING DEPARTMENT RECORDS ADMINISTRATION ONLY:

VERIFICATION: _____ _____

DATA ENTRY: _____ _____

RECORDS: _____ _____

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4/29/56

I. TRAINING DESCRIPTION

A. Title of Lesson: Emergency Operating Procedures, Secondary Containment Control Section SCR

B. Lesson Description: This lesson plan discusses the actions taken to control radiation levels in the Secondary Containment.

C. Estimated Duration of the Lesson: Approximately 1 hour

D. Method of Evaluation, Grade Format, and Standard of Evaluation:

1. Written Examination with 80% minimum passing grade.

E. Method and Setting of Instruction:

1. Classroom Lecture
2. Assign the Student Learning Objectives as review problems with the students obtaining answers from the text, writing them down and handing them in for grading.

F. Prerequisites:

1. Instructor:
   a. Certified in accordance with NTP-16 or NTP-16.1.
2. Trainee:
   a. In accordance with NTP-10 and NTP-11 or
   b. Be recommended for this training by the Operations Superintendent (or designee) or Training Superintendent.

G. References:

1. BWROG Emergency Procedure Guidelines, Rev. 4
2. Plant Procedure N2-EOP-Secondary Containment Control Section SCR

II. REQUIREMENTS

A. AP-9.0, Rev. 2, "Administration of Training"

B. NTP-10, Rev. 3, "Training of Licensed Operator Candidates"

C. NTP-11, Rev. 4, "Licensed Operator Retraining"

III. TRAINING MATERIALS

A. Instructor Materials:

1. Transparency Package
2. Overhead Projector
3. Whiteboard and Felt Tip Markers
4. EOP Flow Chart for SCR Section

B. Trainee Materials:

1. EOP Flowchart for SCR Section
2. OLP-SCR

IV. EXAM AND MASTER ANSWER KEYS

Will be generated and administered as necessary. They will be on permanent file in the Records Room.

V. LEARNING OBJECTIVES

A. Terminal Objectives:

TO-1.0 Given conditions requiring the use of the Emergency Operating Procedure, use the procedure to place the plant in a stable condition as prescribed in the procedure.

B. Enabling Objectives:

EO-1.0 State the purpose of the Secondary Containment Control Procedures Section SCR.

EO-2.0 State the entry conditions for the Secondary Containment Control Procedure Section SCR.

EO-3.0 Given the procedural step, discuss the technical basis for that step.

I. INTRODUCTION

A. Student Learning Objectives

B. Purpose

To provide the actions necessary to control Reactor Building radiation levels to:

- Protect equipment in the Reactor Building
- Limit radioactivity release to the Reactor Building, and either
- Maintain Reactor Building integrity, or
- Limit radioactivity release from the Reactor Building.

EO-1.0

C. Procedure Overview

1. The Reactor Building Radiation Control Section is executed concurrently with the following sections:
   a. SCT-Reactor Building Temperature Control
   b. SCL-Reactor Building Level Control
2. The symptomatic approach to emergency response, where the initiating event of the transient is not known in advance demands concurrent execution of these procedures.
3. The values and trends of parameters, and the status of plant equipment during the event will dictate the order of execution of each flowpath.

II. DETAILED DESCRIPTION

A. Entry Conditions

EO-2.0

1. Setpoints

a. The conditions which require entry into this procedure are:

1) Differential pressure - at or above 0 in. of water

- Indicates a potential loss of Secondary Containment structural integrity, which could result in uncontrolled release of radioactivity.

2) Area temperature above an isolation setpoint.

- Indicates steam may be discharging from Primary System. Increasing area temperatures may compromise equipment needed to carry out EOP actions, and may limit access by personnel.

3) Area radiation level alarm unexpectedly high.

- Indicates water may be leaking from a Primary System.

4) HVR exhaust radiation level above an isolation setpoint.
   - Indicates radioactivity may be discharging to the environment when HVR should have automatically isolated.

5) Floor Drain Sump water level high-high.
   - Indicates steam water, or both may be discharging to the Secondary Containment.

b. The occurrence of any one of these conditions requires entry into this procedure.

c. If an entry condition clears prior to exiting this procedure, and then re-occurs, re-entry at the beginning of the procedure is required.

d. If a second entry condition occurs while performing the procedure, re-entry at the beginning is again required.

e. If all entry conditions clear while executing this procedure, this procedure may be exited.

f. Termination of the emergency rather than termination of an event is the basis for exiting conditions for EOP's. Consequently, these procedures may be exited at any point during their execution if the operator determines that an emergency no longer exists. The EOP's have been written so that if an operator remains in a procedure when an emergency no longer exists, they still provide proper guidance. Alternately, if the operator exits a procedure prematurely, reoccurrence of an entry condition will follow and the appropriate EOP procedure will be reentered. (TMR#02-88.232)

2. Setpoint Bases

a. The values selected were chosen on the basis of being simple, readily identifiable and operationally significant. They also provide advance warning of potential emergency conditions, allowing action to be taken which may prevent more severe circumstances.

B. Procedural Steps

1. Activate the Emergency Plan, if required, in accordance with EAP-1.

   • It is appropriate to activate the E-Plan, should plant conditions be at the action levels specified in EAP-1. — EO-3.0

2. While executing the following steps:

   a. IF

      HVR exhaust radiation level exceeds an isolation setpoint. — 4

      THEN

      1) Confirm or manually initiate isolation of HVR. — 4

      2) Confirm initiation of or manually initiate SBGT.

         • Confirming isolation of Rx Building HVAC will ensure termination of any release of radioactivity to the environment from this system. — EO-3.0

- SBGT is the normal means employed under post-transient conditions for maintaining a negative Secondary Containment pressure. Exhaust from SBGT is processed prior to discharge through an elevated release point.
- This step must be kept in mind throughout the performance of this procedure.

b. IF
HVR isolates
AND
HVR exhaust radiation level is below the isolation setpoint,
THEN
Restart HVR Defeat the high drywell pressure and low RPV water level isolation interlock.

- However bypassing high exhaust radiation interlocks is not authorized.

EO-3.0

- If Rx Building HVAC is isolated, it is appropriate to restart this system and use it to regain control of Rx Building temperature and reassure once it has been confirmed that restart will not result in excessive radioactivity release.

2. Monitor and control REACTOR BUILDING RADIATION LEVELS.
   - Provides a smooth transition from general plant procedures to EOPs. EO-3.0
   - Assures normal methods have been employed prior to more complex actions.
3. WAIT until a RB radiation level exceeds its high alarm setpoint.
   - Delaying the performance of subsequent actions in this procedural leg confirms that radiation levels are increasing and further action is required. EO-3.0
4. Isolate all systems that are discharging into the area <u>except</u> systems required to shutdown the Reactor <u>OR</u> assure adequate core cooling <u>OR</u> protect Primary Containment integrity <u>OR</u> suppress a fire.

- Primary Systems are isolated to terminate possible sources of radioactivity release.
- Fire fighting systems are not sources of radioactivity and therefore need not be isolated.
- Systems necessary to shutdown the reactor or assure adequate cooling are not isolated since doing so may ultimately lead to higher radioactivity release levels.

EO-3.0

5. Refer to S-EPP-1 Radiation Emergencies.
6. Perform steps #7 and #9 concurrently.
7. WAIT until more than one RB area radiation level exceeds 1.00+4 MR/HR.
   - 1.00 + 4 MR/HR is the Maximum Safe Operating Radiation Level.
   - More than one area indicates a wide spread problem.

EO-3.0

8. Shutdown the reactor (OP-101 C/D).

Note: This step does not preclude a reactor scram.

- Places the reactor in the lowest energy state by normal means.

EO-3.0

9. WAIT until A Primary System is discharging into the Reactor Building.
   - By the time this step is reached, at least one of the following conditions exist:
     - System has not been isolated due to adequate core cooling, shutdown of the reactor, or protecting Primary Containment integrity.
     - Isolation not possible, ie no isolation valve or valve inop.
     - Source of discharge not known.

Note: Review the definition of a "Primary System".

EO-3.0

10. BEFORE any radiation level reaches 1.00E+4MR/HR.
11. Enter RPV Control and execute concurrently with this procedure.
    - Entry into RPV Control will result in a scram and thereby reduce the energy available to be released to the Secondary Containment. Since Primary Systems are the sources of radioactivity release, this action should be effective in reducing containment radiation levels.

EO-3.0

12. WAIT until more than one RB area radiation levels exceeds 1.00E+4 MR/HR.

13. Emergency Depressurization is required.

    a. The criteria of "more than one area" indicates a wide-spread threat of significant radioactivity release.

    b. RPV depressurization minimizes the driving head and flow of Primary Systems that are discharging into areas of the Secondary Containment.

    c. Flags indicate to operators that further guidance is provided in the overrides contained in RPV Control Section RP, C3 and C5.

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EO-3.0

III. WRAP-UP

A. Summary

Action in the Reactor Building radiation control section monitors and controls Secondary Containment radiation levels, limits radioactivity release into the Secondary Containment and, in the event of a breach in the Secondary Containment, limits radioactivity release outside the Secondary Containment. As required, systems that are discharging into the Secondary Containment are isolated to terminate the source of radioactivity and, when the safe operating radiation level is exceeded in more than one area of the Secondary Containment, Emergency RPV Depressurization is required. If the radiation problem is not due to a Primary System discharge but is widespread, then a normal reactor shutdown is directed.