NIAGARA MOHAWK POWER CORPORATION

NINE MILE POINT NUCLEAR STATION

UNIT II OPERATIONS

02-REQ-006-344-2-14 Revision 4

TITLE: EMERGENCY OPERATING PROCEDURE, EMERGENCY RPV DEPRESSURIZATION (C-2)

	SIGNATURE	DATE
PREPARER	[signature]	9/6/90
TRAINING SUPPORT SUPERVISOR	F.A. Peeling for J. LeClair	9-28-90
TRAINING AREA SUPERVISOR	[signature]	9/6/90
PLANT SUPERVISOR/ USER GROUP SUPERVISOR	[signature]	9/7/90

MASTER

Summary of Pages

Effective Date 9/28/90

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TRAINING DEPARTMENT RECORDS ADMINISTRATION ONLY:

VERIFICATION: _____ _____

DATA ENTRY: _____ _____

RECORDS: _____ _____

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4/29/90

I. TRAINING DESCRIPTION

A. Title of Lesson: Emergency Operating Procedures, Emergency RPV Depressurization (C-2)

B. Lesson Description: This lesson discusses the actions taken to perform an emergency RPV depressurization.

C. Estimate of the Duration of the Lesson: Approximately 1 hour

D. Method of Evaluation, Grade Format, and Standard of Evaluation: 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. Qualified in instructional skills per NTP-16 and/or 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 his designee or by the Training Superintendent.

G. References:

BWROG Emergency Procedure Guidelines, Rev. 4,
Plant Procedure N2-EOP-C2

II. REQUIREMENTS

A. AP-9, Administration of Training

B. NTP-10, Training of Licensed Operator Candidates

C. NTP-11, Licensed Operator Requalification Training

III. TRAINING MATERIALS

A. Instructor Materials:

1. Transparency Package
2. Overhead Projector
3. Whiteboard and Felt Tip Markers
4. EOP Flowchart for C2

B. Trainee Materials:

1. EOP Flowchart for C2

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 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 Emergency RPV Depressurization Procedure.

EO-2.0 State the entry conditions for the Emergency RPV Depressurization Procedure.

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

VI. LESSON CONTENT

LESSON CONTENT	DELIVERY NOTES	OBJECTIVES/ NOTES
I. INTRODUCTION		
A. Student Learning Objectives		
B. Purpose		
The actions in this procedure rapidly depressurize the RPV. Performance of this procedure may become necessary in order to:		EO-1.0
1. Establish or maintain adequate core cooling.		
2. Terminate or minimize the discharge of Reactor coolant from unisolable primary system breaks.		
3. Reduce the energy within the RPV before reaching plant conditions for which the Pressure Suppression System may not be able to safely accommodate an SRV opening or a loss of coolant accident.		
4. Minimize radioactivity release from the RPV to the Primary Containment and Secondary Containment, or to areas external to the Primary Containment and Secondary Containment.		
II. DETAILED DESCRIPTION		
A. Entry Conditions		
This procedure is entered only as directed by another emergency operating procedure.		EO-2.0

B. Procedural Steps

1.

a. Are all control rods to at least position 02
YES - continue at Step 2
NO - continue at Step 3

Show TP or Chart of C-3.

b. Will the Reactor remain shutdown under all conditions without boron
YES - Continue at Step 4
NO - Continue at Step 3

c. WAIT until all injection into the RPV <u>except</u> from boron injection systems, CRD, and RCIC has been terminated and prevented.

- When these conditions are not met failure to terminate and prevent injection may result in the rapid injection of large volumes of cold unborated water from low pressure systems as RPV pressure decreases.
- This could add sufficient positive reactivity to induce a power excursion large enough to damage the core.

EO-3.0

2. Does a high Drywell ECCS initiation signal (1.68 psig) exist?
   a. YES - continue at STEP #3
   b. NO - continue at STEP #4
      - This step is simply a precursor to the next step, if the response is "no", the next step is "bypassed".
3. Prevent injection form those LPCS and LPCI pumps not required to assure adequate core cooling.
   - This step prevents the rapid injection of cold unborated water into the RPV. — EO-3.0
4. Is Suppression Pool water level above El. 192 Ft.
   a. YES - continue at STEP #5
   b. NO - continue at STEP #9
      - To ensure the SRVs discharge is below the water, their operation is limited to Suppression Pool levels above 192 ft. Operation of SRVs with their discharges uncovered will cause a pressurization of the containment the magnitude of which cannot be predicated.

192 feet is the minimum indicated level. — EO-3.0

5. Irrespective of the resulting RPV cooldown rate, open all 7 ADS valves.
   - The reliability of their pneumatic supply and control power.
     - Distribution of their discharges within the Suppression Pool.
6. Are all 7 ADS valves open?
   a. YES - continue at STEP #10
   b. NO - continue at STEP #7
7. Irrespective of the Resulting RPV cooldown rate, open other SRVs until 7 valves are open.
   - ADS valves were chosen because of their reliability and to promote even heat dissipation in the Suppression Pool. However, if not all ADS valves can be opened other SRVs should be opened until a total of seven ADS/SRVs are open.
   - Opening more than seven SRVs may induce unnecessary uneven heat loads on the Suppression Pool.

EO-3.0

8. Are at least 4 SRVs open?
   a. YES - continue at STEP #10

b. NO - continue at STEP #9

- This is the minimum number of SRVs required for emergency depressurization.
- Defined in curves and limits lesson plan.
- If less than four SRVs can be opened additional steam paths must be found.

Steam paths are listed in step 9 below.

EO-3.0

EO-3.0

9. Irrespective of the resulting RPV cooldown rate, rapidly depressurize the RPV using one or more of the following:
   a. If necessary, defeat isolation interlocks.
   b. Systems
      1) Main condenser
      2) RHR (steam condensing mode)
      3) Main steam line drains
      4) RCIC steam line
      5) Head vent

10.	While executing the following steps: IF RPV water level cannot be determined THEN Exit this procedure and enter contingency #4, RPV Flooding	Show entry point into contingency 4.
11.	WAIT until All control rods are inserted to at least position 02 OR The Reactor will remain shutdown without boron. OR If boron is being injected, SLC tank level drops to 900 gal. OR The Reactor is shutdown and no boron has been injected into the RPV.	
12.	Exit this procedure, and enter RPV control Section RP at "C".	Show entry point back in RP.

III. WRAP-UP

A. Summary

The actions specified in this procedure rapidly depressurized the RPV. Since opening SRVs is the easiest and most effective means of depressurizing the RPV, their use is given first priority. Other systems are also identified for use if the SRVs are ineffective or not available.