NIAGARA MOHAWK POWER CORPORATION

NINE MILE POINT NUCLEAR STATION

UNIT II OPERATIONS

02-REQ-006-344-2-07 Revision 4

TITLE: EMERGENCY OPERATING PROCEDURES, SUPPRESSION POOL TEMPERATURE (SPT)

	SIGNATURE	DATE
PREPARER		10/11/90
TRAINING SUPPORT SUPERVISOR	J. Lowe for J. LeClair with TCO-02-REQ-90-178	10/12/90
TRAINING AREA SUPERVISOR		10/12/90
PLANT SUPERVISORY USER GROUP SUPERVISOR	ACCEPTED	10/12/90

Summary of Pages

(Effective Date: 10/12/90)

Number of Pages: 12

Date	Pages
October 1990	1 - 12

THIS LESSON PLAN IS A GENERAL REWRITE

TRAINING DEPARTMENT RECORDS ADMINISTRATION ONLY:

VERIFICATION: _____ _____

DATA ENTRY: _____ _____

RECORDS: _____ _____

I. TRAINING DESCRIPTION

A. Title of Lesson: Emergency Operating Procedures, Suppression Pool Temperature (SPT)

B. Lesson Description: This lesson plan discusses actions to control Suppression Pool temperature.

C. Estimate of the Duration of the Lesson: 2 hours

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

1. Written examination with 80% minimum passing grade.

E. Method of 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 handling 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 or NTP-11 or
   b. Be recommended for this training by the Operations Superintendent (or designee) for the Training Superintendent.

G. References:

1. BWROG Emergency Procedure Guidelines, Rev. 4
2. Plant Procedure N2-EOP-SPT

II. REQUIREMENTS

A. Requirements for class:

1. AP-9, Administration of Training
2. NTP-10, Training of Licensed Operator Candidates
3. 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 SPT

B. Trainee Materials:

1. EOP Flowchart for SPT
2. OLP-SPT

IV. EXAM AND MASTER ANSWER KEYS

A. 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 Suppression Pool Temperature Control Procedure.

EO-2.0 State the entry conditions for the Suppression Pool Temperature Control Procedure.

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

I. INTRODUCTION

A. Student Learning Objectives

B. Purpose

1. This procedure specifies the operator actions necessary to control and maintain Suppression Pool temperature below that which would damage Primary Containment integrity. — EO-1.0

2. Failure to maintain Suppression Pool temperature within prescribed limits could result in:

   a. Loss of the Pressure Suppression function of the Primary Containment.

   b. Exceeding Suppression Chamber design temperature limits.

   c. Exceeding NPSH limits for pumps which take suction on the Suppression Pool.

C. Procedural Overview

1. The Suppression Pool temperature control procedure is executed concurrently with the following procedures:

   a. N2-EOP-DWT Drywell Temperature Control

   b. N2-EOP-PCP Primary Containment Pressure Control

c. N2-EOP-SPL Suppression Pool Level Control

d. N2-EOP-PCH Primary Containment Hydrogen Control

2. Concurrent execution is necessary because:

a. The actions taken to control any one parameter may directly effect control of the others.

b. This procedure is based on the symptomatic approach to emergency response, where the initiating event of the transient is not known in advance. Assignment of priorities to any one of the five parameters is, therefore, not possible.

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) Suppression Pool temperature above 90°F.
   - Most limiting pool temperature addressed by Technical Specifications.
2) Drywell temperature above 150°F.
   - Drywell limiting temperature as specified by Tech. Specs.
3) Suppression Pool water level above El. 201 ft.
   - Maximum LCO pool level by Tech. Specs.
4) Suppression Pool water level below El. 199.5 ft.
   - Minimum LCO pool level by Tech. Specs.
5) Drywell pressure above 1.68 psig.
   - Limiting Safety System Setting for drywell pressure by Tech. Specs.
     - ALSO: ECCS setpoint & entry into RPV control.
6) Primary Containment hydrogen concentration above 1.8%.
   - H_2/O_2 Analyzer alarm setpoint.

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

c. If an entry condition clears prior to existing this procedure, and then reoccurs, 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 follow and the appropriate EOP procedure will be re-entered. (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. Monitor and control Suppression Pool temperature below 90°F using available Suppression Pool cooling.
   - Provides a smooth transition from general plant procedures to EOPs. — EO-3.0
   - Assures normal methods have been employed prior to more complex actions.

2. WAIT until Suppression Pool temperature cannot be maintained below 90°F.
   - Responds to Tech. Specs. LCO requirement. — EO-3.0
   - The possibility exists that Suppression Pool temperature is NOT the concern, allows attention to be diverted to that which is, BUT not ignore this parameter as exceeding 90°F confirms that Suppression Pool cooling is unable to maintain pool temperature and further actions are necessary. — EO-3.0

3. Operate all available Suppression Pool cooling.
   a. Use only RHR pumps which do not have to be run continuously in the LPCI mode for adequate core cooling.

- Maintaining adequate core cooling takes precedence over maintaining Suppression Pool temperature below the LCO value. — EO-3.0
- This step, however, does permit alternating the use of RHR pumps between the LPCI injection and Suppression Pool cooling modes. — EO-3.0

4. BEFORE Suppression Pool temperature reaches 110°F. (Enter RPV Control)
   - 110°F is the Boron Injection Initiation Temperature. — EO-3.0
   - This is to ensure that is Emergency RPV Depressurization is required later, the heat rejected to the Primary Containment will be minimized.
5. Enter RPV Control and execute it concurrently with this procedure.
   - Entering RPV Control, assures that, if possible, the reactor is scrammed and shutdown by control rod insertion before the requirement for boron injection is reached. — EO-3.0

6. WAIT until Suppression Pool temperature and RPV Pressure cannot be maintained below the Heat Capacity Temperature Limit (Fig. PC-1) Emergency RPV Depressurization is required.
   a. Emergency Depressurization is performed before the HCTL is exceeded to ensure sufficient heat capacity in the Suppression Pool to accommodate the energy addition of the blowdown.
   b. The HCTL is defined as the highest Suppression Pool temperature at which initiation of RPV depressurization will not result in exceeding either:
      1) The Suppression Chamber design temperature or,
      2) The Primary Containment pressure limit before the rate of energy transfer from the RPV to the Primary Containment is within the capacity.
   c. The consequences of not depressurizing the RPV when required include:
      1) Failure of equipment important to safety.

EO-3.0

2) Loss of containment integrity.

All of which may also lead to inadequate core cooling.

III. WRAP-UP

A. The Suppression Pool temperature control procedure specifies actions for controlling and maintaining Suppression Pool temperature. If the Suppression Pool temperatures LCO cannot be controlled Suppression Pool cooling is initiated. If the pool temperature continues to increase, the reactor is scrammed before temperature reaches the Boron Injection Initiation Temperature. If the Suppression Pool temperature cannot be maintained below the Heat Capacity Temperature Limit, action is taken to reduce and maintain RPV pressure below the limit. Failing that, Emergency RPV Depressurization is required.