NIAGARA MOHAWK POWER CORPORATION

NINE MILE POINT NUCLEAR STATION

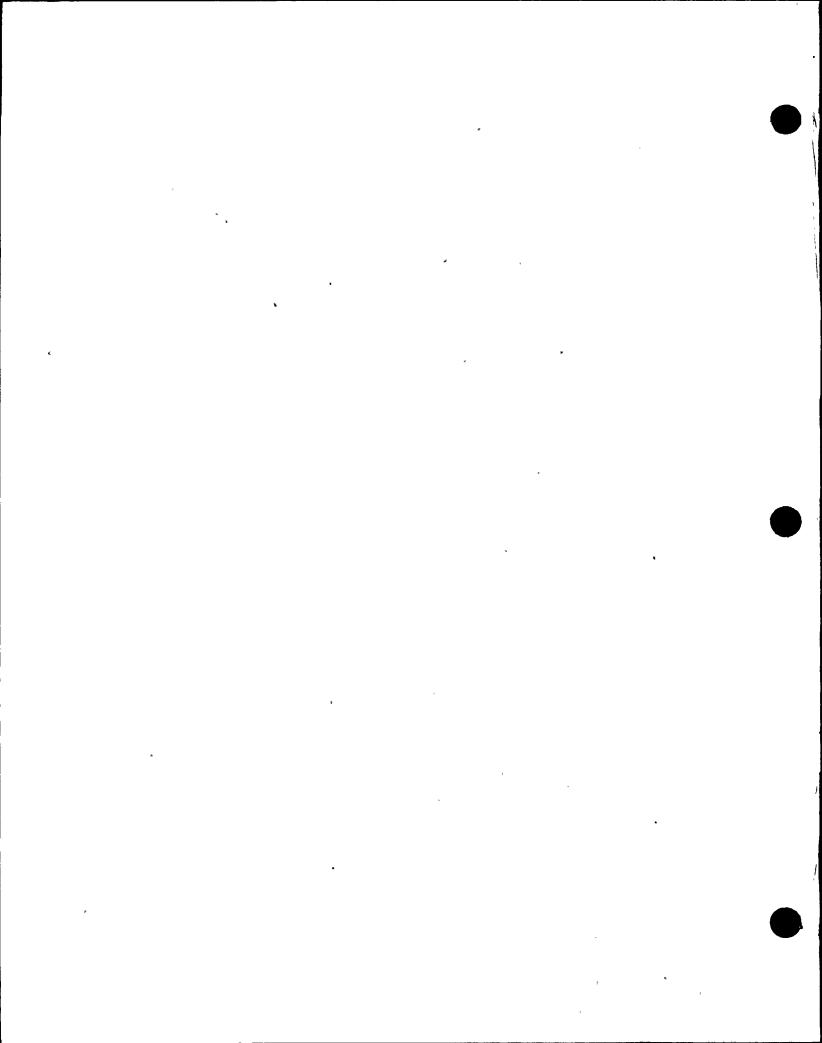
UNIT II OPERATIONS

<u>02-REQ-006</u>	5-344-2-13	Revision	4
TITLE: <u>EMERGENCY OPERAT</u>	ING PROCEDU	RES, ALTERNAT	E LEVEL CONTROL (C-1)
	SIG	NATURE	<u>DATE</u>
PREPARER	EXDOS		x/30/90
TRAINING SUPPORT SUPERVISOR	DU L	Ju JA	9-28-90
TRAINING AREA SUPERVISOR	J.H.	merilight	9-28-90 9/6/90
PLANT SUPERVISOR/ USER GROUP SUPERVISOR	Zikazi (ycof Pages	3/7/00
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RECORDS:

4/29/05



I. TRAINING DESCRIPTION

- A. Title of Lesson: Emergency Operating Procedure, Alternate Level Control (C-1)
- B. Lesson Description: This lesson discusses the detailed actions taken on low RPV water level under degraded plant conditions.
- 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.

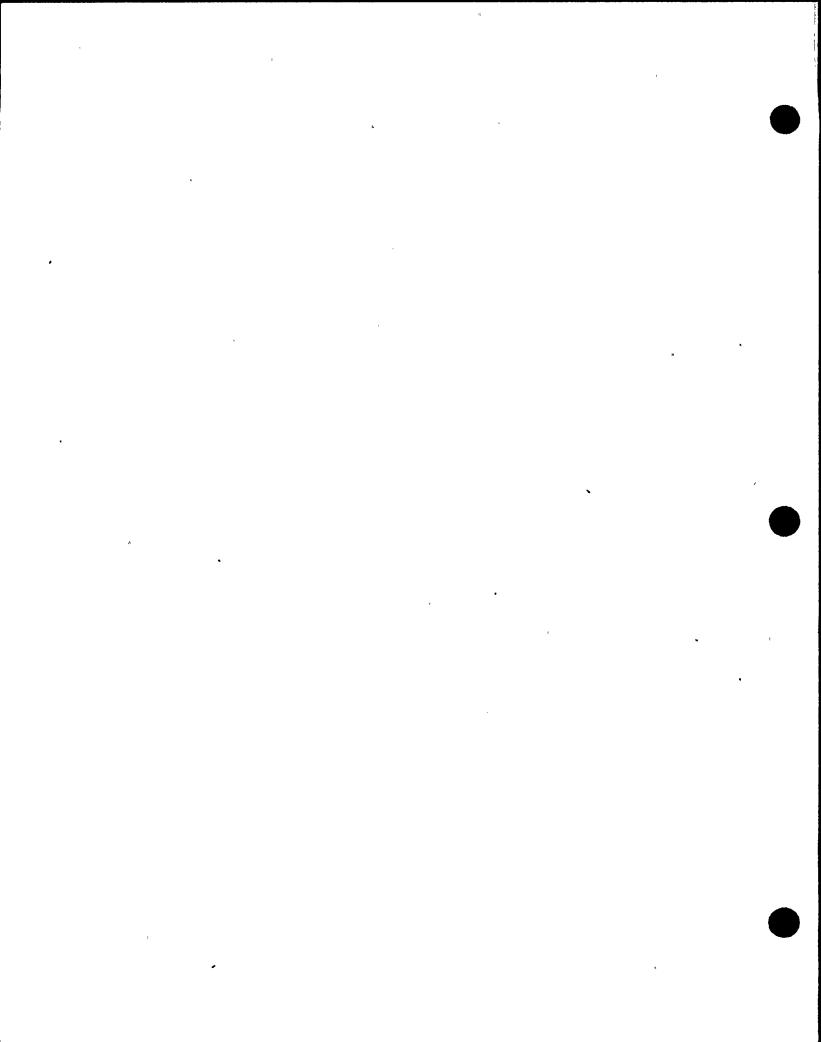
F. Prerequisites:

- 1. Instructor:
 - 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-C1

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

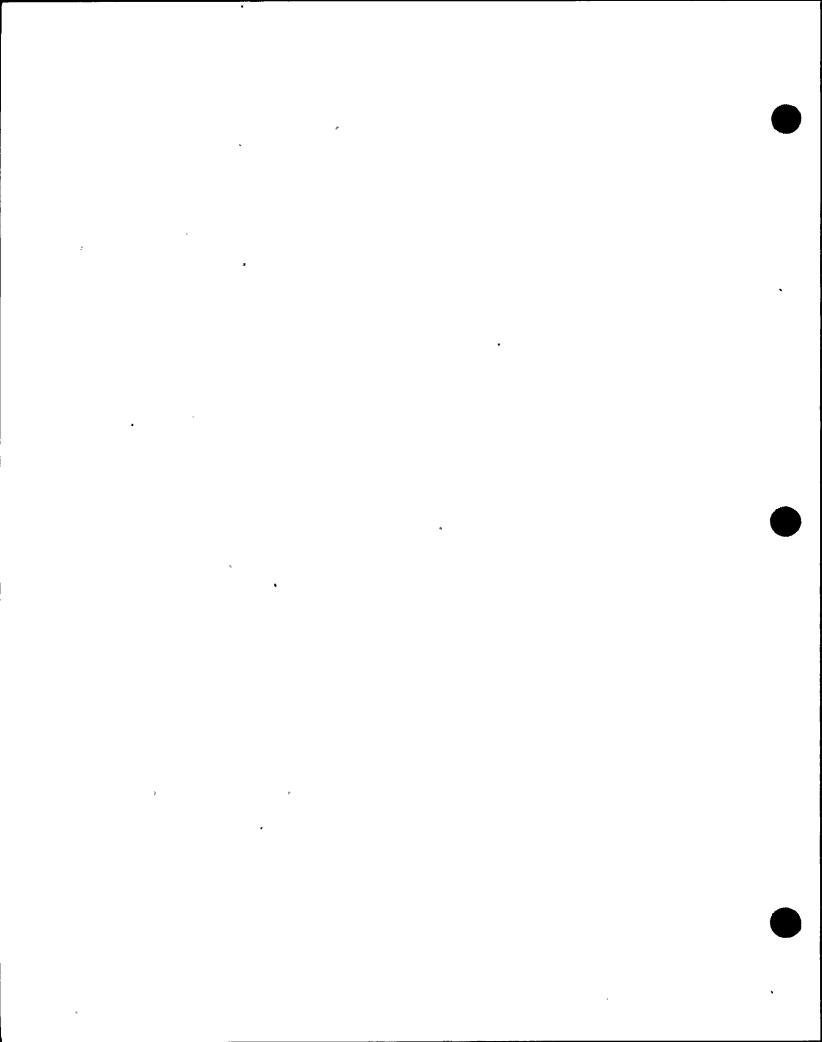
- A. Instructor Materials:
 - 1. Transparency Package
 - 2. Overhead Projector
 - 3. Whiteboard and Felt Tip Markers
 - 4. EOP Flowchart for Cl
- B. Trainee Materials:
 - 1. EOP Flowchart for Cl

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 Alternate Level Control procedure.
 - EO-2.0 State the entry conditions for Alternate Level Control procedure.
 - EO-3.0 Given the procedural step, discuss the technical basis for that step.



I. INTRODUCTION

- A. Student Learning Objectives
- B. Purpose

This procedure provides explicit instructions for RPV water level control to restore and maintain RPV level to above the top of active fuel.

EO-1.0

II. DETAILED DESCRIPTION

A. Entry Conditions

This procedure is entered only upon direction from other emergency operating procedures.

EO-2.0

- B. Procedural Steps
 - 1. While executing the following steps:

Show TP or flowchart of EOP-C1.

a. IF

All control rods are not inserted to at least position O2.

AND

The Reactor will not remain shutdown without boron

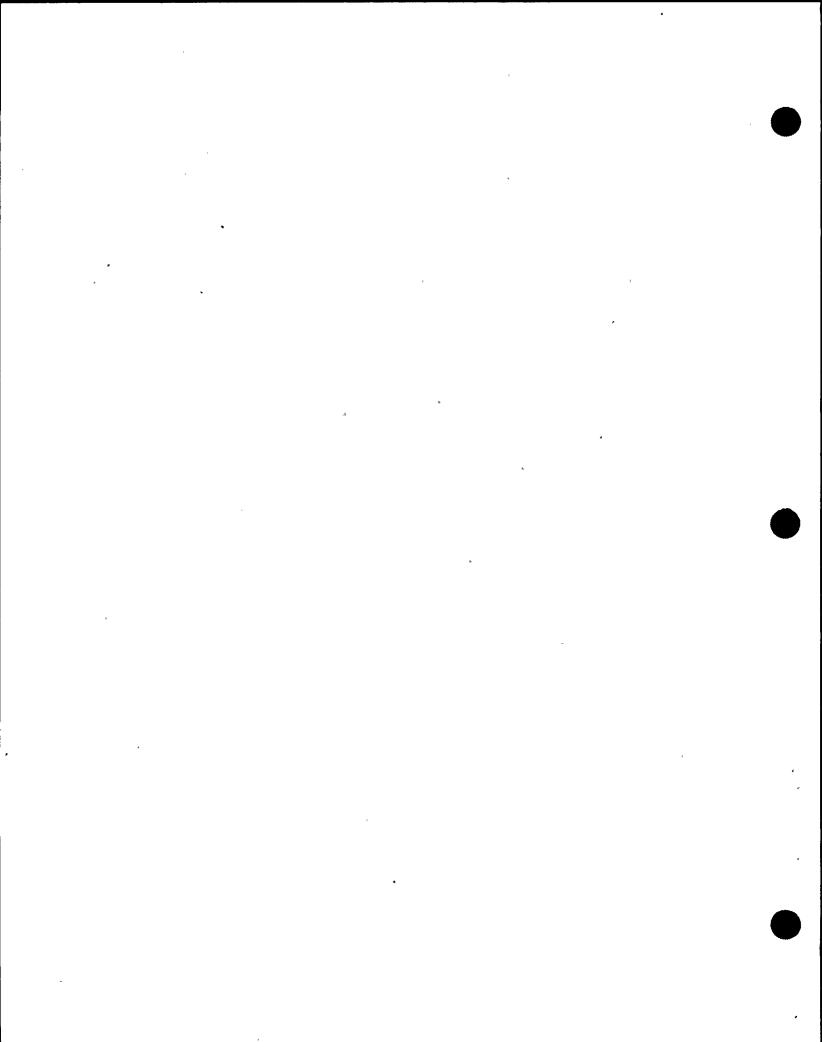
THEN

Exit this procedure and enter Contingency #5, Level/Power Control.

Show entry into C-5.

 When boron injection is required control of RPV water level differs from that prescribed in this procedure. EO-3.0

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•	With boron being injected
	consideration must be given to
	with injection systems are used
	and what flow rates should be
	established.

E0-3.0

b. IF

RPV water level cannot be determined THEN

Exit this procedure and enter Contingency #4, RPV Flooding

Show entry point into EOP-C-4.

EO-3.0

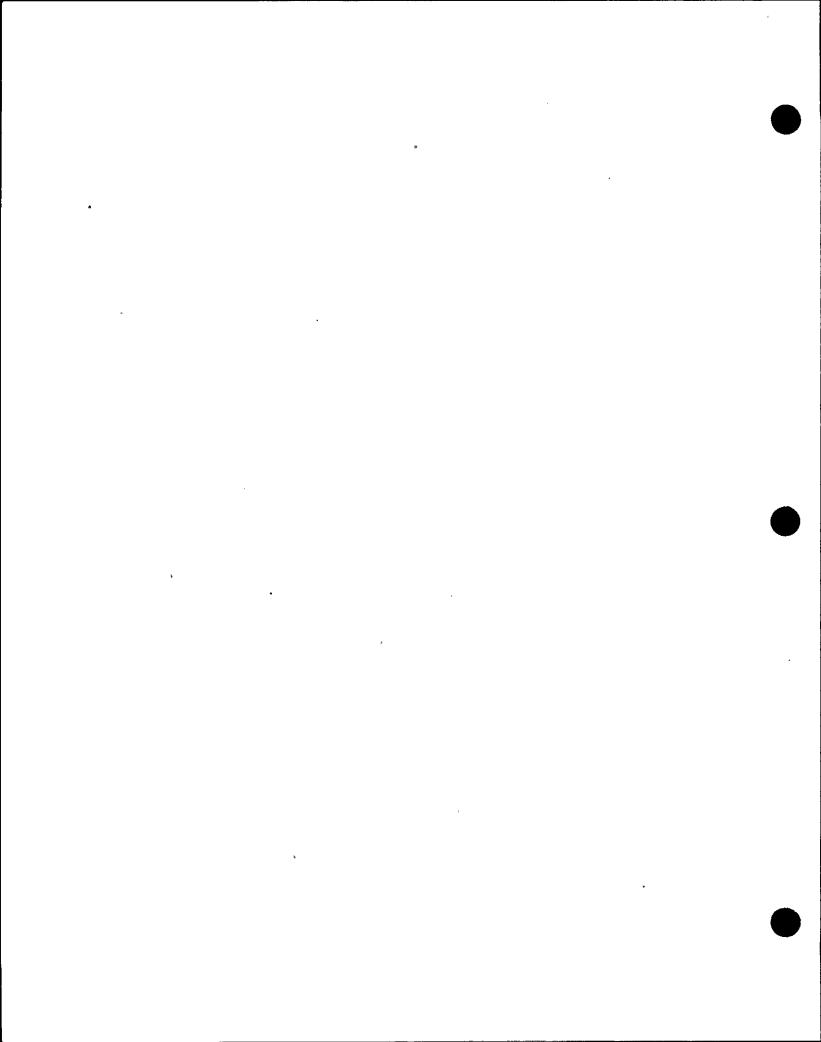
 Without RPV water level and level trend information the actions specified in this procedure cannot be performed. RPV flooding is performed to assure continued adequate core cooling.

c. IF

RPV water level is rising THEN

Exit this procedure and enter RPV Control Section RL at "A".

Show entry point into EOP-RL.



d. IF

Primary Containment water level and Suppression Chamber pressure cannot be maintained below the Maximum Primary Containment Water Level Limit (Fig.-C1) THEN

Irrespective of whether adequate core cooling is assured, terminate injection into the Primary Containment from sources external to the Primary Containment until Primary Containment Water Level and Suppression Chamber Pressure can be maintained below the curve. (Figure C1-1)

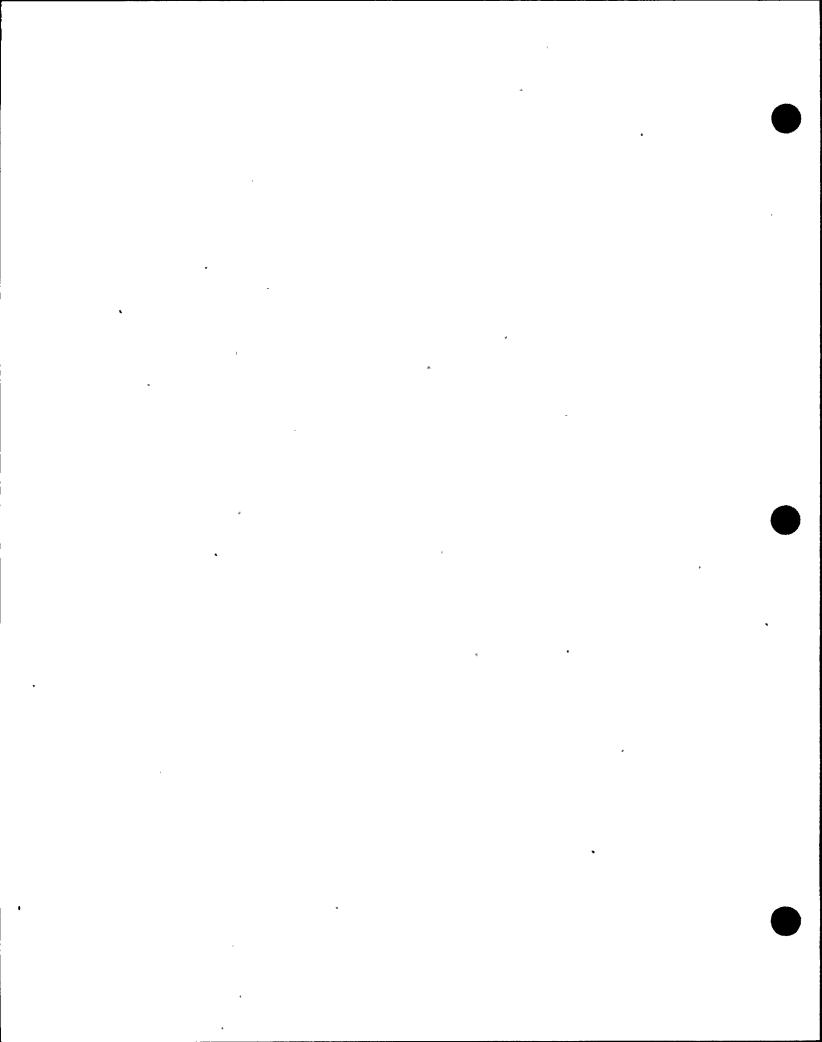
- This action precludes any further increase in Primary Containment Water Level, to prevent what may be complete and uncontrolled loss of Primary Containment integrity.
- 2. Line up for injection, start pumps, and irrespective of pump NPSH and vortex limits, raise injection flow to the maximum with 2 or more of the following injection subsystems.
 - a. Condensate

Show TP of Fig. - C1.

Show TP of Fig. - C1-1.

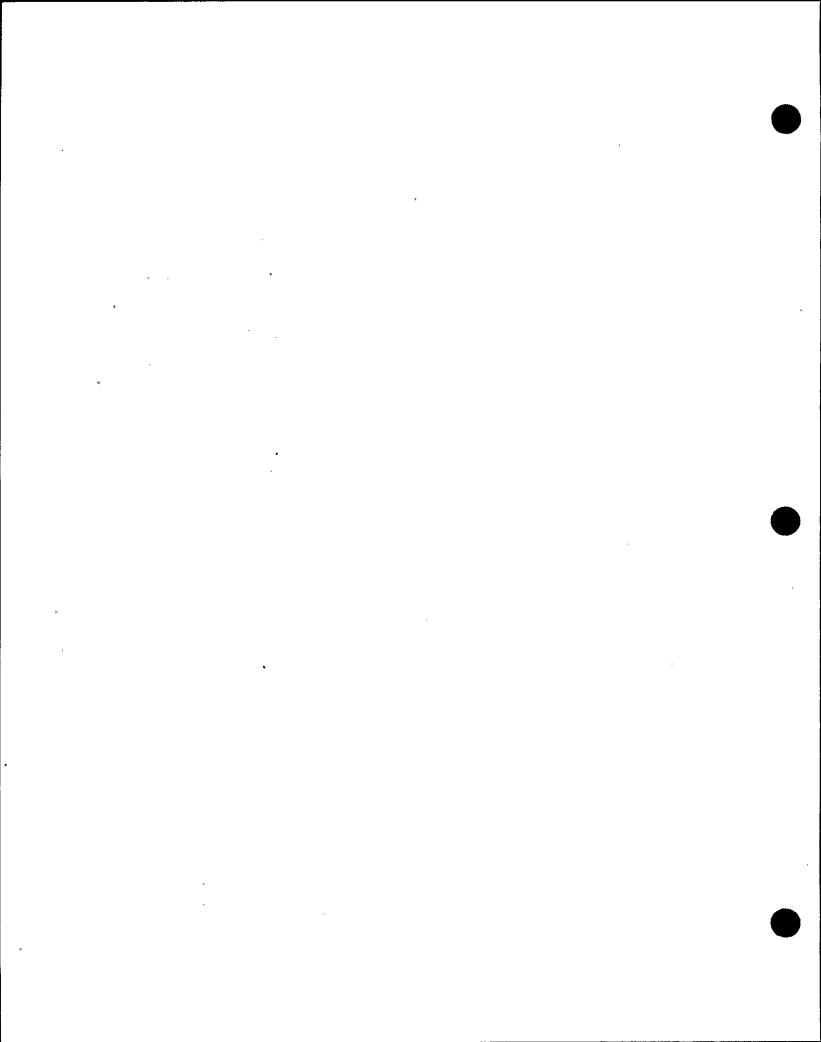
E0-3.0

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- b. HPCS
- c. LPCI-A inject through the heat exchanger as soon as possible.
- d. LPCI-B inject through the heat exchanger as soon as possible.
- e. LPCI-C
- f. LPCS
 - Injection subsystems are lined up with pumps running to assure that water will be injected into the RPV during and following a blowdown.
 - At least two subsystems are required to accommodate the possibility of one subsystem not operating properly.
 - Flow is raised to the maximum to provide as much flow as possible when RPV pressure drops below system shutoff head.
- 3. Can at least 2 of the injection subsystems be lined up.
 - a. YES continue at STEP #5

EO-3.0

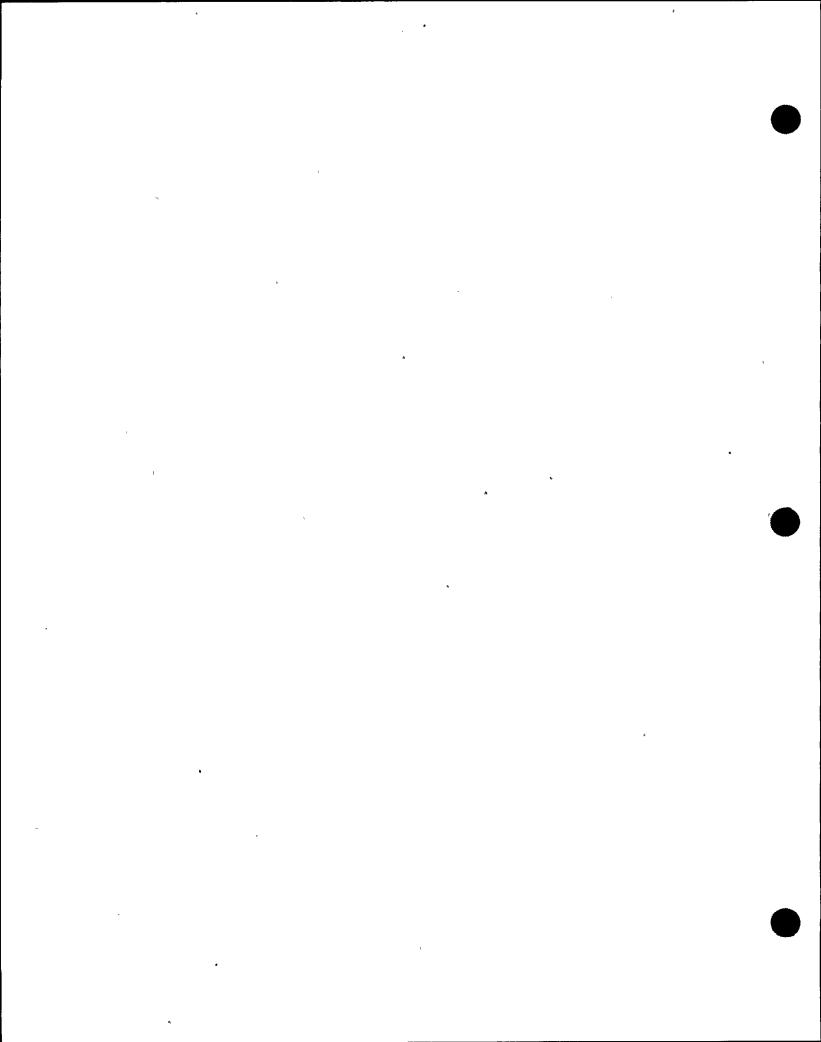


E0-3.0

- b. NO continue at STEP #4
 - This step tests for success of the previous steps, if successful (YES), then sufficient makeup will be available to the RPV if pressure is below or is reduced below the shutoff head of the pumps. If unsuccessful (NO), inadequate makeup exists

regardless of RPV pressure hence the direction to the next step.

- 4. Commence lining up as many of the following alternate injection subsystems as possible.
 - a. Service water to RHR crosstie
 - b. Fire system
 - c. ECCS keep full system
 - d. SLC (test tank)
 - e. SLC (boron tank)
 - f. Condensate Transfer
 - Does not include starting pumps.
 - These systems are alternates for the following reasons:
 - low water quality



- relative difficulty in establishing RPV injection Lineup.
- lineup is not permitted during normal operation.
- 5. Is RPV pressure above 195 psig.
 - a. YES continue at STEP #6
 - b. NO continue at STEP #11
 - With pressure above 195 psig, RPV injection is precluded due to pressure being above the shutoff head of the listed systems (except SLC).
- 6. While executing the following steps
 IF
 RPV pressure drops below 195 psig
 THEN

Continue at "G"

RPV pressure may decrease to less than 195 psig. If it does it is appropriate

to continue at the step specified.

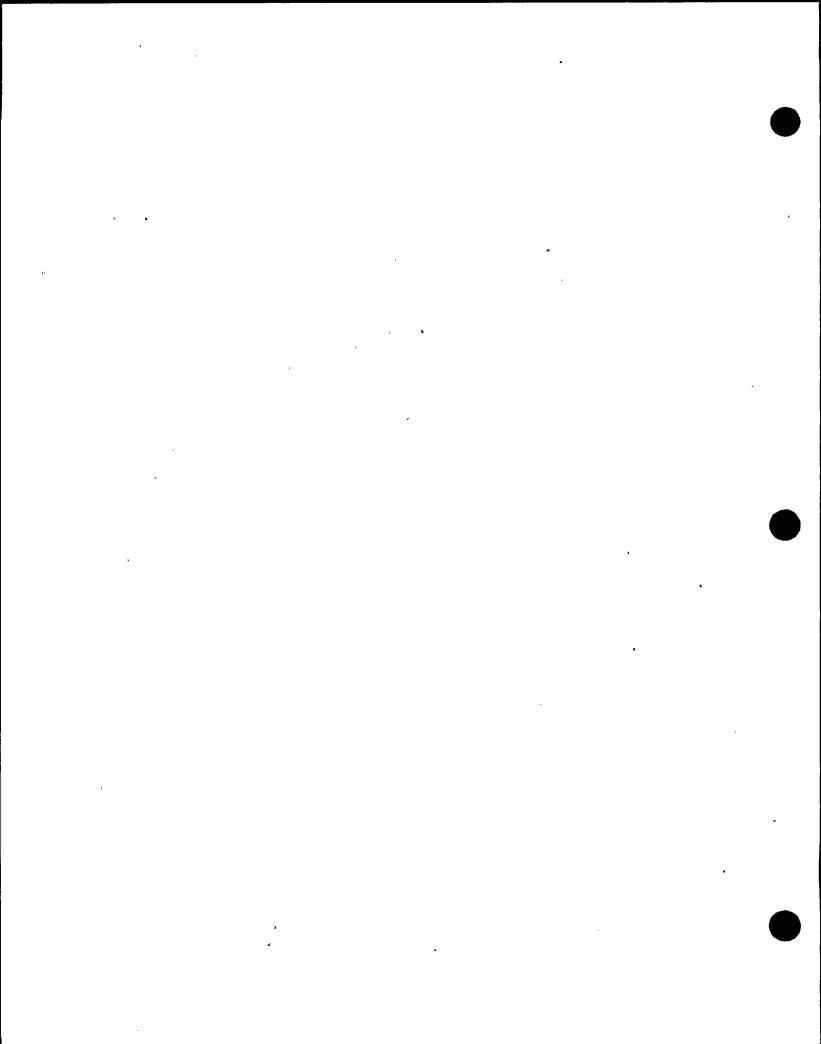
- 7. Is any injection subsystem lined up for injection with at least one pump running?
 - a. YES continue at STEP #9

step #11

EO-3.0

E0-3.0

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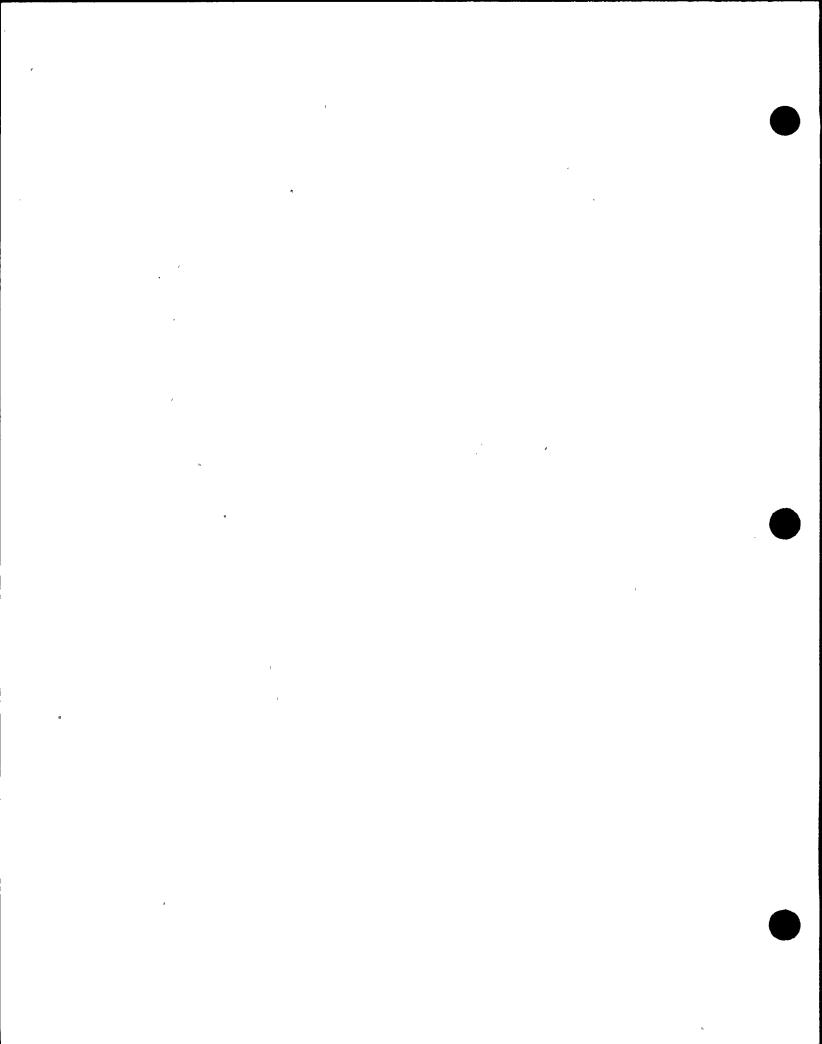


3 8.

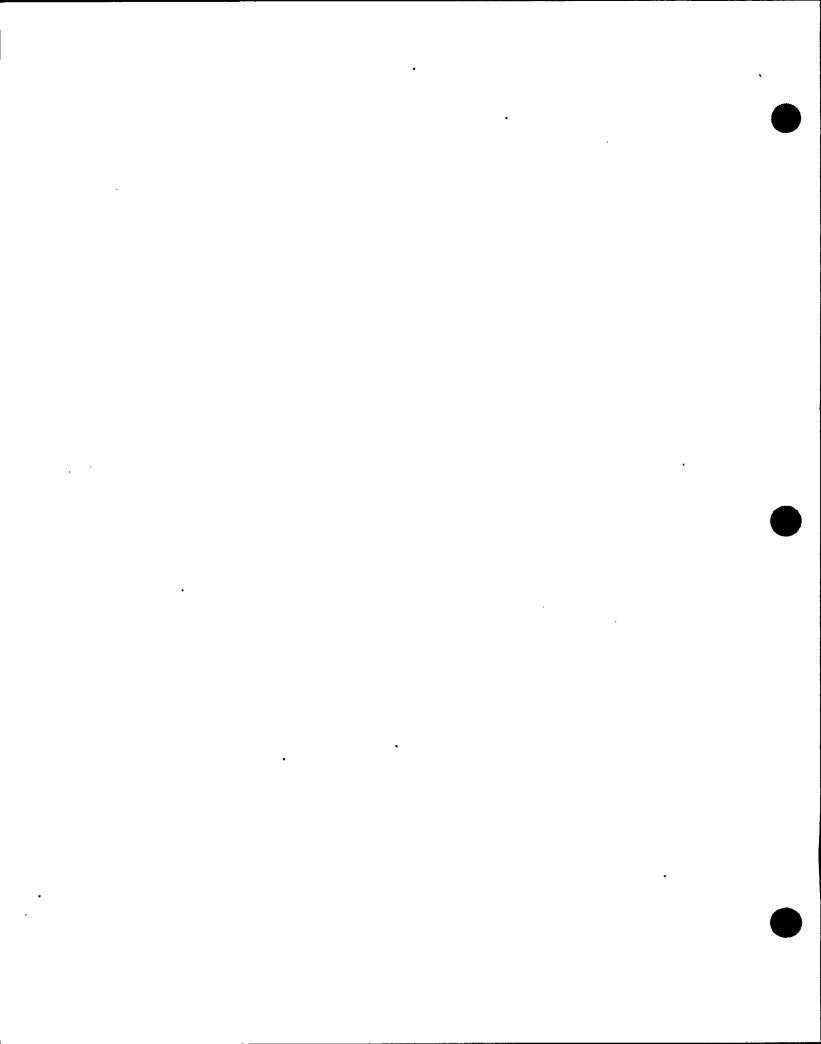
9.

10.

b.	NO - continue at STEP #8	EO-3.0
	• Evaluate present status of RPV	
	injection subsystems to determine	
	if alternate subsystems will be	
	required.	
	- If yes, depressurization of	
	RPV to allow subsystem to	
	inject.	
	- If no, alternates must be	
	readied.	
Star	pumps in alternate injection	
	stems which are lined up for injection.	
•	Action required by NO response to #7	
WAIT	until RPV water level drops to -14 in.	EO-3.0
•	Adequate core cooling by submergence	60-3.0
	(most preferred method).	
•	Time used waiting can be best used to	50.0.0
	line up and start pumps to attempt	EO-3.0
	decreasing level trend reversal.	
Is a	y system or subsystem lined up for	
	tion with at least one pump running?	
a.	YES - Emergency RPV Depressurization is	
~ .	required.	



- If RPV water level drops to -14 in. and at least one source of injection is available, RPV depressurization is required to maximize injection flow.
- RPV emergency depressurization is not initiated until -14 in. because:
 - Adequate core cooling is assured with RPV level above
 -14 in.
 - While RPV level is decreasing time is better spent attempting to make additional systems available for injection.
- b. No Steam Cooling is required.
 - With RPV level decreasing and no source of injection available the only mechanism by which adequate core cooling can be maintained is steam cooling.
 - Steam cooling is not initiated until level decreases to top of active fuel because:

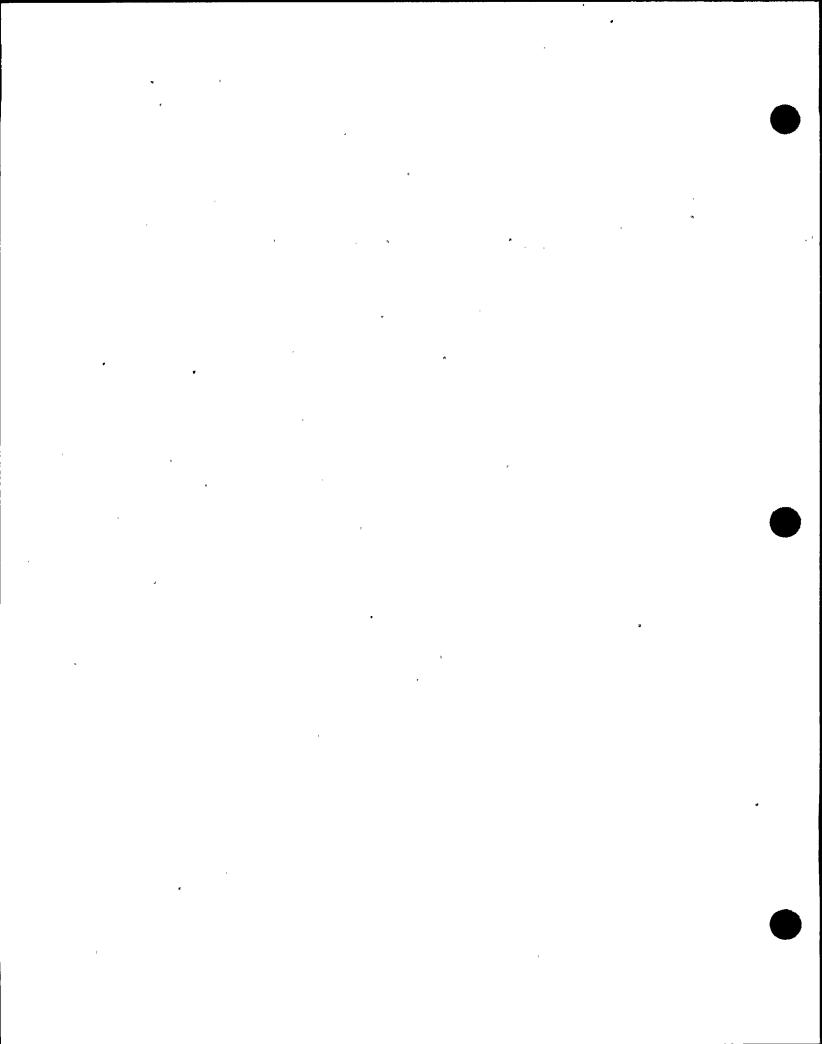


- Adequate core cooling is assured with level above TAF.
- Steam cooling is effective only when RPV water level has decreased into the core region.
- 11. Line up for injection, start pumps, and irrespective of pump NPSH and vortex limits, raise injection flow to the maximum with all systems and injection subsystems.
 - This step insures all available, specified means are used to inject into the vessel.
- 12. WAIT until RPV water level drops to -14 in.
 - RPV emergency depressurization is not initiated until -14 in. because:
 - Adequate core cooling is assured with RPV level above -14 in.
 - While RPV level is decreasing time is better spent attempting to make additional systems available for injection.
- 13. Emergency RPV Depressurization is required:
 Line up for injection, start pumps, and
 raise injection flow to the maximum with all
 alternate injection subsystems.

E0-3.0

E0-3.0

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EO-3.0

 Since all available systems and subsystems are unavailable to maintain RPV water level above TAF, the use of alternate injection subsystems is required.

14. IF

Water level cannot be restored and maintained above -14 in.

THEN

Primary Containment Flooding is required: enter contingency #6

 If level cannot be restored at this point, then a last effort is the core by flooding the containment. Show entry point in C-6.

III. WRAP-UP

A. Summary

The actions specified in this procedure provided more explicit instructions for RPV water level control than those provided in the RPV Level Control Procedure. Specific instructions are given based on the status of RPV water level and water level trend, and availability of specific systems. These instructions are given in an effort to restore and maintain RPV water level to above the top of active fuel.

