

07-187-91

NIAGARA MOHAWK POWER CORPORATION

NINE MILE POINT NUCLEAR STATION

UNIT II OPERATIONS

02-LOT-006-344-2-18 Revision 5

TITLE: EMERGENCY OPERATING PROCEDURES, PRIMARY CONTAINMENT
FLOODING (C-6)

	<u>SIGNATURE</u>	<u>DATE</u>
PREPARER	<u>[Signature]</u>	<u>12-4-90</u>
TRAINING SUPPORT SUPERVISOR	<u>[Signature]</u>	<u>12-4-90</u>
TRAINING AREA SUPERVISOR	<u>[Signature]</u>	<u>12-5-90</u>
PLANT SUPERVISOR/ USER GROUP SUPERVISOR	<u>[Signature]</u>	<u>12/10/90</u>

Summary of Pages
 (Effective Date: 12/10/90)
 Number of Pages: 12

Date: December 1990 Pages: 12
CONTROLLED
 THIS LESSON PLAN IS A GENERAL REWRITE

DOCUMENT

TRAINING DEPARTMENT RECORDS ADMINISTRATION ONLY:

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RECORDS: _____

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I. TRAINING DESCRIPTION

- A. Title of Lesson: Emergency Operating Procedures, Primary Containment Flooding (C-6)
- B. Lesson Description: This lesson plan discusses actions taken to flood the Primary Containment.
- C. Estimate of the Duration of the Lesson: 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: Classroom Lecture
- F. Prerequisites:
 - 1. Instructor:
 - a. Certified in accordance with NTP-16.
 - 2. Trainee:
 - a. Certified in accordance with NTP-10.
- G. References:
 - 1. BWROG Emergency Procedure Guidelines, Rev. 4
 - 2. Plant Procedure N2-EOP-C6, Rev. 4

II. REQUIREMENTS

- A. AP-9, Administration of Training
- B. NTP-10, Training of Licensed Operator Candidates

III. TRAINING MATERIALS

- A. Instructor Materials:
 - 1. Transparencies Package
 - 2. Overhead Projector
 - 3. Whiteboard and Felt Tip Markers
 - 4. EOP Flowchart for C6
 - 5. Training Record
- B. Trainee Materials:
 - 1. EOP Flowchart for C6
 - 2. Course Evaluation Form

IV. EXAM AND MASTER ANSWER KEYS

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

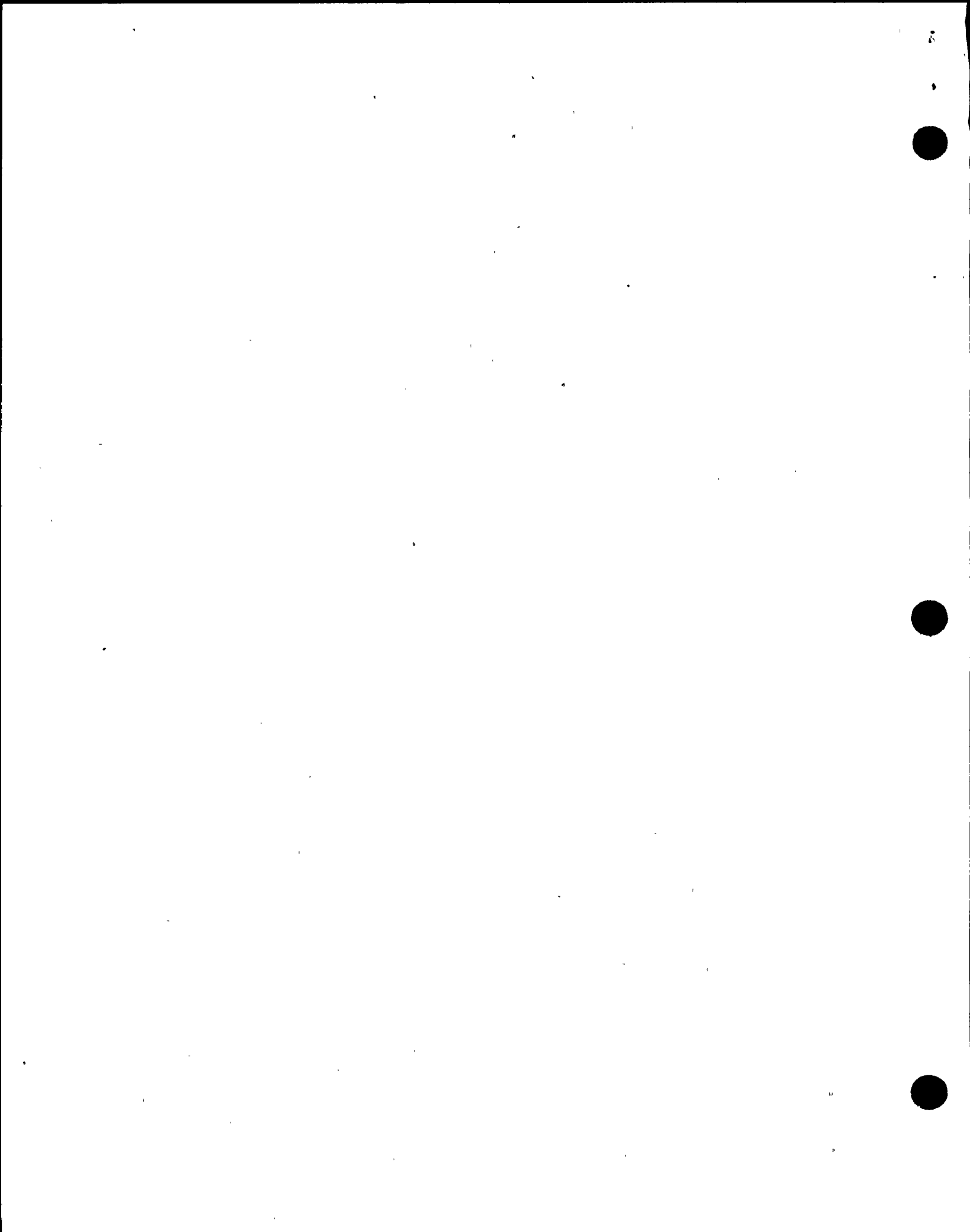


V. LEARNING OBJECTIVES

Upon completion of this training, the trainee will have gained the knowledge to perform the following:

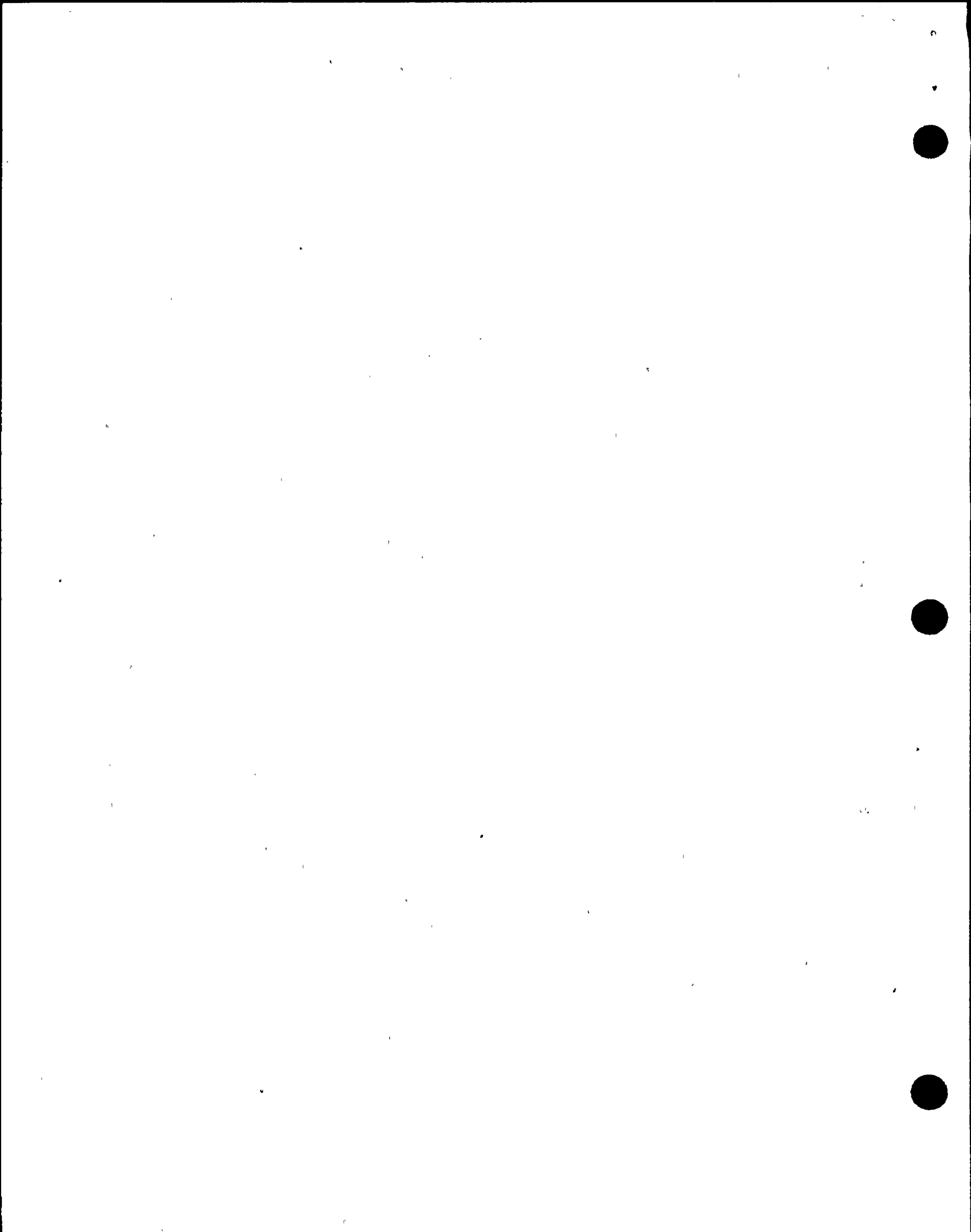
A. Terminal Objectives:

- 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.
- TO-2.0 (SRO ONLY) Direct the actions required for N2-EOP-PC Section SPT. (3449450503)
- TO-3.0 (SRO ONLY) Direct the actions required per N2-EOP-C6, RPV Flooding (Primary Containment Flooding). (3449560603)
- TO-4.0 Perform the actions required for a high suppression pool water level. (2000230501)
- TO-5.0 Perform the actions required for a reactor water level low. (2000310501)
- TO-6.0 Perform the actions required for a large break LOCA inside the Primary Containment. (2009150501)
- TO-7.0 Perform RPV/Containment service water flooding from the Control Room. (2059330101)
- TO-8.0 Perform the RHR keep full pump, alternate RPV injection from the Control Room. (2059340401)
- TO-9.0 Manually initiate HPCS from the Control Room. (2060050101)
- TO-10.0 Perform manual injection of LPCS from the Control Room. (2099020401)
- TO-11.0 Inject to the vessel using the condensate transfer pumps. (2569180501)



B. Enabling Objectives:

- EO-1.0 State the purpose of the Primary Containment Flooding Procedure.
- EO-2.0 State the entry conditions for the Primary Containment Flooding Procedure.
- EO-3.0 Given the procedural step, discuss the technical basis for that step.



I. INTRODUCTION

A. Student Learning Objectives

B. Purpose

1. To restore adequate core cooling through core submergence, by flooding the containment, when previous level control actions performed were unsuccessful.

II. DETAILED DESCRIPTION

A. Entry Conditions

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

B. Procedural Steps

1. While executing the following steps:
 - a. IF
Primary Containment water level and Suppression Chamber pressure cannot be maintained below the Maximum Primary Containment Water Level Limit.
(Fig. C6-1)

Preliminary Activities:

1. Introduce self to class (if unfamiliar).
2. Distribute TR for completion.
3. Distribute Course Evaluation Forms and describe their use.
4. Discuss Method of Evaluation.

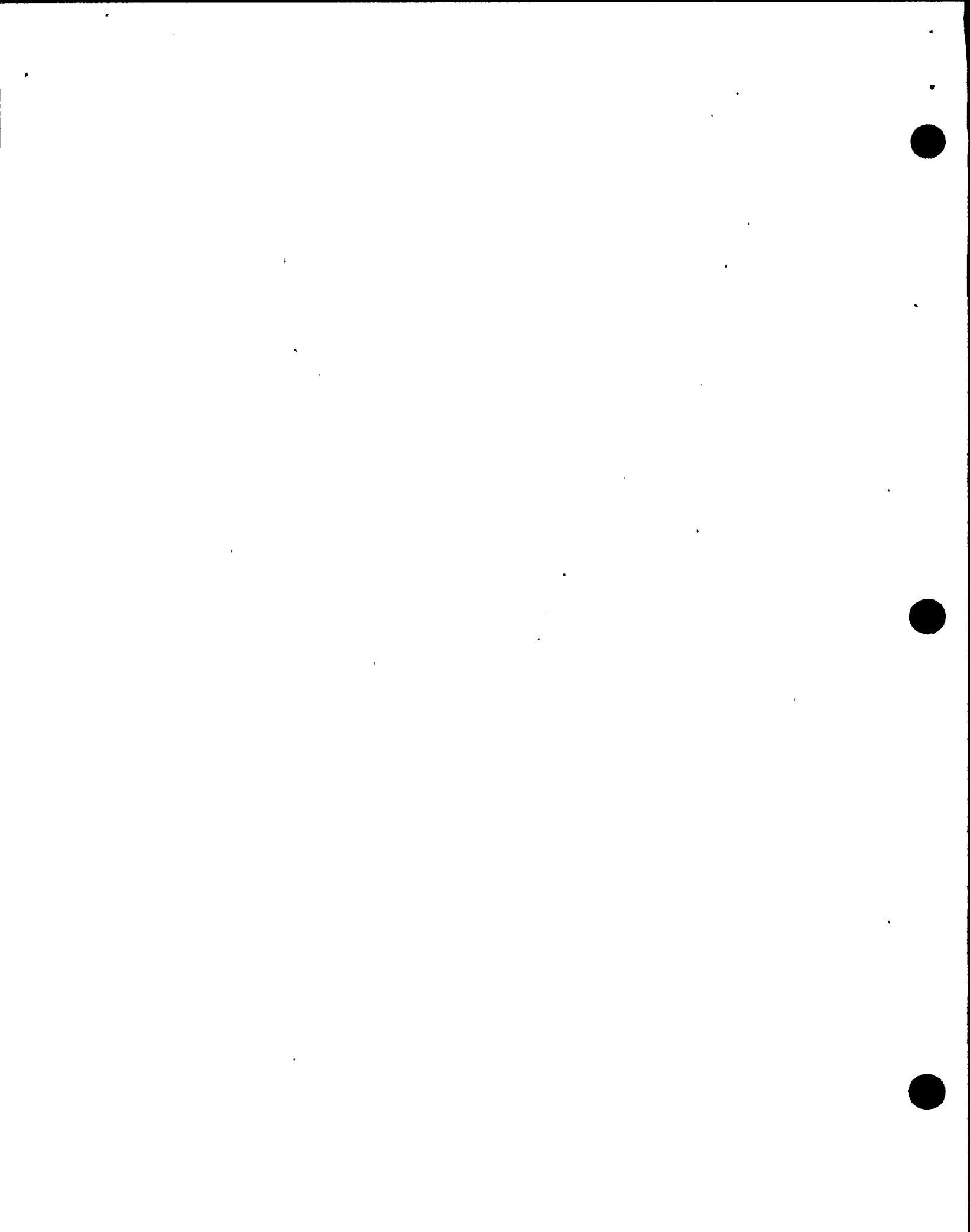
Review Learning Objectives with the class.

EO-1.0

NOTE: TP's may be used to highlight points of interest on flowchart; use TP's to show procedural steps if flowchart not used.

EO-2.0

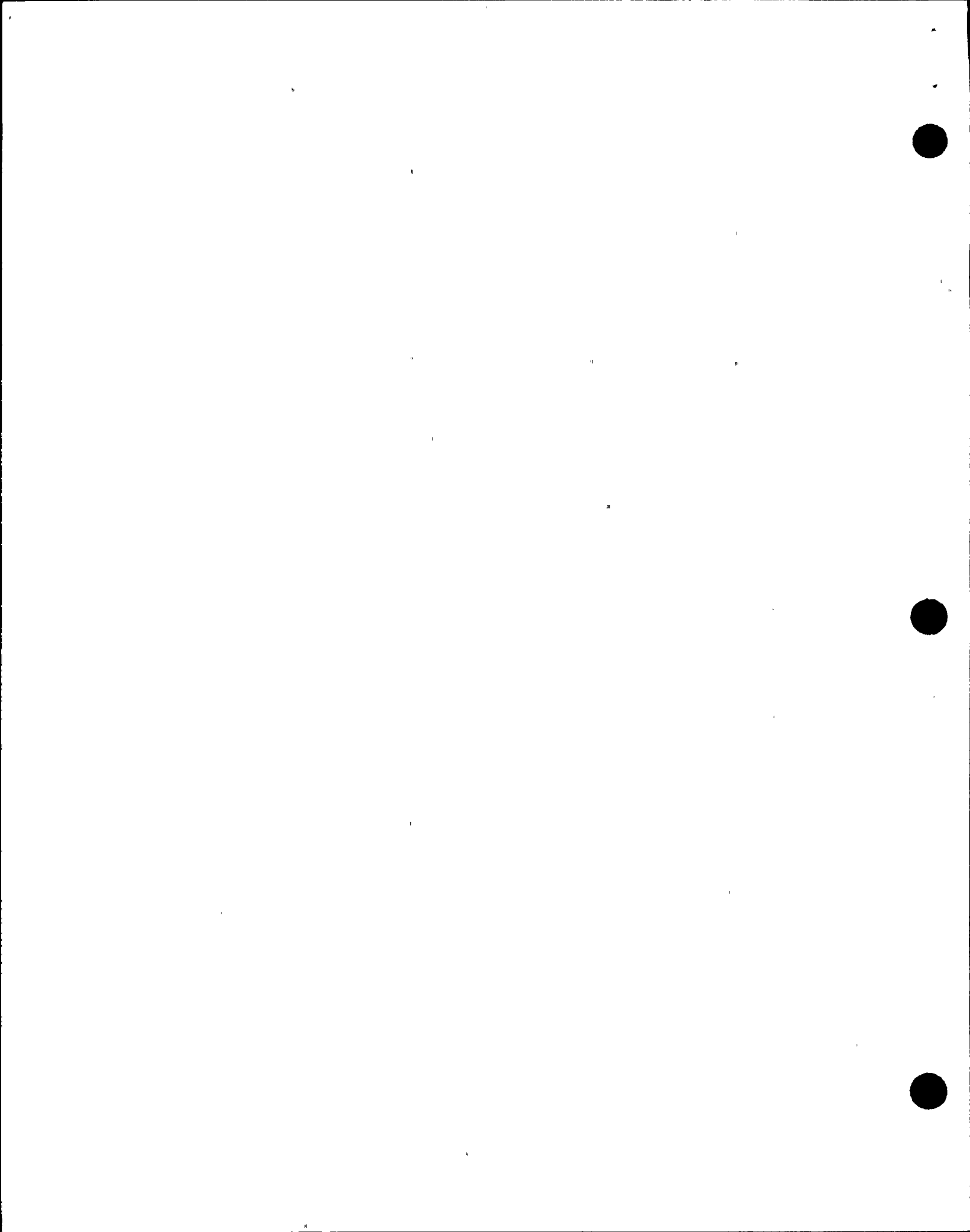
Show TP of Figure C6-1.



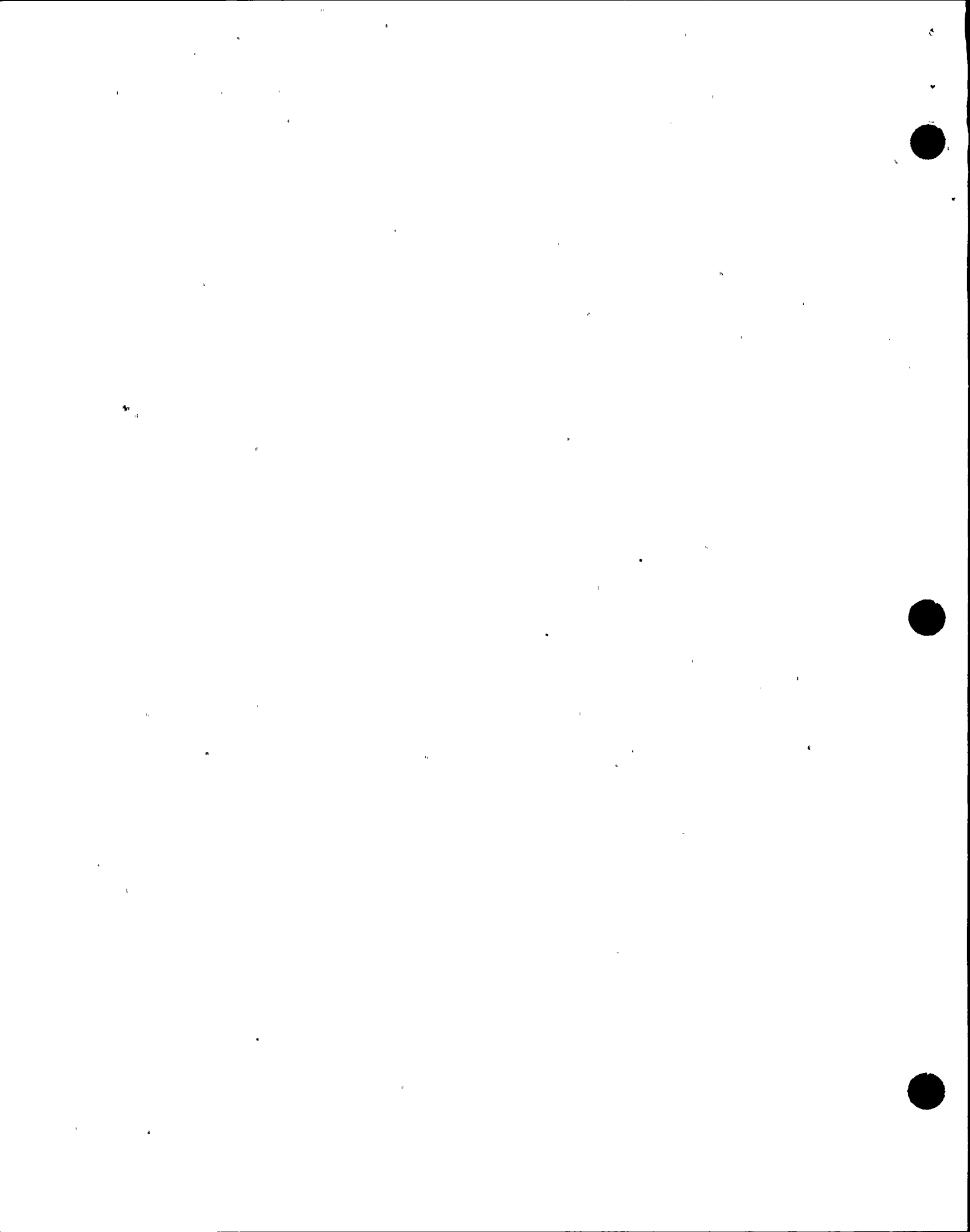
THEN

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 (Fig. C6-1).

- Assuming a non-isolated Primary System break inside the drywell, injection into the RPV from sources external to the Primary Containment will cause containment water level to increase. EO-3.0
- If injection into the RPV is continued and the Maximum Primary Containment Water Level Limit is exceeded, the structural integrity of the containment is no longer assured. EO-3.0
- This limit is based on the elevation of the highest vent in the containment capable of rejecting all decay heat. EO-3.0

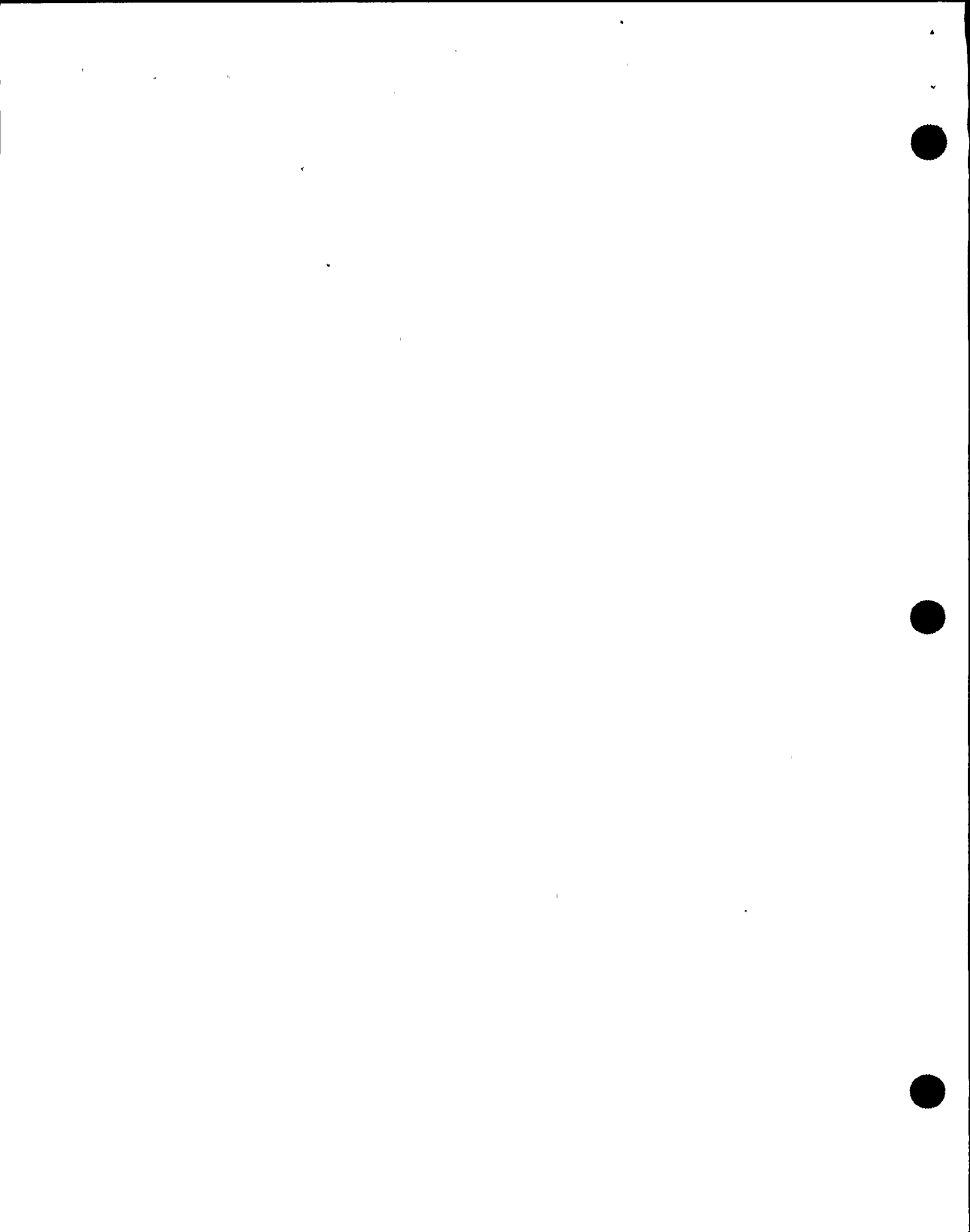


- Injection sources external to the containment are secured, regardless of whether adequate core cooling is assured, in order to remain below this limit. EO-3.0
 - It is preferential to ensure Primary Containment integrity over the prevention of core degradation since the loss of the containment may result in an unrecoverable loss of adequate core cooling through possible failure. EO-3.0
- b. IF
 RPV water level can be restored and maintained above -14 in
 THEN
 Enter this procedure and enter EOP-RPV, Show entry point into EOP-RL.
 RPV Control, Section RL at "A".
- Once RPV water level is restored and maintained above TAF, there is no longer a need for flooding. EO-3.0
 - The operator is directed to enter RPV control at "A". This action will result in securing the venting evolution of the RPV and entry into the appropriate level control path of "RPV Control". EO-3.0

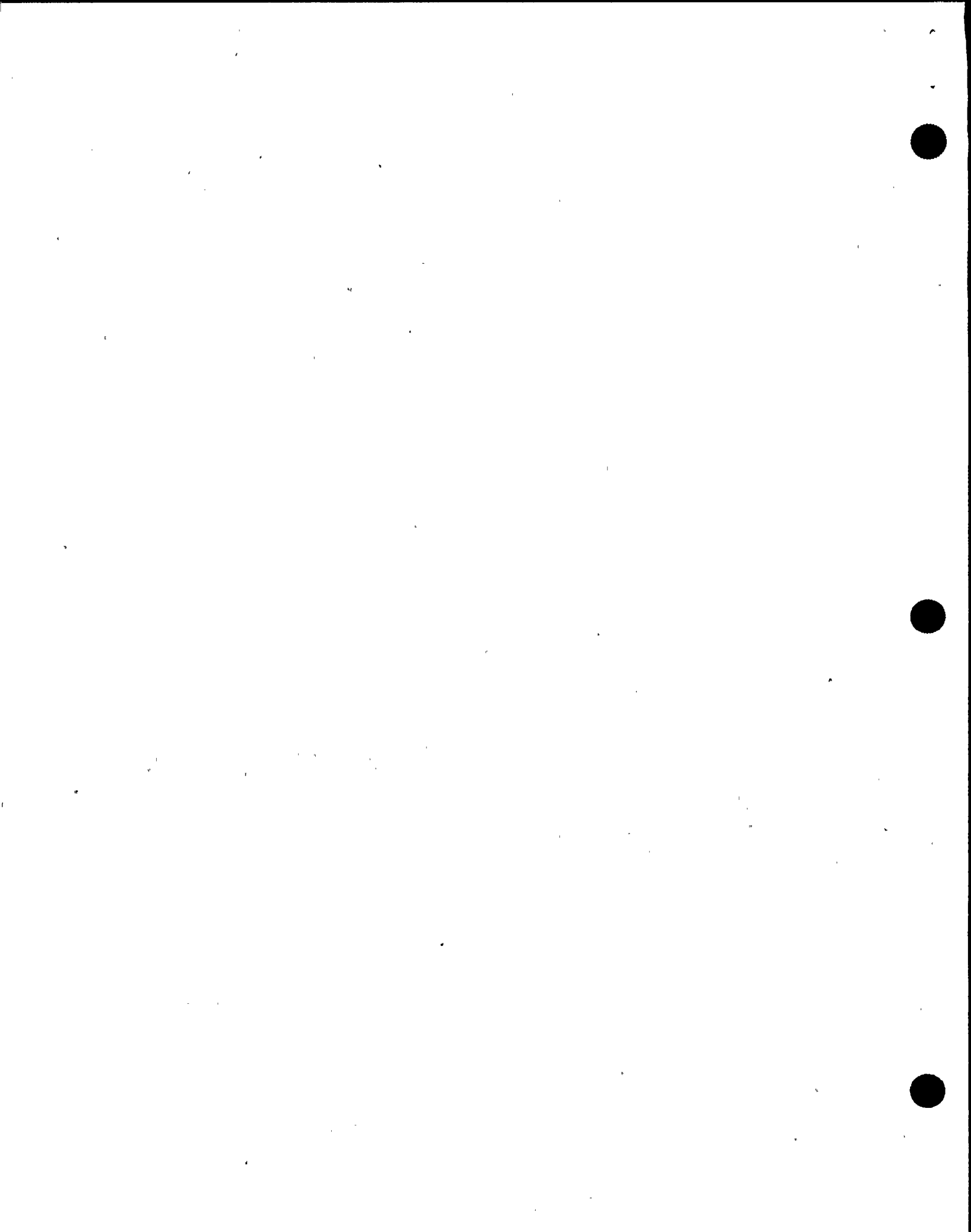


2. Operate the following systems:
 - a. HPCS with suction from the condensate storage tank when available.
 - b. LPCS
 - c. Condensate/feedwater
 - d. RCIC with suction from the condensate storage tank only
 - 1) If necessary, defeat low RPV pressure isolation interlock.
 - e. Service water to RHR crosstie
 - f. Fire system
 - g. ECCS keep full systems
 - h. Condensate transfer
 - i. LCPI, unless service water to RHR crosstie, condensate transfer, or fire system are available.
 - All available systems which draw suction on a water source external to the Primary Containment are lined up and operated to add water to the containment.

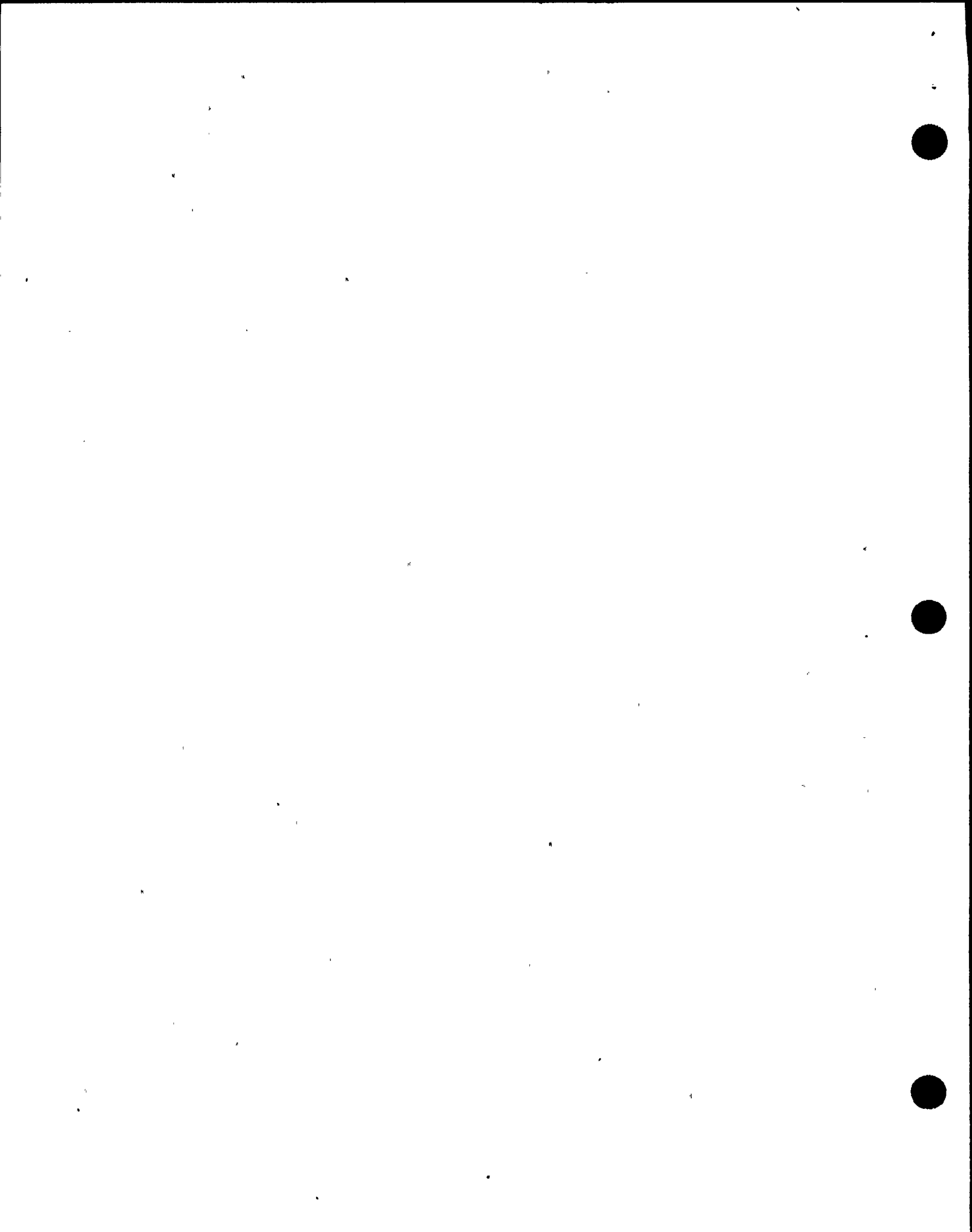
EO-3.0



- Since the RPV has been depressurized prior to entering this procedure, the RCIC low steam pressure isolation may have to be bypassed. This condition allows RCIC to run at speeds approaching turbine stall speed. EO-3.0
 - While containment water level is being raised, the containment pressure is being controlled using the steps set forth in Section PCP of "Primary Containment Control" to keep Primary Containment pressure below the Primary Containment Pressure Limit. EO-3.0
3. WAIT until Primary Containment water level reaches El. 248.5 ft.
 4. Irrespective of the offsite radioactivity release rate, vent the RPV until RPV water level reaches -14 in. with one or more of the following systems.
 - a. If necessary, defeat isolation interlocks.



- b. Systems
- 1) Condenser
 - 2) RCIC steam line
 - 3) RHR
- The bottom of the lowest recirculation system piping is the lowest possible break elevation and the lowest drywell water level where steam and non-condensibles could be trapped in the RPV. EO-3.0
 - As water level increases above the level of the break, steam and non-condensibles are trapped inside the RPV and cannot escape unless vented. This would cause RPV water level to be lower relative to containment water level. EO-3.0
 - The RPV is vented to allow the water to rise into the RPV. One or more of the vent paths listed are used to accomplish this step. EO-3.0
 - Venting is continued until RPV water level reaches TAF. EO-3.0
 - Venting is done regardless of offsite radioactivity release rates to ensure the core is submerged as rapidly as possible.



5. WAIT until Primary Containment water level reaches El. 292.5 ft.

6. Maintain Primary Containment water level between 292.5 ft. and the Maximum Primary Containment Water Level Limit (Fig. C6-1) with the following systems:

Show TP of Figure C6-1.

a. Inject via the RPV take suction from sources external to the Primary Containment only when required.

b. Systems

1) HPCS

2) LPCS

3) Condensate/feedwater

4) CRD

5) LPCI

6) Head Spray

7) Service water to RHR crosstie

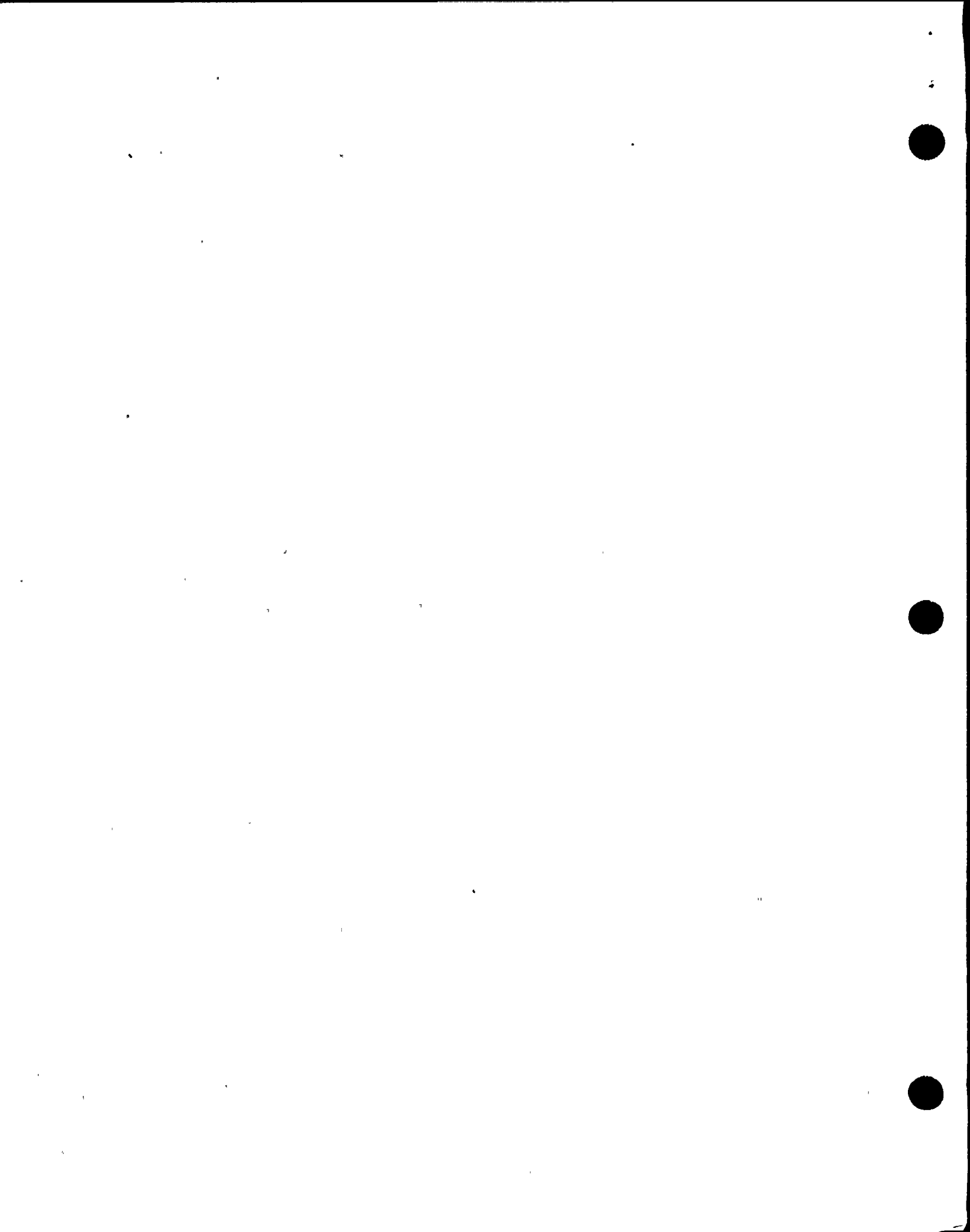
8) Fire System

9) ECCS keep full systems

10) Condensate transfer

• Elevation 292.5 ft. is the elevation corresponding to the TAF.

EO-3.0



- Once containment level is raised the operator is directed to maintain the level between 292.5 ft. and the Maximum Primary Containment Water Level Limit. By maintaining level between these two points, it assures adequate core cooling due to core submergence and will not result in containment failure.
- c. Since the required water level is established, injection systems are operated taking suction from sources outside the Primary Containment only as required to maintain the proper level.

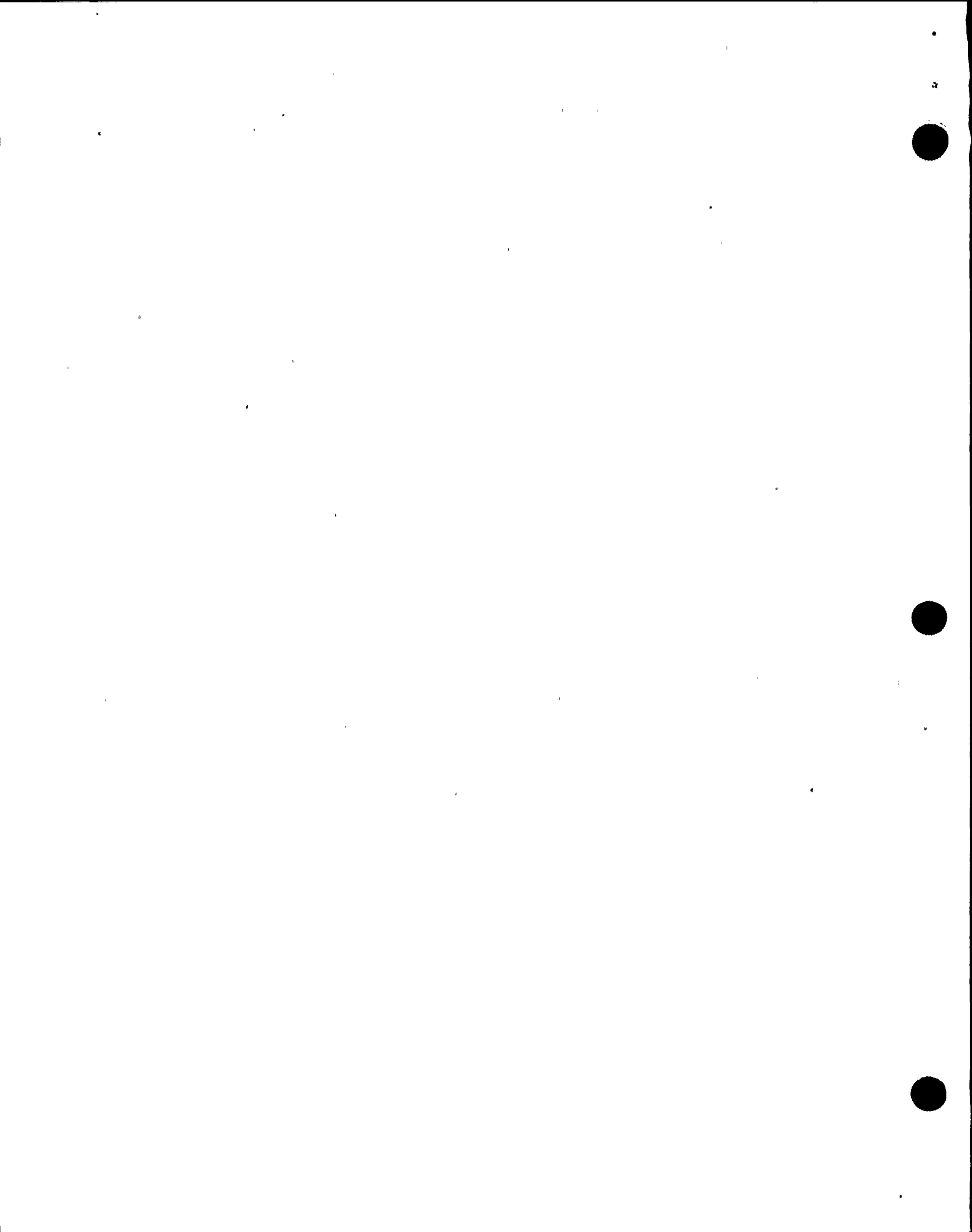
EO-3.0

Q: What is the purpose of EOP-C6?

A: To provide actions necessary to restore adequate core cooling through core submergence.

Q: If RPV water level can be restored and maintained above -14 in., which procedure is entered from EOP-C6?

A: N2-EOP-RL.



II. WRAP-UP

A. Summary

The purpose of "Containment flooding" is to restore adequate core cooling through core submergence when previous actions performed were unsuccessful in doing so.

Prior to entering "Containment flooding", attempts were made to restore RPV water level to above TAF by injecting directly to the RPV with any available system. By flooding the containment to the level corresponding to the top of active fuel, the RPV will be flooded through the break while the RPV is vented.

