

NIAGARA MOHAWK POWER CORPORATION
NINE MILE POINT NUCLEAR STATION
SIMULATOR LESSON PLAN

07-190-91

02-REQ-009-TRA-2-32 Revision 0

TITLE: 10% POWER CHARGE/LPRM FAILURE/LOSS OF US-010
LARGE LOCA INSIDE THE CONTAINMENT

	SIGNATURE	DATE
PREPARED BY	<u>[Signature]</u>	<u>5/30/91</u>
VALIDATED BY	<u>[Signature]</u>	<u>5/30/91</u>
SUPERVISOR OPS. TRAINING	<u>[Signature]</u>	<u>5/31/91</u>
PLANT SUPERVISOR/ USER GROUP SUPERVISOR	<u>[Signature]</u>	<u>5/31/91</u>

MASTER CONTROLLED DOCUMENT

Summary of Pages
Effective Date: 5/31/91
Number of Pages: 16
Date: May 1991 Pages: 1 - 16

TRAINING DEPARTMENT RECORDS ADMINISTRATION ONLY:

VERIFICATION: _____
DATA ENTRY: _____
RECORDS: _____

9305040387 911031
PDR ADCK 05000410
S PDR



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ATTACHMENT 5
LESSON PLAN TEMPORARY/PUBLICATION/ADDENDUM CHANGE FORM

The attached change was made to:

Lesson plan title: 10% Power Change / LPerm Failure / Loss of US-10 / Large LOCA inside Cont.

Lesson plan number: 02 REQ-009-TRA-2-32

Name of instructor initiating change: Eric D Perry

Reason for the change: To correct expert student response section.

Type of change:

1. Temporary change
2. Publication change
3. Addendum change

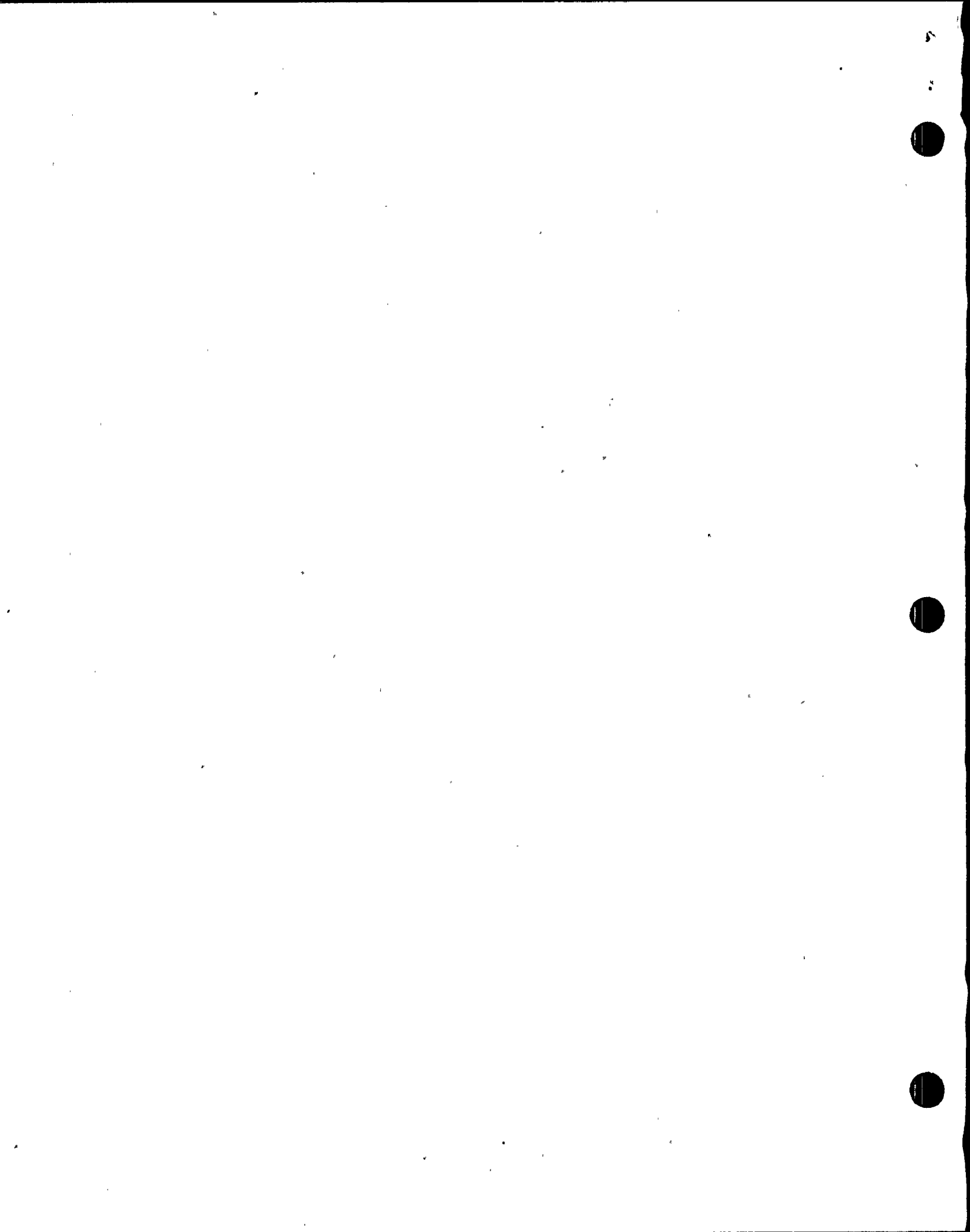
Disposition:

1. Incorporate this change during the next scheduled revision.
2. Begin revising the lesson plan immediately. Supervisor initiate the process.
3. To be used one time only.

Approvals:

Instructor: Eric D Perry /Date 6/17/91

Supervisor Operations Training (or designee): William D. [Signature] /Date 6/17/91



A. TRAINING DESCRIPTION

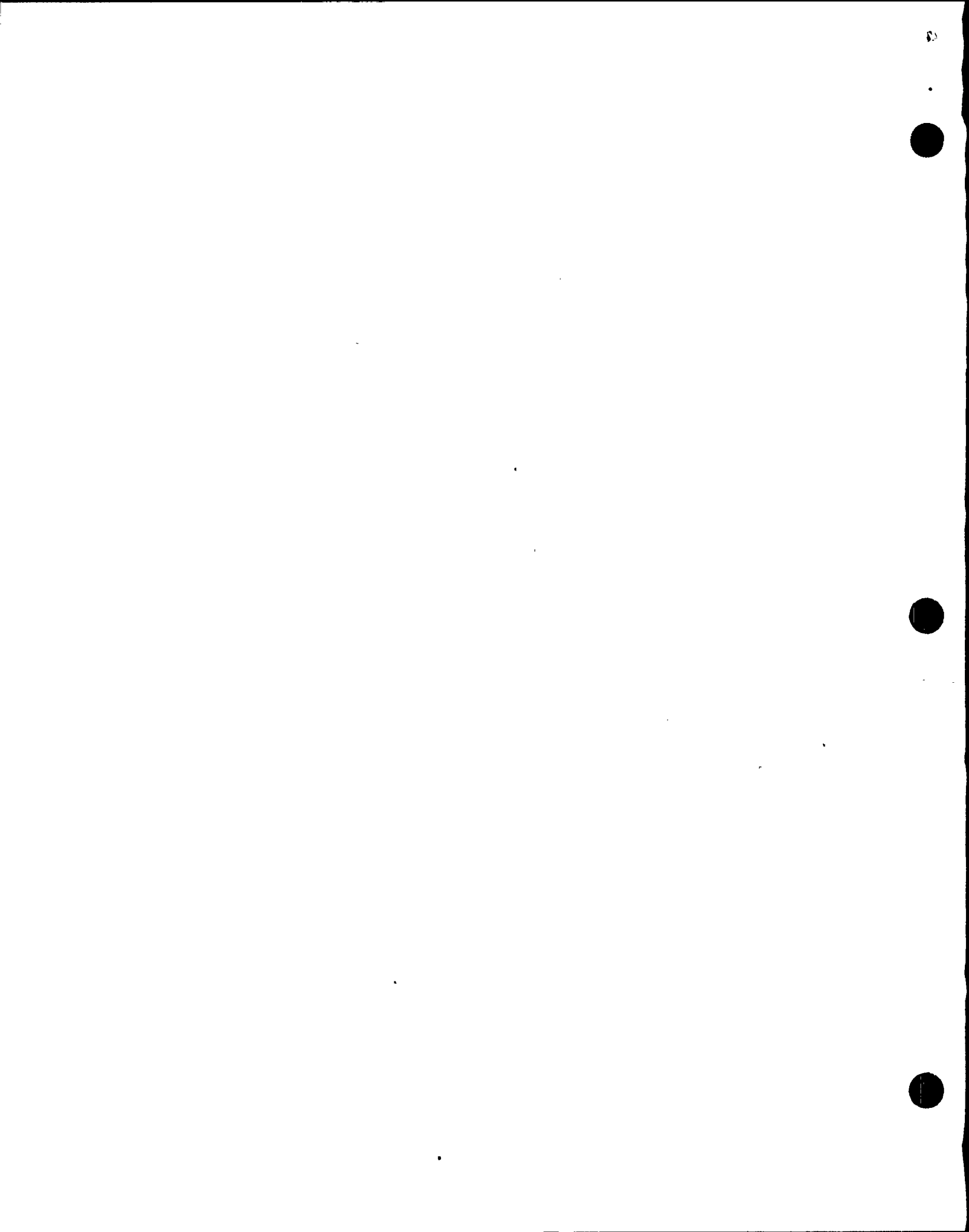
1. Title of Lesson Plan: 10% Power Change/LPRM Failure/Loss of US-010 Large LOCA inside the Containmentment
2. Estimated Duration of Lesson: 50 minutes
3. Prerequisites:
 - a. Instructor:
Qualified in accordance with NTP-16.
 - b. Trainees:
Meet eligibility requirements per 10CFR55.
4. References:
 - a. N2-OP-101D, Power changes
 - b. N2-OP-92, Neutron Monitoring
 - c. Technical Specifications
 - 1) Table 3.3.1-1 Note C LPRM Requirements for APRM Channels.
 - d. EOP-RPV, RPV Control
 - e. EOP-PC, Primary Containmentment Control
5. Manipulations Performed:
 - a. A05, Power change >10% with rods or recirc flow
 - b. B15, Nuclear Instrumentation Failure
 - c. A11, Loss of Electrical Power, Degraded Sources
 - d. A06, Large LOCA inside Primary Containmentment

B. REQUIREMENTS

1. NTP-11, Licensed Operator Requalification Training

C. PRE-EXERCISE BRIEF

Conduct in accordance with NTI-4.3.1 using Attachment 1 as a guide.



D. SIMULATOR SET-UP

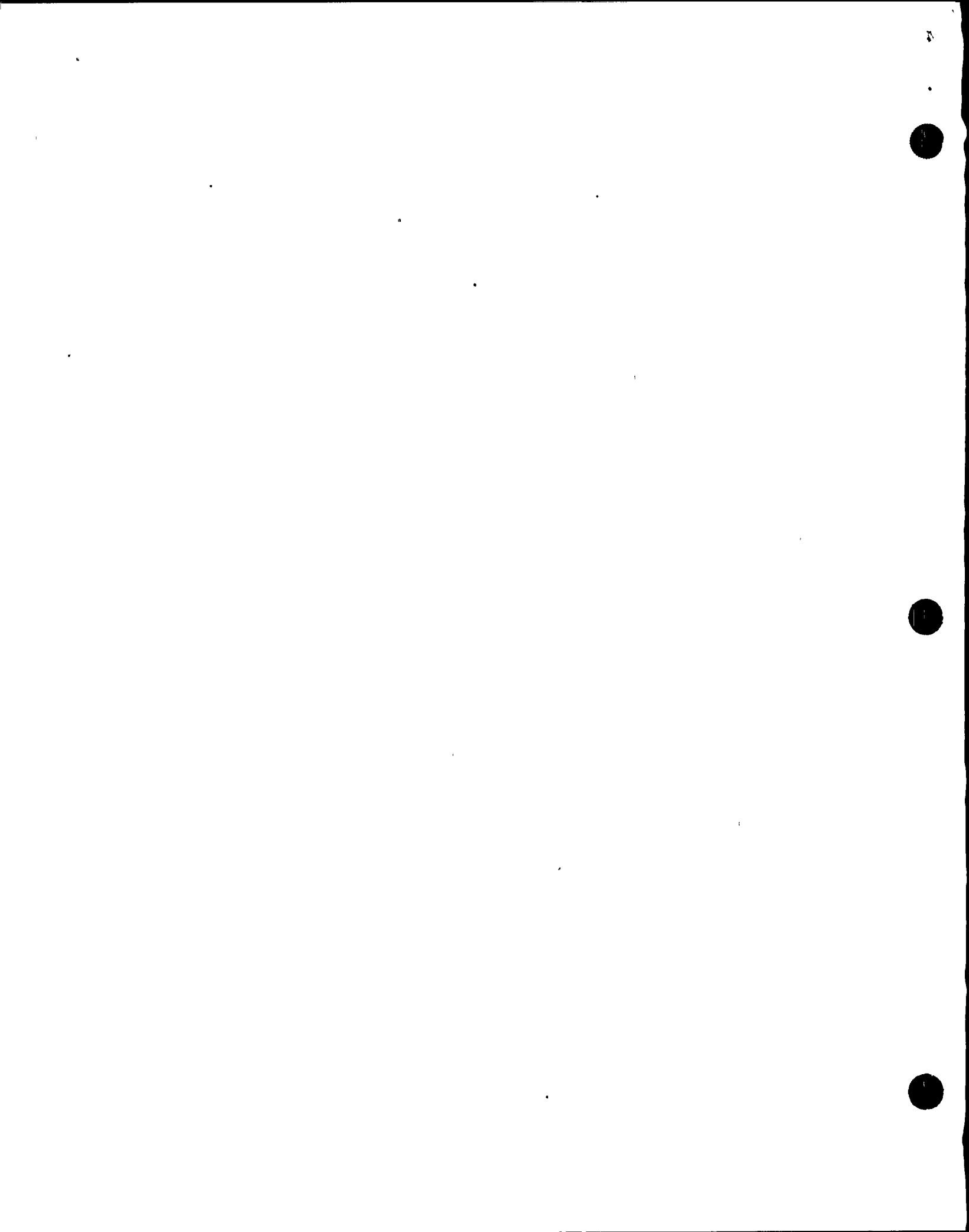
1. Initialize IC-20
2. Change the simulator conditions as follows:
 - a. Place recirc in loop manual.
 - b. Place the C RFP in service and secure the B RFP.
 - c. Start the B EHC pump and secure the A EHC pump.
 - d. Hang Red 100% Rod Line sign.
3. Presets:
 - a. Preset Malfunctions:
 - 1) 1,NM143217C, LPRM 32-17-C Failure Upscale
 - 2) 1,NM144833C; LPRM 48-33-C Failure Upscale
 - 3) 3,NM145633A, LPRM 56-33-A Failure Upscale
 - 4) 4,NM144017D, LPRM 40-17-D Failure Upscale
 - 5) 5,NM142457B, LPRM 24-57-B Failure Upscale
 - 6) 6,NM141657A, LPRM 16-57-A Failure Upscale
 - b. Preset I/O:
 - 1) None
 - c. Preset Remotes:
 - 1) Page NM5; Toggle 41 Bypass LPRM 32-17-C
 - 2) Page NM5; Toggle 46 Bypass LPRM 40-17-D
 - 3) Page NM8; Toggle 105 Bypass LPRM 48-33-C
 - 4) Page NM8; Toggle 107 Bypass LPRM 56-33-A
 - 5) Page NM12; Toggle 168 Bypass LPRM 24-57-B
 - 6) Page NM12; Toggle 163 Bypass LPRM 16-57-A
 - 7) Page FW3; Toggle 16 FW Aux oil pump C off
 - 8) Page FW3; Toggle 15 FW Aux Lube Pump B ON

E. POSITION ASSIGNMENTS

Ensure proper rotation of trainees is performed to meet the requirements of the training session.

F. SCENARIO SUMMARY

The scenario starts with the crew relieving the shift at 100% power. Soon after turnover, the load dispatcher request a power reduction. Soon after the power reduction, a LPRM detector fails requiring a 1/2 scram to be inserted. When the LPRM failure has been addressed, a loss of US-010 will occur. Next, a LOCA occurs inside the Primary Containment. The scenario ends when the SSS classifies the event and the RPV and drywell parameters have been stabilized.



G. LEARNING OBJECTIVES

1. Generic Objectives:

- GO-1.0 Demonstrate effective communications in accordance with the Operations Department Instruction on verbal communications.
- GO-2.0 Demonstrate for those exercises that require use of the Emergency Plan, an understanding of the roles and responsibilities of the SSS, ASSS/STA and CSO/NAOE in accordance with Operations Department Instructions.
- GO-3.0 SRO's shall demonstrate an understanding of command and control, EOP place keeping techniques and effective use of control room personnel during emergency conditions.
- GO-4.0 Operators shall demonstrate "Self Verification" work practices in accordance with Operations Department Instructions.

2. Scenario Objectives:

- LO-1.0 Given a reactor plant at 100% power, the operating crew will perform a power reduction per OP-101D and not exceed a rate of $1/25$ MWe/hr.

Tasks:

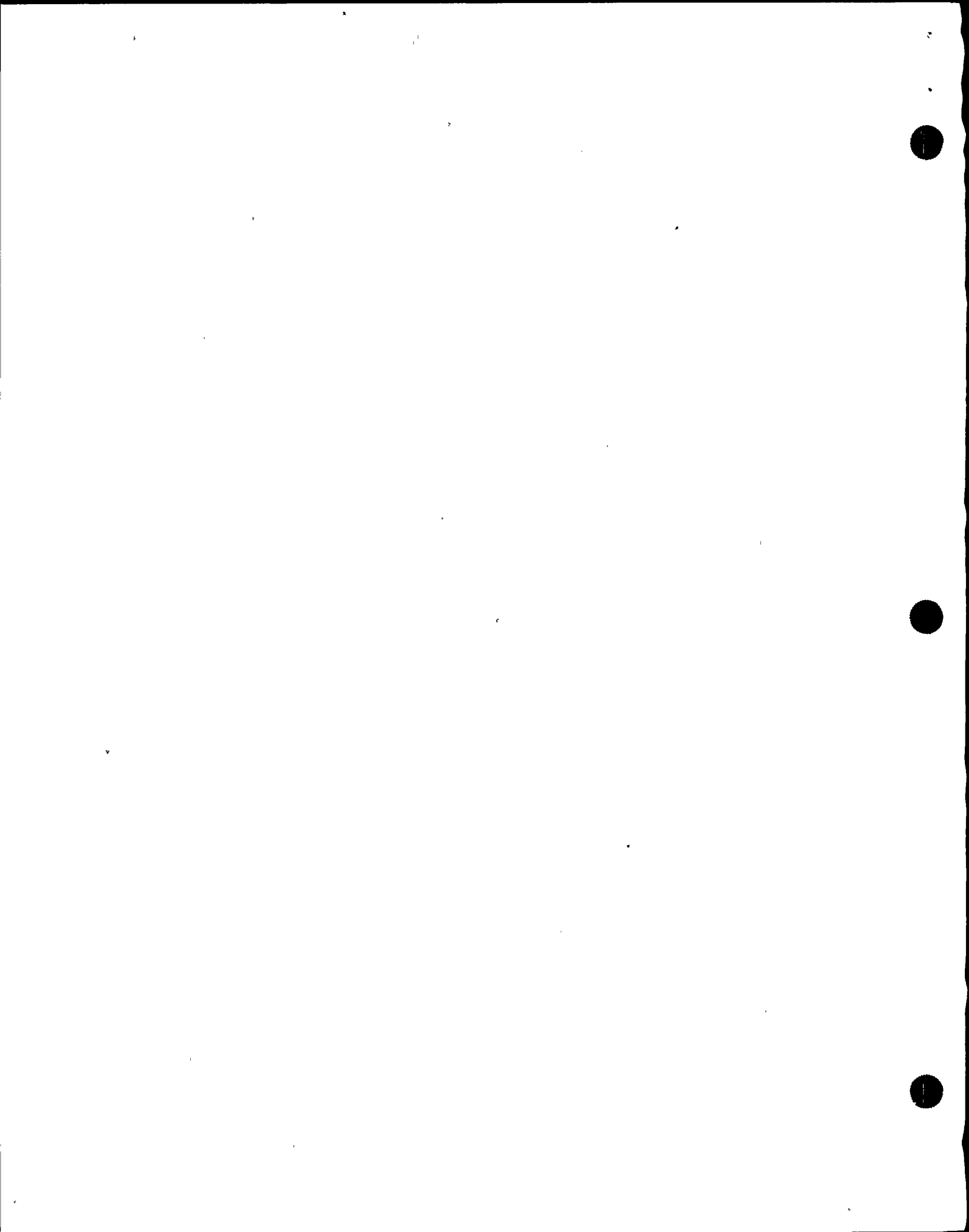
SRO: Direct power changes (>10%) using recirc flow or control rods (3419140103)

RO: Monitor operation of the recirc pumps (2020060101).

- LO-2.0 Given a reactor plant at approximately 90% power and a failure of an LPRM detector, the operating crew will declare the associated APRM channel INOP and bypass the APRM channel.

Tasks:

RO: Perform the actions required for an APRM/LPRM failure (2009040501).



LO-3.0 Given a reactor plant at approximately 90% and a loss to US-010, the operating crew will identify the loss of EHC pump and the B RFP aux. oil pump and take corrective action to stabilizing the plant.

Tasks:

SRO: Authorize and direct the de-energize/energizing of electrical busses (3410460303).

LO-4.0 Given a large LOCA inside the primary containment, the operating crew will operate the ECCS systems to restore RPV level above TAF.

Tasks:

SRO: Direct the actions required for EOP-C1, level restoration (3449510603).

LO-5.0 Given a large LOCA inside the primary containment, the operating crew will operate the containment sprays to stabilize containment pressure <1.68 psig.

Tasks:

SRO: Direct the actions required per EOP-PC Section PCP (3449430603).

RO: Perform actions for a high drywell pressure (2000070501).

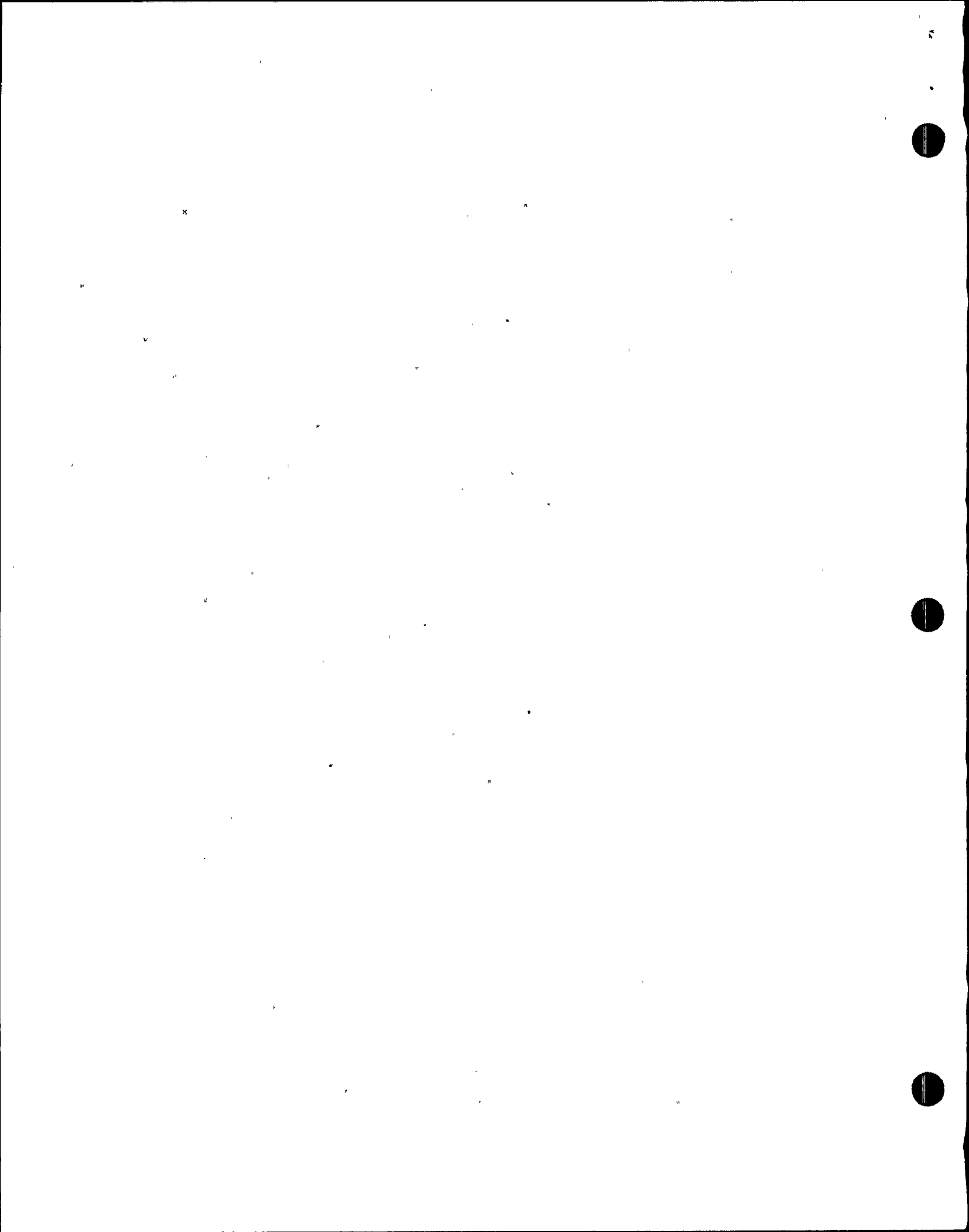
RO: Operate the containment spray system (2050150101).

LO-6.0 Given a large LOCA inside the primary containment, the SSS will classify the event at a minimum as an ALERT and initiate the notifications with 15 minutes.

Tasks:

SRO: Classify emergency events requiring emergency plan implementation (3440190303).

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H. LESSONS LEARNED

1. None

I. TURNOVER INFORMATION

1. Give the following information for initial conditions:

Core Life: BOL

Description: 100% power, operating above the 100% rod line.

Rod Sequence Information: N/A

Plant Conditions: 100% Power

2. Tech. Spec. limitations in effect:

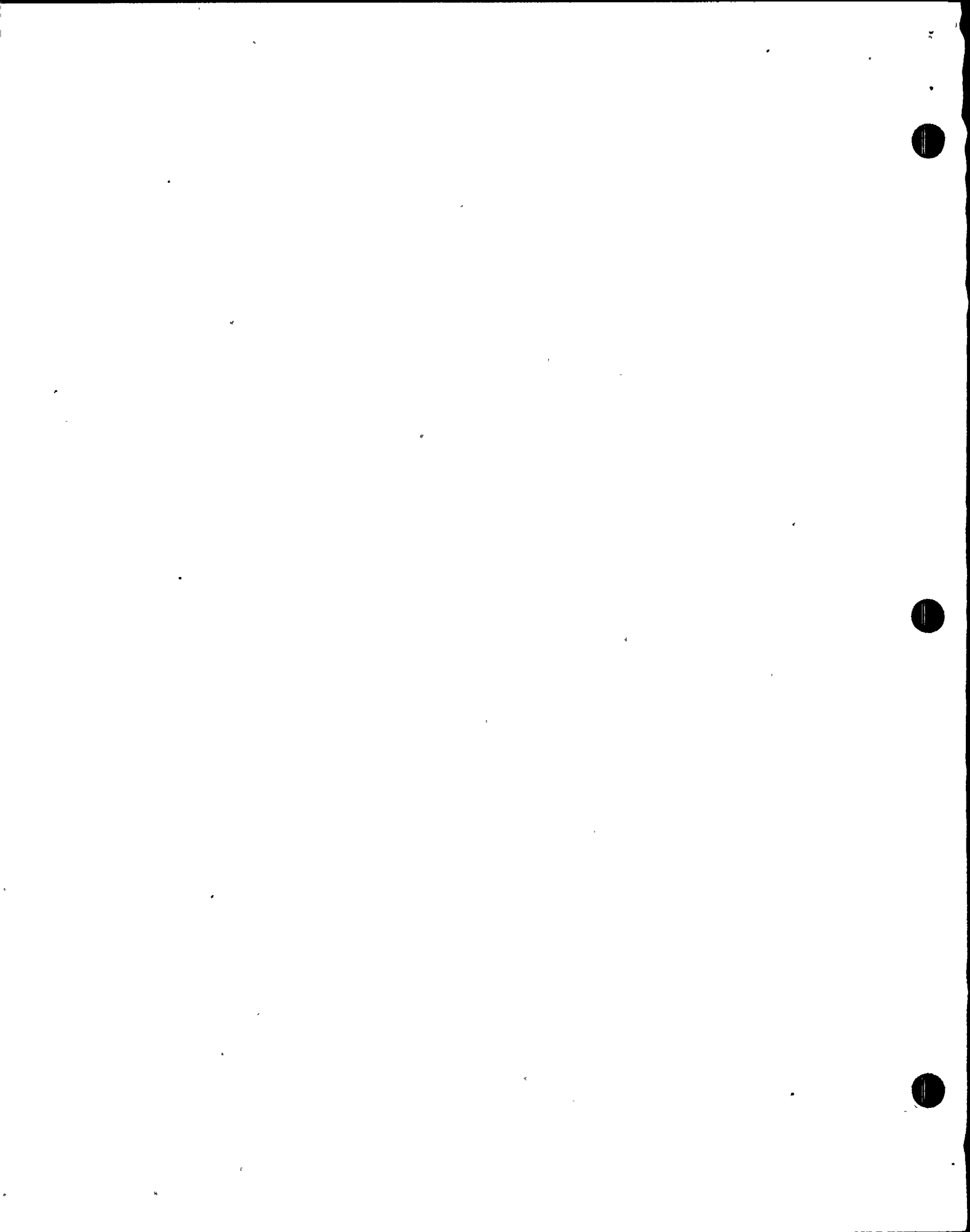
None

3. Significant problems/abnormalities:

None

4. Evolutions/maintenance for the on-coming shift:

- a. Continue 100% power operation per plant operating procedures and load dispatchers requests.



INSTRUCTOR INFORMATION/
INSTRUCTOR ACTIVITIES

EXPECTED STUDENT RESPONSE

SAT/UNSAT/NA

COMMENTS

1. Shift Turnover in Progress

Crew performs panel walkdowns
and receives turnover information
from the SSS.

Sat/Unsat/NA

2. Power Reduction

Role Play: Three minutes after the
turnover, the load dispatcher request a
power reduction to 1000 MWe at a rate of
125 MWe/hr.

SSS directs operator to reduce
power IAW OP-101D to ^{900 MWe}~~1000~~ MWe at
125 MWe/hr.

Sat/Unsat/NA

SSS may call Chemistry.

Sat/Unsat/NA

CSO/E reduces power with recirc
(as directed).

Sat/Unsat/NA

LO-1.0

3. LPRM Failure

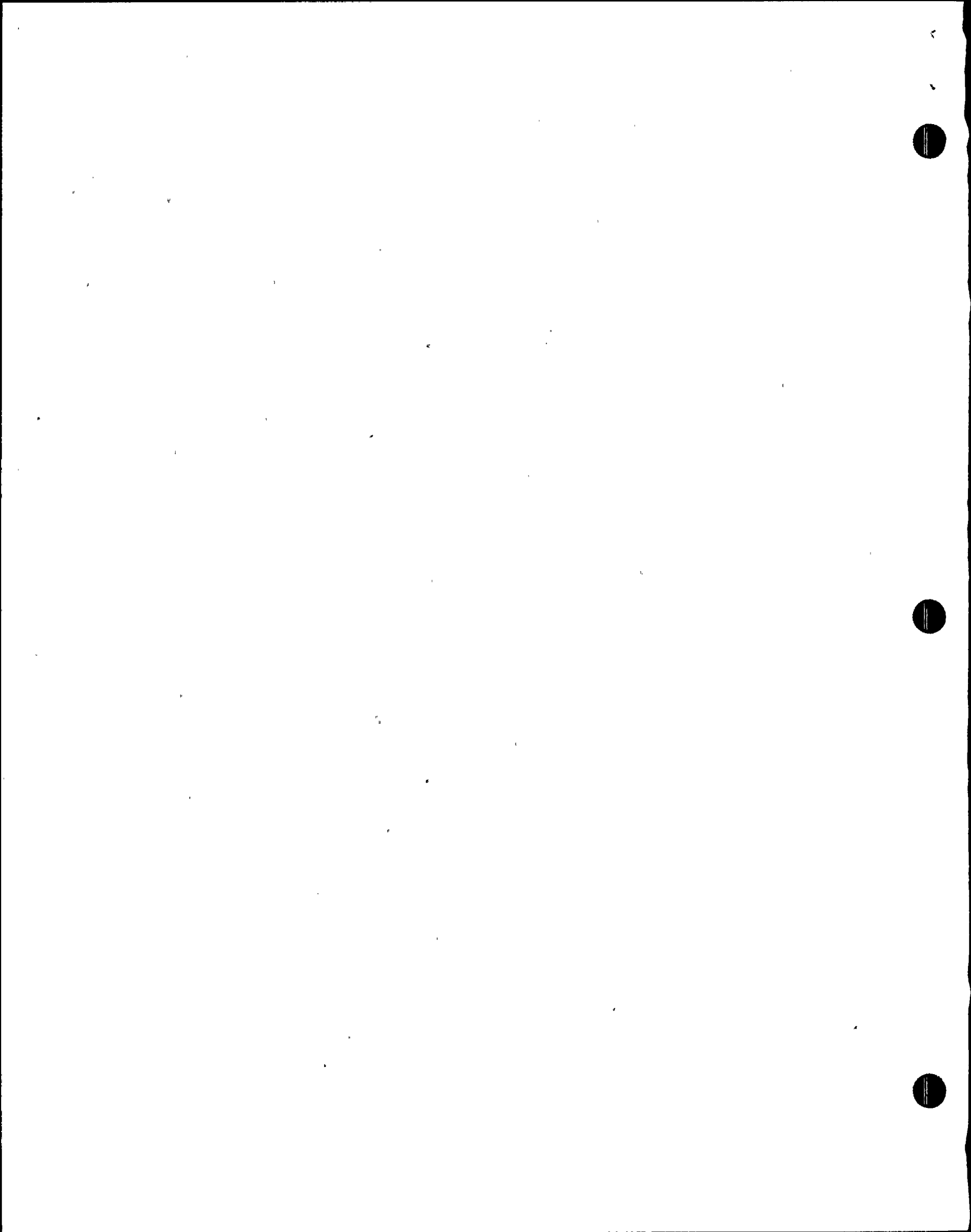
When the power reduction is completed,
wait two minutes and insert the following
malfunction:

MF;7,NM141633C

LPRM 16-33-C Failure Upscale

Crew reports the LPRM failure.

Sat/Unsat/NA



INSTRUCTOR INFORMATION/
INSTRUCTOR ACTIVITIES

EXPECTED STUDENT RESPONSE

SAT/UNSAT/NA

COMMENTS

Note: When the LPRM is bypassed, the C APRM will not have the minimum number of LPRM per level. This will cause the LPRM to be administratively INOP.

SSS directs operators to investigate the LPRM failure.

Sat/Unsat/NA

SSS contacts Reactor Engineer.

Sat/Unsat/NA

SSS/ASSS refer to TS Section 3/4.3 Table 3.3.1-1 Note C.

Sat/Unsat/NA

Role Play: As the Reactor Engineer report to the Control Room. Using N2-PM-@07 bypass the LPRM.

SSS declares the APRM channel INOP.

Sat/Unsat/NA

To bypass LPRM 16-33-C insert the following remote:

SSS directs operator to bypass APRM Channel C.

Sat/Unsat/NA

LO-2.0

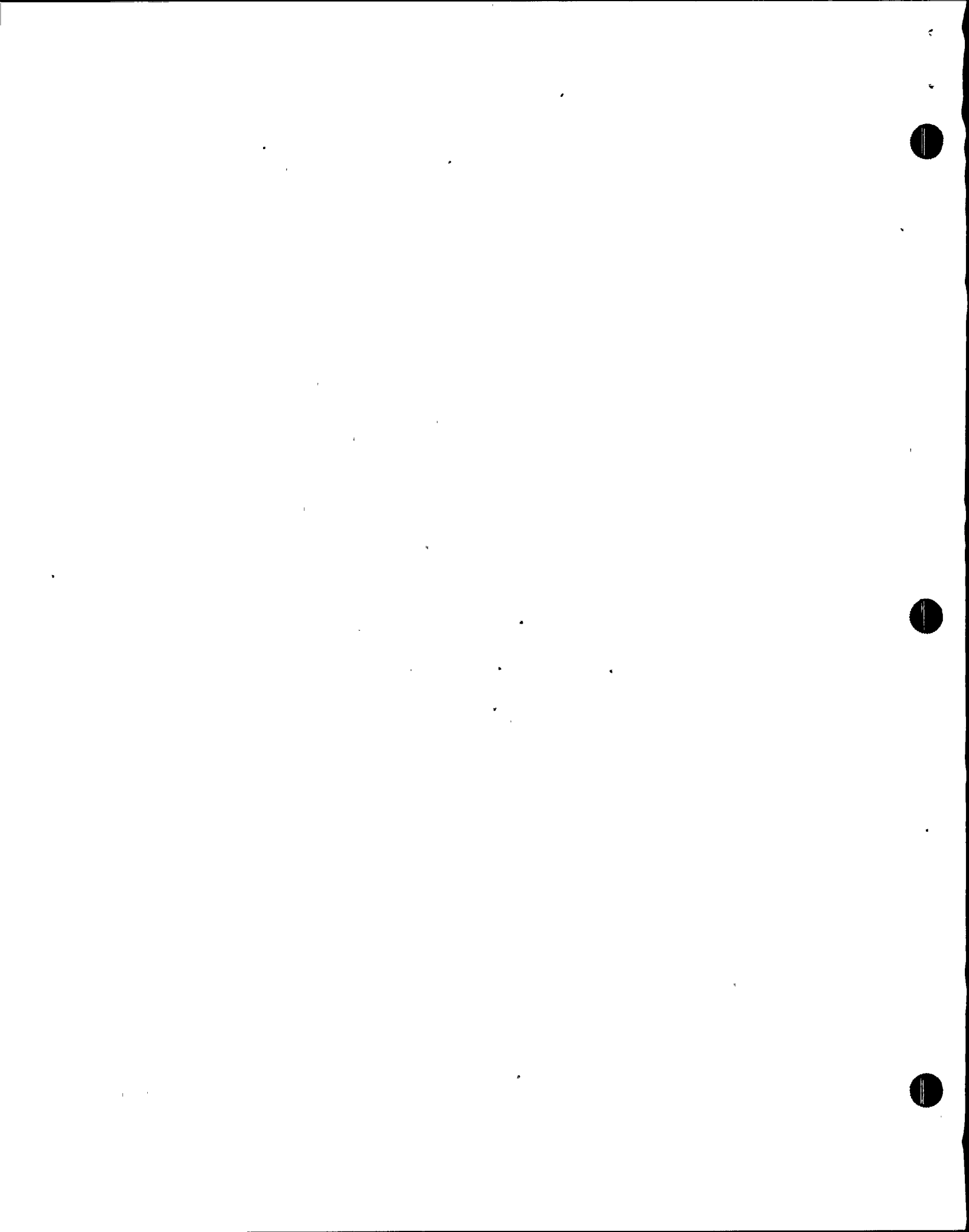
Page NM7; Toggle 89 bypass LPRM 16-33-C

CSO/E bypass the C APRM.

Sat/Unsat/NA

4. Loss of US-010

Two minutes after the actions for the LPRM failure have been completed, time in the following:



INSTRUCTOR INFORMATION/
INSTRUCTOR ACTIVITIES

EXPECTED STUDENT RESPONSE

SAT/UNSAT/NA

COMMENTS

MF;8,ED06US10B,,,time
Loss of US-010 Bus B

Crew reports the loss of
US-010 bus B.

Sat/Unsat/NA

I/O;1,AN851501-20,time,, ON
RFP Aux. oil pump overload

Crew reports the STBY EHC pump
has started.

Sat/Unsat/NA

Note: The motor overload annunciator
comes in due to the loss of power to the
overload relay.

Crew reports the loss of the B
RFP Aux. oil pump.

Sat/Unsat/NA

NLO operator(s) dispatched to
check the EHC pumps.

Sat/Unsat/NA

Note: Annunciator procedure requires the
B RFP to be isolated, but the suction
valve (84B) has also loss power.

NLO operators dispatched to
isolate the B RFP.

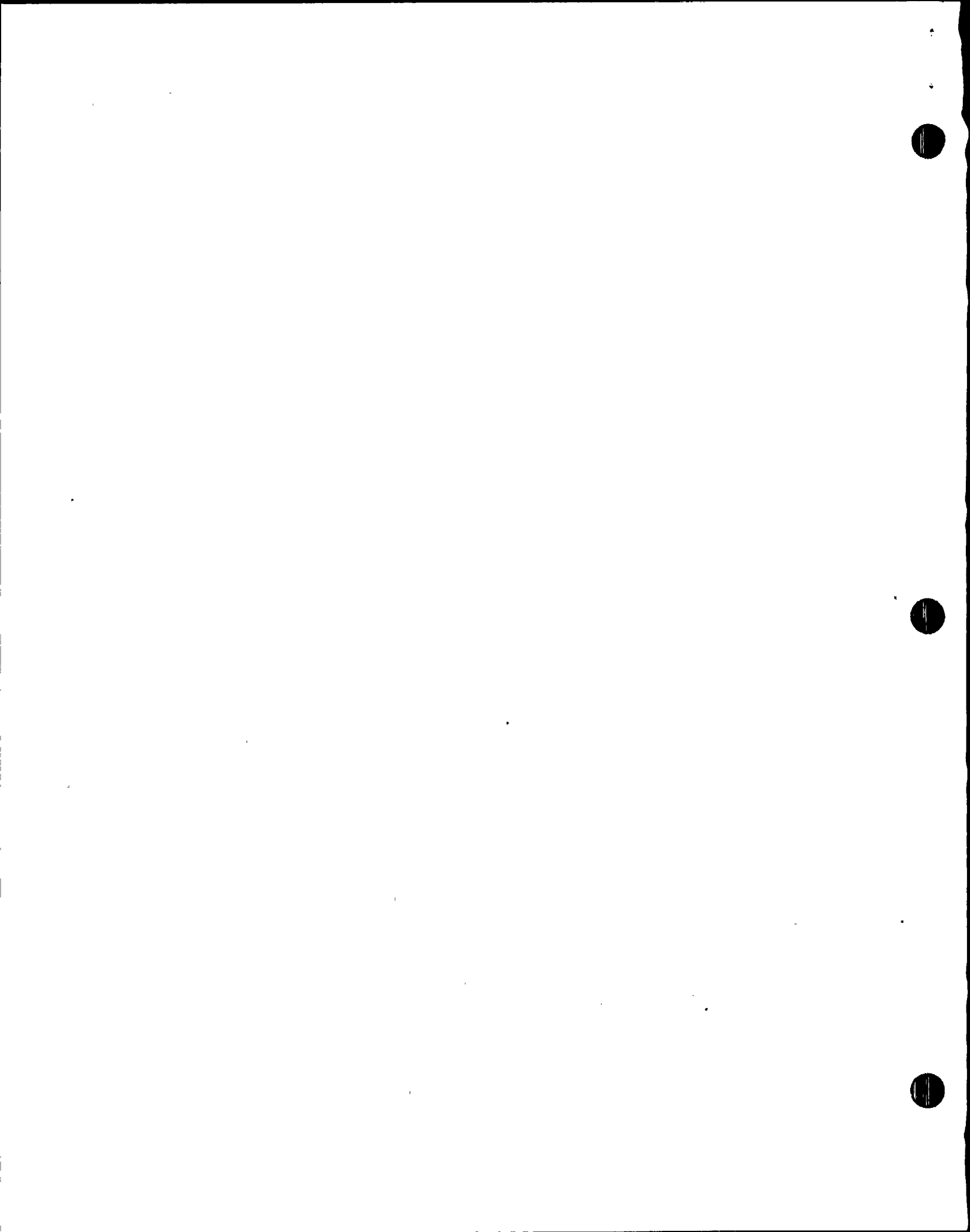
Sat/Unsat/NA

LO-3.0

Role Play: As the operator dispatched to
the B RFP, report that the RFP is not
rotating.

NLO operator dispatched to
SWG-010.

Sat/Unsat/NA



5. Large LOCA

When the actions for the loss of SWG-010 have been completed, wait 2 minutes and insert:

MF:9,RR19,75,15

Coolant leakage inside Primary Containment.

Crew report the rising containment pressure.

Sat/Unsat/NA

SSS directs operators to scram the reactor.

Sat/Unsat/NA

CSO/E performs scram actions.

Sat/Unsat/NA

SSS directs operators to restore RPV level to between 159.3 and 202.3 inches.

Sat/Unsat/NA

CSO/E restores level (as directed).

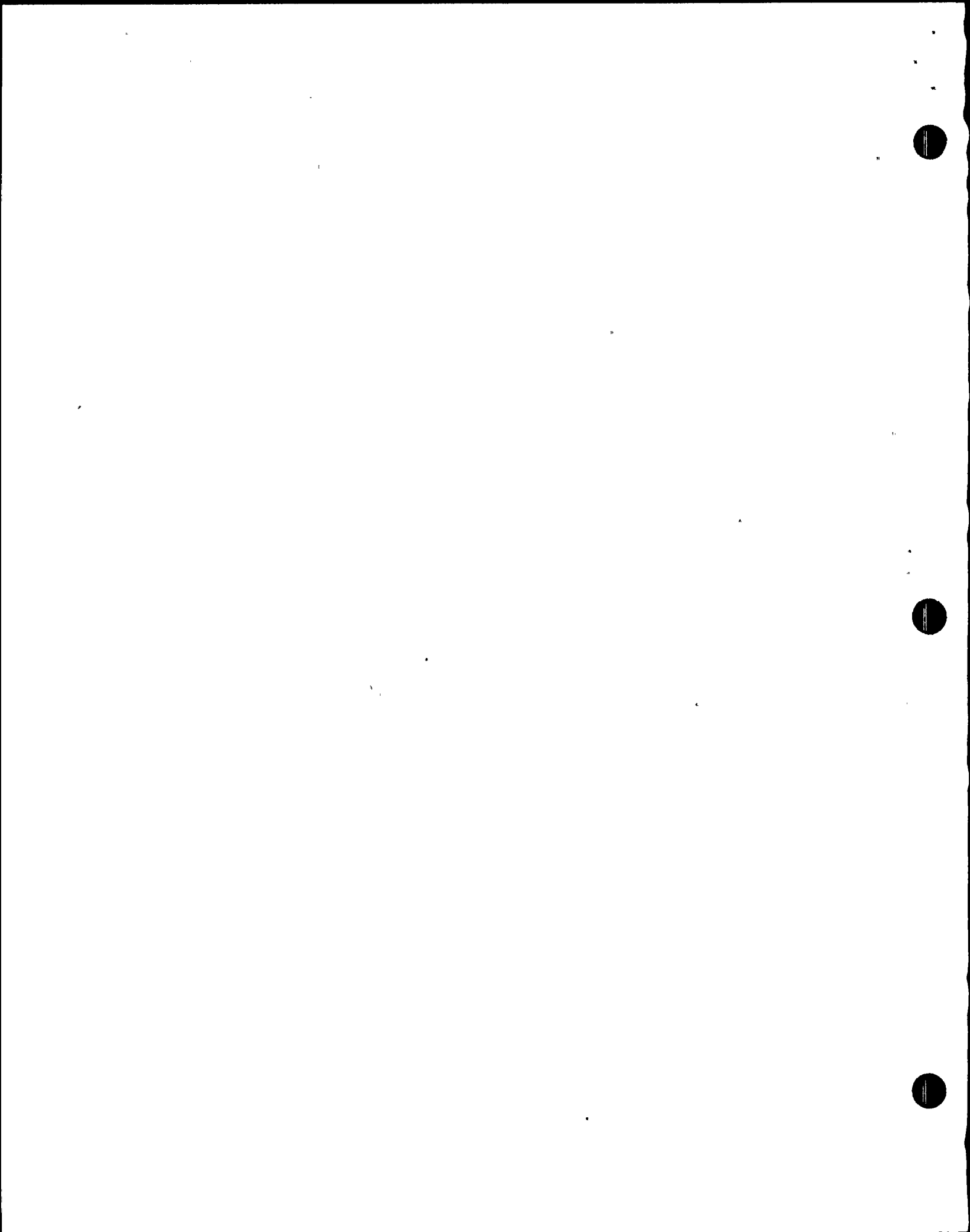
Sat/Unsat/NA

SSS directs operators to control RPV pressure <1037 psig.

Sat/Unsat/NA

CSO/E controls RPV pressure (as directed).

Sat/Unsat/NA



SSS directs operator to establish SP sprays before pressure reaches 10 psig EOP-6 AH-22.

Sat/Unsat/NA

Operators establish SP sprays, as directed, as follows:

1. Throttle RHR pump flow to 7450 gpm using 38A(B).
2. Open 33A(B).
3. Suppression in spray approx. 450 gpm.
4. Establish service water flow to the heat exchanger.
5. Notifies Rad Protection to start 23A(B).

Sat/Unsat/NA

Sat/Unsat/NA

Sat/Unsat/NA

LO-5.0

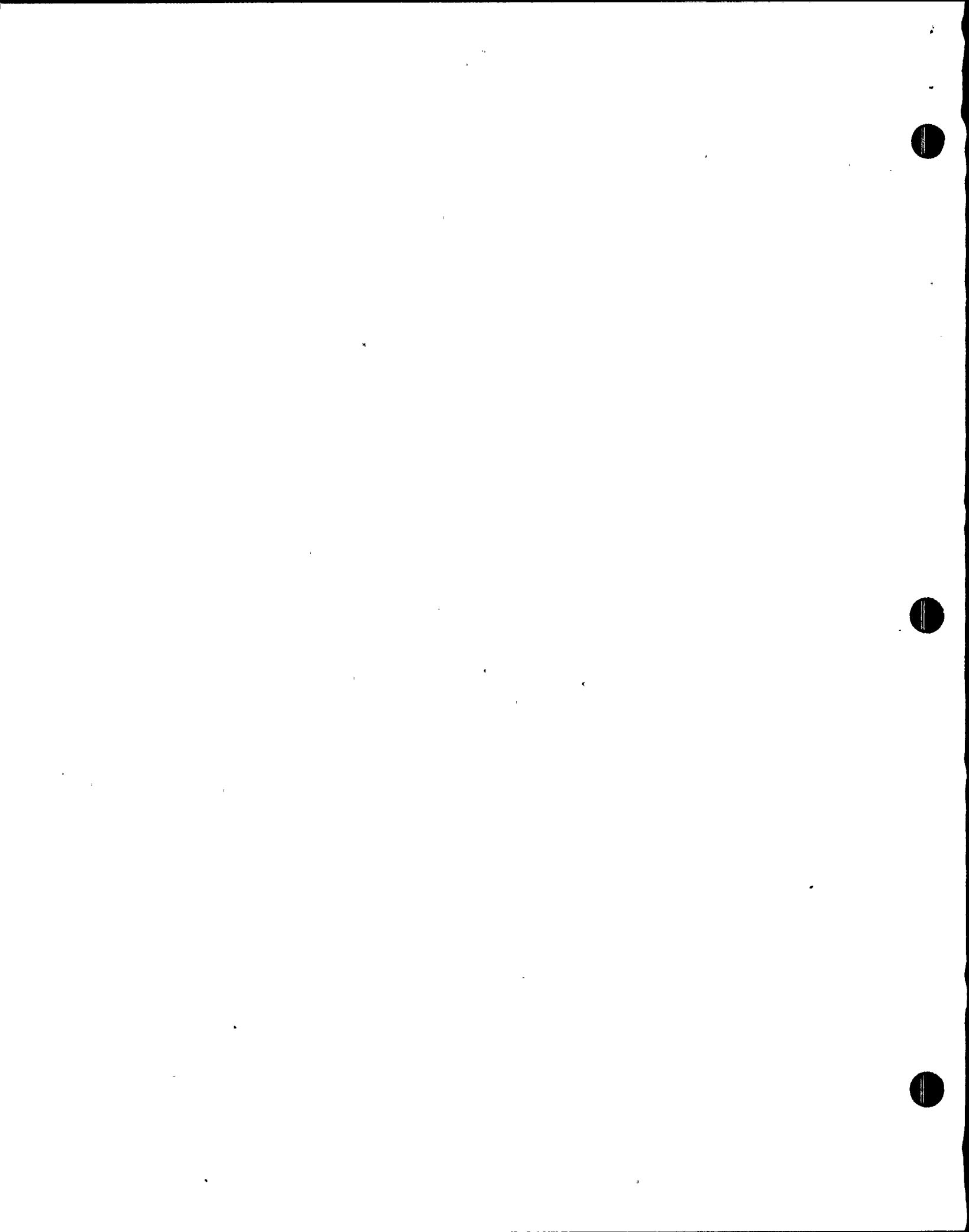
Sat/Unsat/NA

Sat/Unsat/NA

SSS directs operator to spray the drywell after:

Sat/Unsat/NA

1. Securing recirc pumps.
2. Containment unit coolers.



Operators establish drywell
sprays, as directed, as
follows:

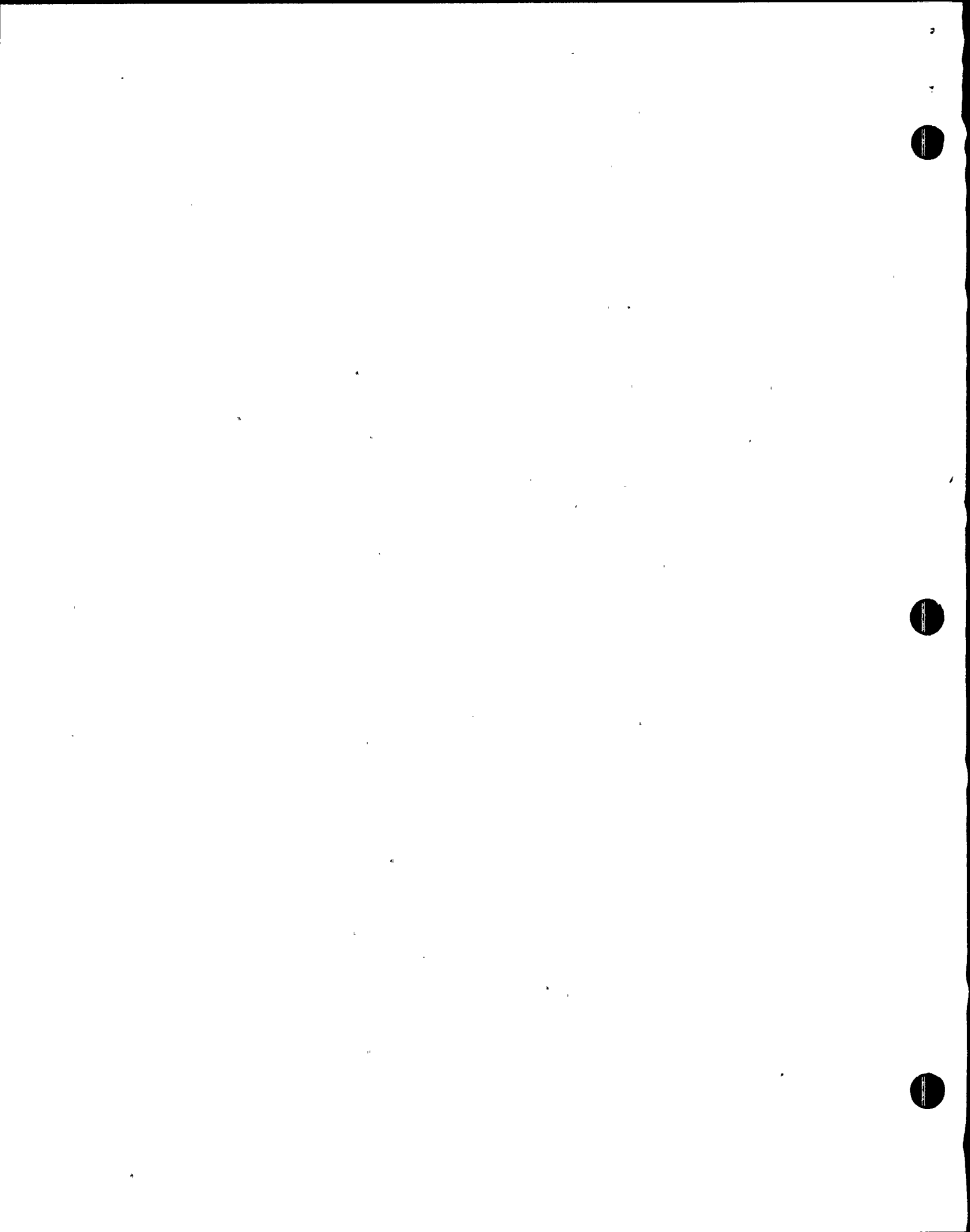
- | | | |
|---|--------------|--------|
| 1. Shut 38A(B) | Sat/Unsat/NA | |
| 2. Open 25A(B) | Sat/Unsat/NA | |
| 3. Open 15A(B) | Sat/Unsat/NA | |
| 4. D/W header spray approx-
imately 7950 gpm | Sat/Unsat/NA | LO-5.0 |

Crew reports the leakrate has greatly increased.	Sat/Unsat/NA	
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SSS directs drywell and/or suppression chamber sprays secured.	Sat/Unsat/NA	
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SSS directs operators to inject with ECCS systems to restore level.	Sat/Unsat/NA	
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Operators secure drywell and/or SP sprays.	Sat/Unsat/NA	
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Operator report the status of the injection of the ECCS systems.

Sat/Unsat/NA

When RPV level is above TAF, SSS directs to operator to re-establish drywell sprays.

Sat/Unsat/NA

LO-4.0

Note: See previous steps for actions to re-establish containment sprays.

Operators re-establish drywell sprays (as directed).

Sat/Unsat/NA

SSS directs operators to secure sprays when containment pressure drops less than 1.68 psig.

Sat/Unsat/NA

Operators secure containment sprays (as directed).

Sat/Unsat/NA

6. Notifications

SSS classifies the event as an ALERT *or higher*

Sat/Unsat/NA

LO-6.0

SSS directs operator to initiate notifications.

Sat/Unsat/NA

INSTRUCTOR EVALUATION FORM



Termination Cue: Terminate the scenario when RPV level is restored above TAF and containment pressure is less than 1.68#.



K. POST EXERCISE ASSESSMENT

1. The instructor may review the Scenario Summary, Learning Objectives and the Lessons Learned with the crew.

The Lessons Learned should be reviewed even if no errors were committed.

2. The crew may perform a self assessment.

Have the crew assess their performance in relation to the Lessons Learned and the Learning Objectives for this exercise.

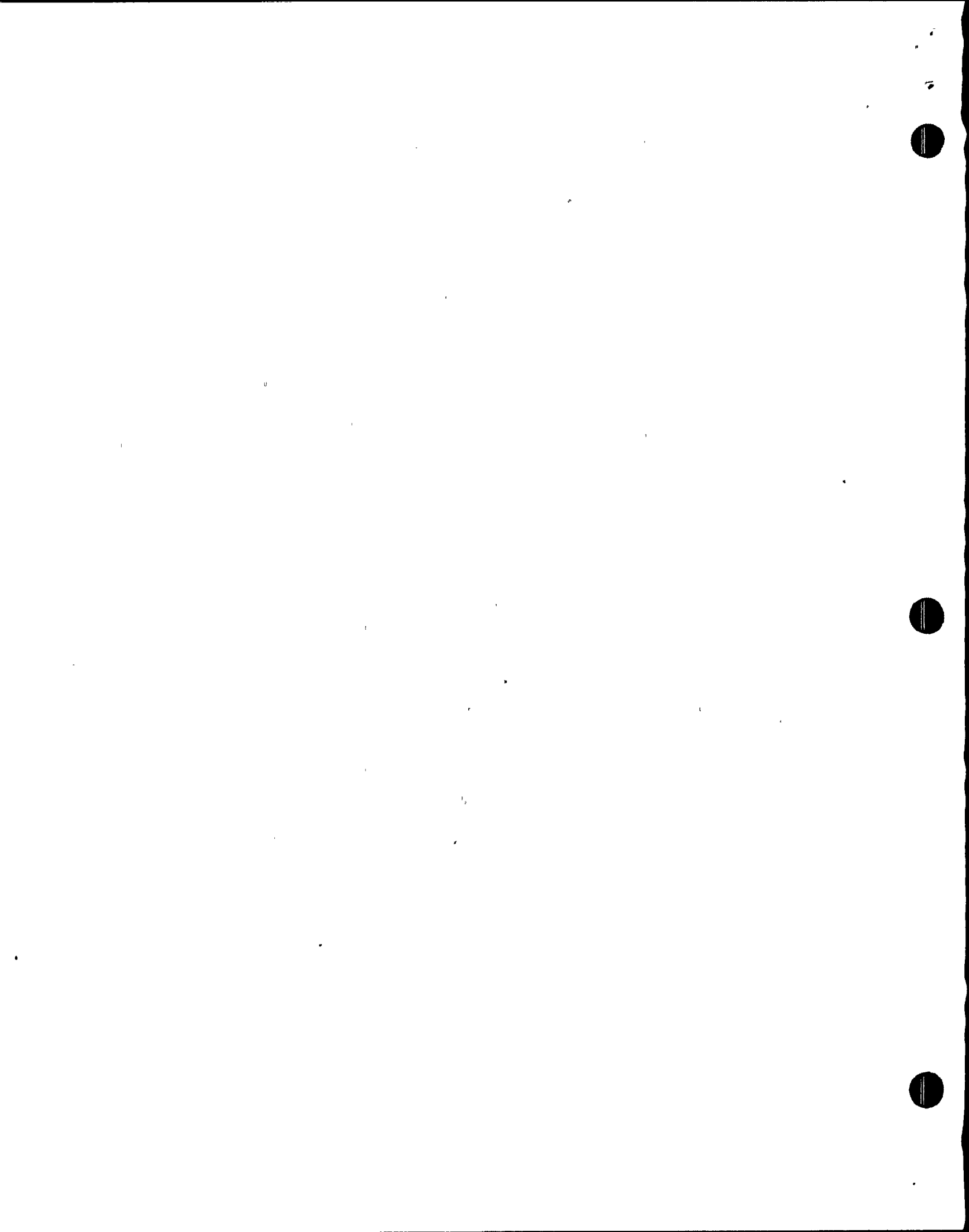
The individual who was the SSS during the scenario should lead the assessment.

3. Instructors Assessment

The instructors may provide an assessment of the crew's performance (as necessary) during the execution of the crew's self-assessment. The bases of this assessment shall be the Lesson Plan Notes, Team Work Rating Scale and the topics covered in the Lesson Plan. The comments from the Scenario Checklist should be detailed and focused on individual performance. The comments from the Team Work Rating Scale should be global and should be focused on the team as a whole.

The below are examples that may be used during the assessment:

- a. Control Room formality
- b. Actions taken and differences from expected actions
- c. Procedural use and compliance
- d. Attentiveness to control panels and indications
- e. Teamwork and communications
- f. Meeting the Learning Objectives
- g. Logkeeping



- h. Understanding plant/system response
 - i. Diagnosis of events/conditions
 - j. Recognize progress and good performance
 - k. Compliance/use of Technical Specifications
 - l. Supervisory control
 - m. Emergency plan implementation
 - n. Notifications and administrative requirements
 - o. Self verification techniques
 - p. Conservative approach to reactor safety
- (NCTS 5) q. Realism

Summarize any performance weaknesses or trainees misconceptions and provide guidance or training to correct these weaknesses. Any questions asked during the scenario should be reviewed with the entire crew.

- 4. Questions raised during the assessments, or at any time during the training session, that cannot be immediately answered should be researched and answered before the end of the day, if possible. If the answer is found after the training cycle is completed, bring the question and the answer to the program coordinator for disposition.
- 5. Questions concerning interpretations of procedural steps, technical specifications or station policy will be answered by contacting the responsible station management person and relaying the answer to the crew. For further clarification, it may be necessary to complete the appropriate plant/simulator documentation.
- 6. Video taping may be used to enhance the crew's strengths and weaknesses.

(NCTS 3)

