

NIAGARA MOHAWK POWER CORPORATION

NINE MILE POINT NUCLEAR STATION

UNIT II OPERATIONS

02-REQ-009-TRA-2-19 Revision 1

Φ7-19Φ-91

TITLE: LOSS OF ALL REACTOR FEED PUMPS

	<u>SIGNATURE</u>	<u>DATE</u>
PREPARER	<u>Cont. Sherman</u>	<u>12-5-90</u>
VALIDATED BY	_____	_____
UNIT OPERATIONS TRAINING SUPERVISOR	<u>J. Kamiński</u>	<u>12-12-90</u>
PLANT SUPERVISOR/ USER GROUP SUPERVISOR	<u>FOR D. TORLEY</u>	<u>12/14/90</u>

Summary of Pages

(Effective Date: 12-12-90)

Number of Pages: 18

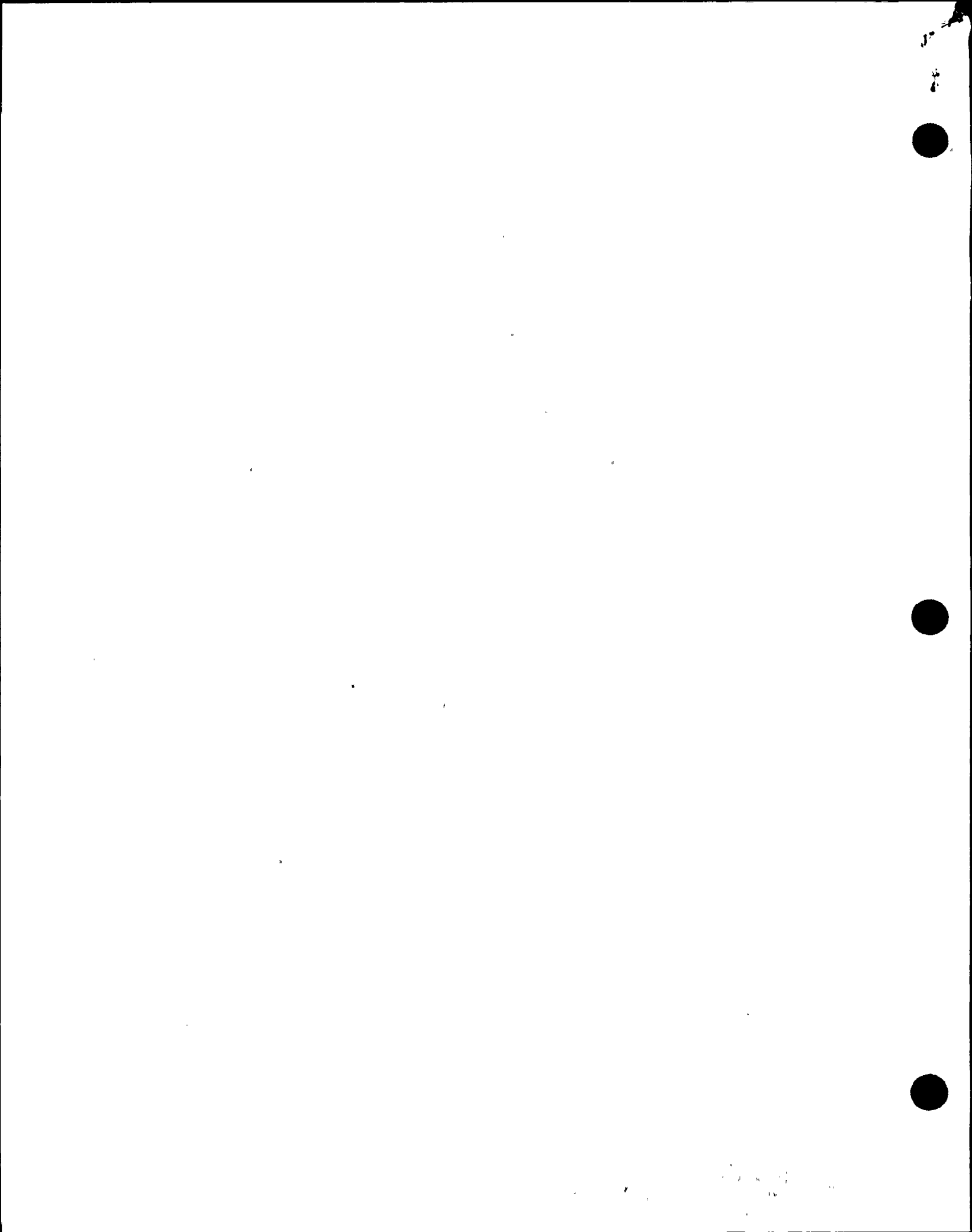
<u>Date</u>	<u>Pages</u>
December 1990	1 - 18

THIS LESSON PLAN IS A GENERAL REWRITE

MASTER
TRAINING DEPARTMENT RECORDS ADMINISTRATION ONLY:
IDENTIFICATION: _____
DATA ENTRY: _____
RECORDS: _____
CONTROLLED
DOCUMENT

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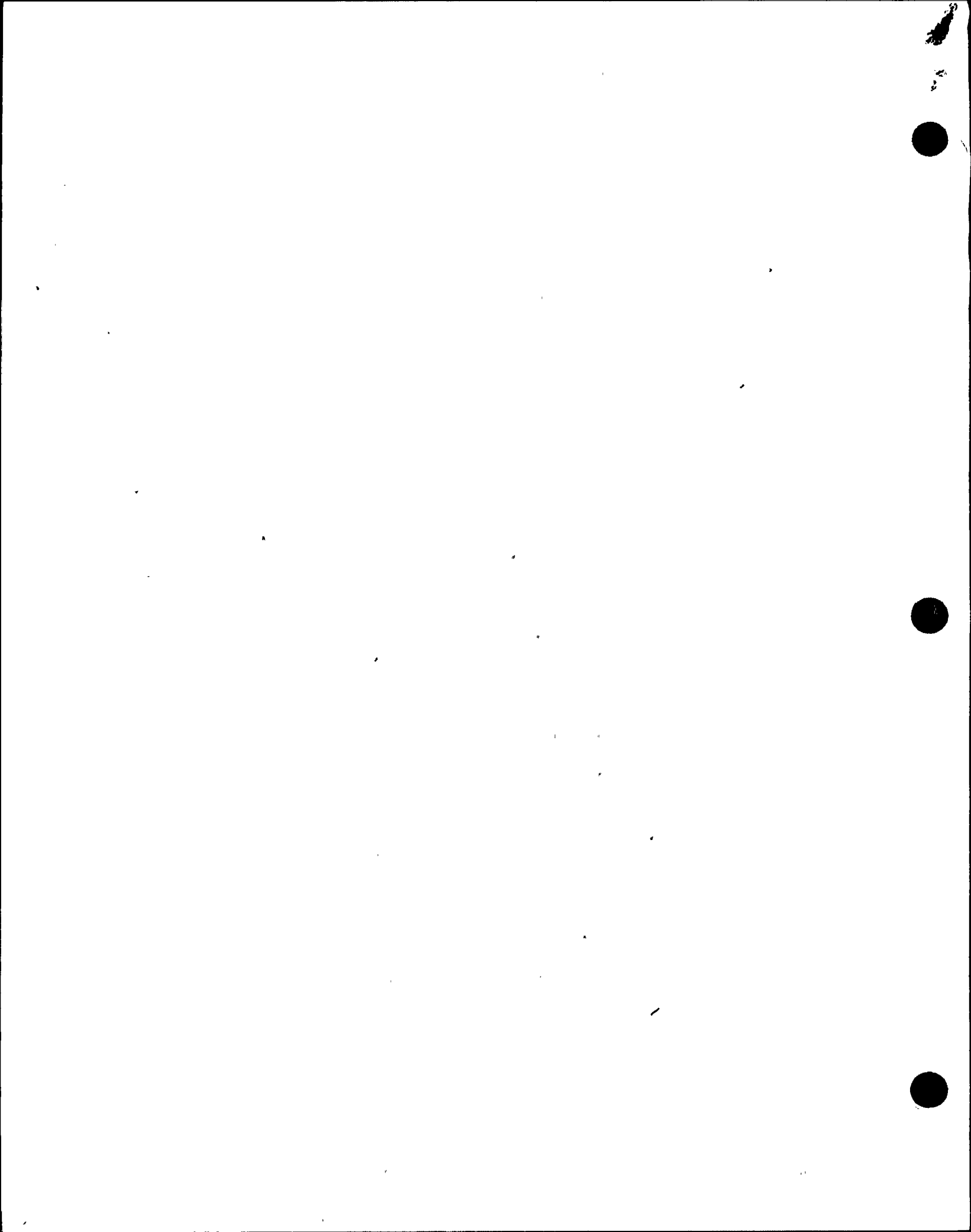
I. TRAINING DESCRIPTION

- A. Title of Lesson: Loss of All Reactor Feed Pumps
- B. Lesson Description: Using the Nine Mile Point Unit 2 Simulator the Instructor will facilitate proper operator performance of all NMP-Unit 2 procedures and guidelines for conduct of operations during each scenario. The Instructor may use Freeze Backtrack and or reset the simulator from any point in this scenario to aid in the facilitation of this lesson.
- C. Estimate of the Duration of the Lesson: 30 minutes
- D. Method of Instruction: Simulator Performance
- E. Prerequisites:
 - 1. Instructor:
 - a. Qualified as a simulator instructor per NTP-16.1
 - 2. Trainee:
 - a. Meet the eligibility requirements per 10CFR55, or
 - b. Be recommended for this training by the Operations Superintendent, his designee, or the Training Superintendent.
- F. References:
 - 1. N2-EOP's - Emergency Operating Procedures
 - 2. N2-OP-3 - Condensate and Feedwater
- G. Annual/Biennial
 - 1. Loss of Normal Feedwater/System Failure (O2-REQ-MAN-B04-2-00)
 - 2. Reactor Scram (O2-REQ-MAN-B13-2-00)

II. REQUIREMENTS

- A. AP-9, Administration of Training
- B. NTP-10, Training of Licensed Operator Candidates
- C. NTP-11, Licensed Operator Requalification Training

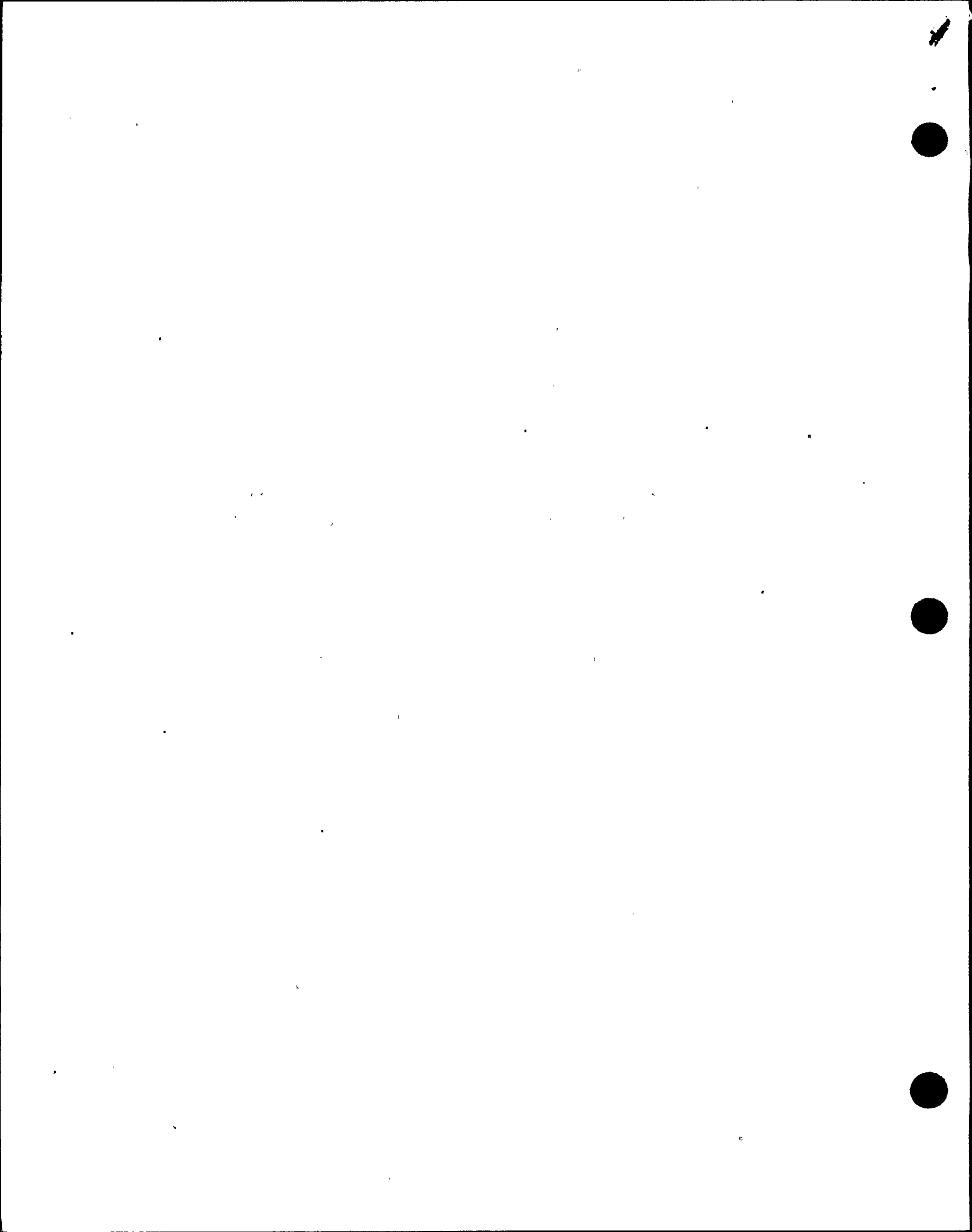
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III. LEARNING OBJECTIVES

A. SSS/ASSS Objectives:

- TO-1.0 3440180303 Direct shift personnel actions to ensure plant safety during emergency conditions.
- EO-1.1 Given the Simulator in the conditions established direct shift personnel actions to ensure plant safety during emergency conditions.
- TO-2.0 3449390603 Direct the actions required per EOP-RPV section RQ.
- EO-2.1 Given N2-EOP-RPV control and the Simulator in the conditions established direct operators to monitor and control reactor power.
- EO-2.2 Given N2-EOP-RPV control and the Simulator in the conditions established determine if the reactor is shutdown.
- TO-3.0 3449400603 Direct the actions required per EOP-RPV section RL.
- EO-3.1 Given N2-EOP-RPV control and the Simulator in the conditions established direct operators to monitor and control reactor water level.
- EO-3.2 Given N2-EOP-RPV control and the simulator in the conditions established determine if an RPV water level instrument may be used to determine RPV water level.
- EO-3.3 Given N2-EOP-RPV control and the Simulator in the conditions established direct operators to initiate any isolations or ECCS actuations that should have initiated but did not. (EOP-6)
- EO-3.4 Given N2-EOP-RPV control and the Simulator in the conditions established determine if the reactor is shutdown.
- EO-3.5 Given N2-EOP-RPV control and the Simulator in the conditions stated, determine if RPV water level can be determined.
- EO-3.6 Given N2-EOP-RPV control and the Simulator in the conditions established direct operators to restore and maintain water level between 159.3 in. and 202.3 in. using the systems listed in section RL of RPV control.



- EO-3.7 Given N2-EOP-RPV control and the Simulator in the conditions stated, determine if RPV water level can be restored and maintained above 159.3 in.
- TO-4.0 3449410603 Direct the actions required per EOP-RPV section RP.
- EO-4.1 Given N2-EOP-RPV control and the Simulator in the conditions stated, direct operators to monitor and control reactor pressure.
- EO-4.2 Given N2-EOP-RPV control and the Simulator in the conditions stated, determine if a high drywell pressure ECCS initiation signal exists.
- EO-4.3 Given N2-EOP-RPV control and the Simulator in the conditions stated, determine if the reactor is shutdown.
- EO-4.4 Given N2-EOP-RPV control and the Simulator in the conditions stated, determine if RPV water level can be determined.
- EO-4.5 Given N2-EOP-RPV control and the Simulator in the conditions stated, determine if any SRV is cycling.
- EO-4.6 Given N2-EOP-RPV control and the Simulator in the conditions stated, direct operators to manually open SRVs until RPV pressure drops to 960 psig.
- EO-4.7 Given N2-EOP-RPV control and the Simulator in the conditions stated, direct operators to stabilize RPV pressure below 1037 psig using the main turbine bypass valves. If necessary to include augmentation with systems listed in RPV control section RP.
- EO-4.8 Given N2-EOP-RPV control and the Simulator in the conditions stated, determine if plant conditions permit performance of normal plant cooldown (less than 100 degrees per hour).
- EO-4.9 Given N2-EOP-RPV control and the Simulator in the conditions stated, direct operators to depressurize the RPV, maintaining the cooldown rate less than 100 degrees per hour.

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B. RO/CSO Objectives

- TO-5.0 2000310501 Perform the actions required for a reactor water level low.
- EO-5.1 Given NMP-2 operating procedures and the Simulator in the conditions established perform the actions required for a reactor water level low as directed by the SSS.
- TO-6.0 2170030101 Manually initiate the RCIC System from the Control Room and monitor for proper operation.
- EO-6.1 Given NMP-2 operating procedures and the Simulator in the conditions established manually initiate the RCIC System from the Control Room and monitor for proper operation as directed by the SSS.
- TO-7.0 2019250101 Perform post scram recovery actions in accordance with N2-OP-101C.
- EO-7.1 Given NMP-2 operating procedures and the Simulator in the conditions established perform post scram recovery actions in accordance with N2-OP-101C as directed by the SSS.

C. Team Objectives:

- TO-8.0 Demonstrate effective communication in accordance with the Operating Department instruction on verbal communication. (NMP2 Requal Action Plan, Rev. 2, 4.B.1).
- TO-9.0 Demonstrate the use of the Emergency Plan, an understanding of the roles and responsibilities of an SSS, ASSS/STA, CSO/NAOE in accordance with the Operating Department instruction on Roles and Responsibilities. (NMP2 Requal Action Plan, Rev. 2, 5.B.1, 6.B.6).
- TO-10.0 Demonstrate an understanding of command and control, EOP place keeping techniques and effective use of Control Room Operators during emergency conditions. (NMP2 Requal Action Plan Rev. 2, 6.B.6, SRO only).
- TO-11.0 Demonstrate "self-verification" work practices techniques in accordance with the Operating Department instruction for all control actions. (LER 50-410/88-50) (NRC IR 50-410/88-01).



ATTACHMENT 1
PRE-EXERCISE BRIEFING

IV. LESSON CONTENT

LESSON CONTENT

DELIVERY NOTES

OBJECTIVES/
NOTES

A. EXERCISE OVERVIEW

Present the following:

During this session, plant conditions begin at 100% power operation. A casing leak from the B condensate pump sprays down the A and C condensate pumps, resulting in ground faults on both pump motors and a sequential loss of these pumps. The B pump then trips on overcurrent due to the runout condition. The loss of the condensate pumps results in a complete loss of feedwater, as the RFPs trip on low suction pressure. RPV water level lowers requiring entry into EOP-RPV control. HPCS and/or RCIC is started manually in the injection mode. Reactor water level is restored and maintained 159.3" to 202.3" and EOP-RPV control is exited.

Discuss plant conditions.

Review automatic actions associated with RFP low suction pressure condition and loss of one condensate pump.

B. PREREQUISITE KNOWLEDGE REVIEW:

Revision 4 of EOP-RPV control has been presented in classroom training and should be reviewed prior to the simulator exercise.

Review EOP-RPV control from prior classroom training.

Review the performance and knowledge objectives with participants.

Discuss the performance and knowledge objectives while describing the scenario.



LESSON CONTENT

DELIVERY NOTES

C. SCENARIO PREVIEW

1. The following is an overview of the conditions and actions that will occur during the scenario:

- a. Identify indications of a casing leak.
- b. Identify condensate pump trip.
Verify/initiate standby cond pump start.
- c. Shutdown/scram when recognized that two cond pumps are tripped. (or respond to reactor scram on low RPV water level when RFPs trip)
- d. Take action to restore RPV water level 159-3" to 202-3" in accordance with EOP-RPV control.
- e. Exit RPV control when level is restored and maintained.

EOP procedures involved:

RL

RQ

RP

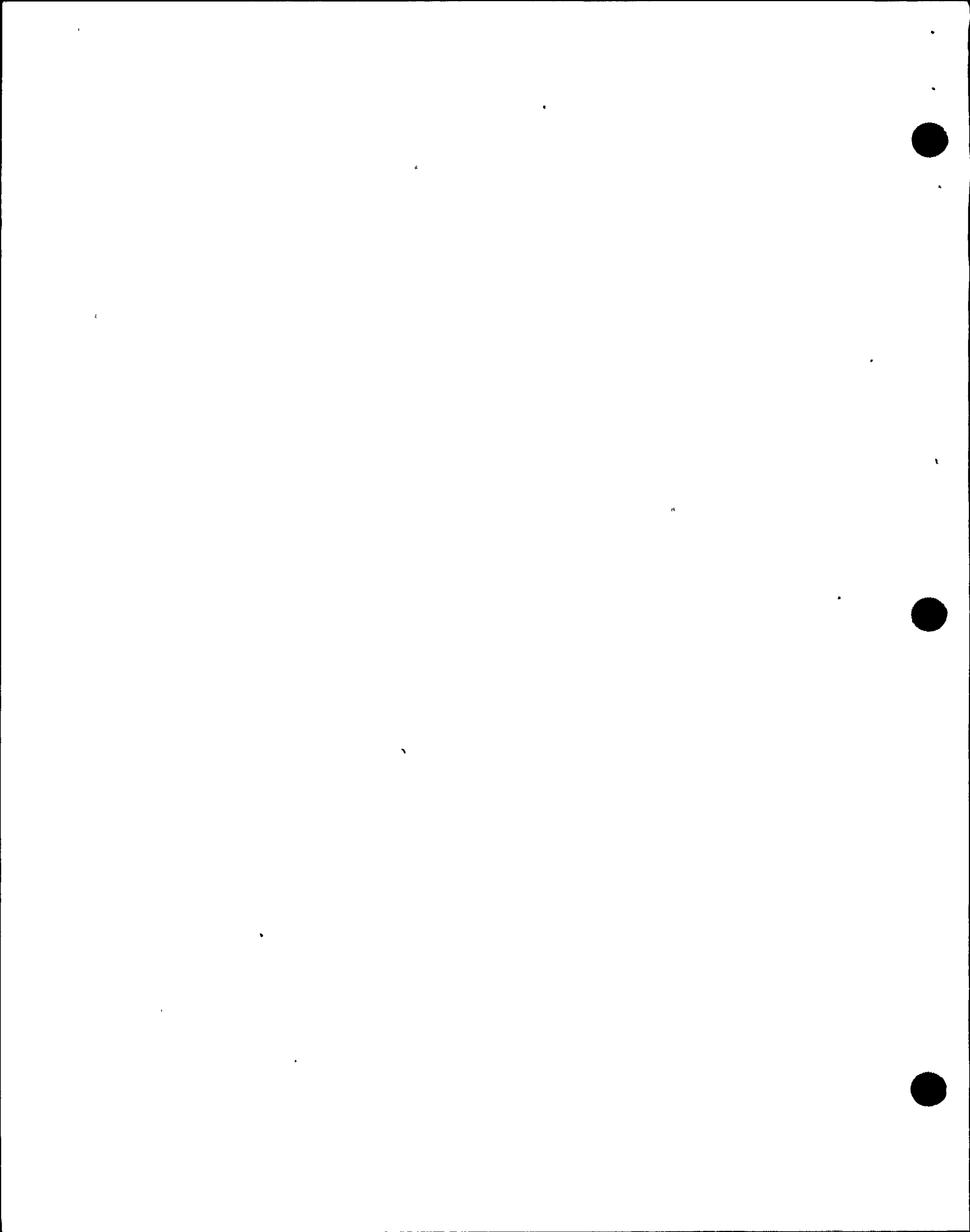
2. Initial conditions

Plant status is given in shift turnover information, listed below.

3. Expected actions

The participants, acting as a team, will:

- respond to appropriate annunciators.
- use the appropriate annunciator response procedures.
- make appropriate reports to the SSS.
- perform indicated operations.
- use the instructor as all plant personnel to perform local operator actions (LOAs).



LESSON CONTENT

DELIVERY NOTES

OBJECTIVES/
NOTES

- observe system indicators.
- use appropriate emergency operating procedures.
- place the plant in a stable condition.

The instructors will perform all LOAs when requested by the participants.

D. OPERATING CONCERNS

Reviews with the participants any NRC/INPO operating concerns that relate to the training session as directed by the Training Program Coordinator.

E. PERFORMANCE REVIEW

1. Obtain and discuss with the participants those areas documented on the Post Training Summary from previous simulator training. Reinforce good performances and areas for improvement.

F. GROUND RULES

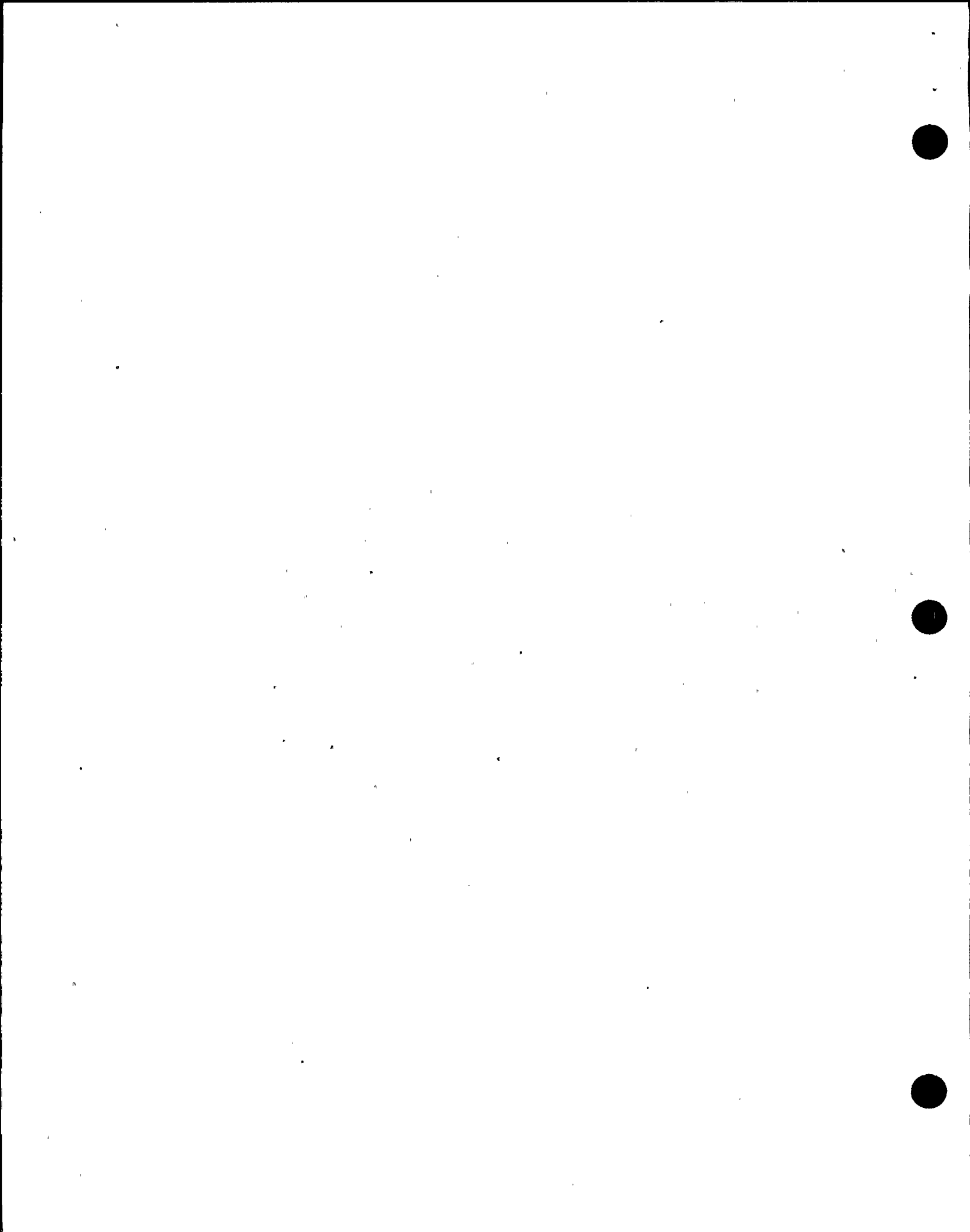
Discuss performance expectations relative to:

- a. Professionalism
- b. Realism
- c. Log keeping
- d. Team work
- e. Communication



ATTACHMENT 1
PRE-EXERCISE BRIEFING

LESSON CONTENT	DELIVERY NOTES	OBJECTIVES/ NOTES
f. Procedure use g. Notifications h. Self verification techniques		
G. SHIFT TURNOVER INFORMATION		
1. Plant status The plant is operating at 100% reactor power. All systems are operating normally. No equipment is marked up. No maintenance is in progress. No Technical Specification LCO has been exceeded. No surveillances are required.		
H. SEQUENCE OF EVENTS		
Conduct simulator activities as prescribed by the attached floor instructor and console operators guide, Attachment 2.		
Ensure video taping is conducted for all sessions to allow for its use in the post exercise assessment, if necessary.		



ATTACHMENT 2

FLOOR INSTRUCTOR AND CONSOLE OPERATORS GUIDE

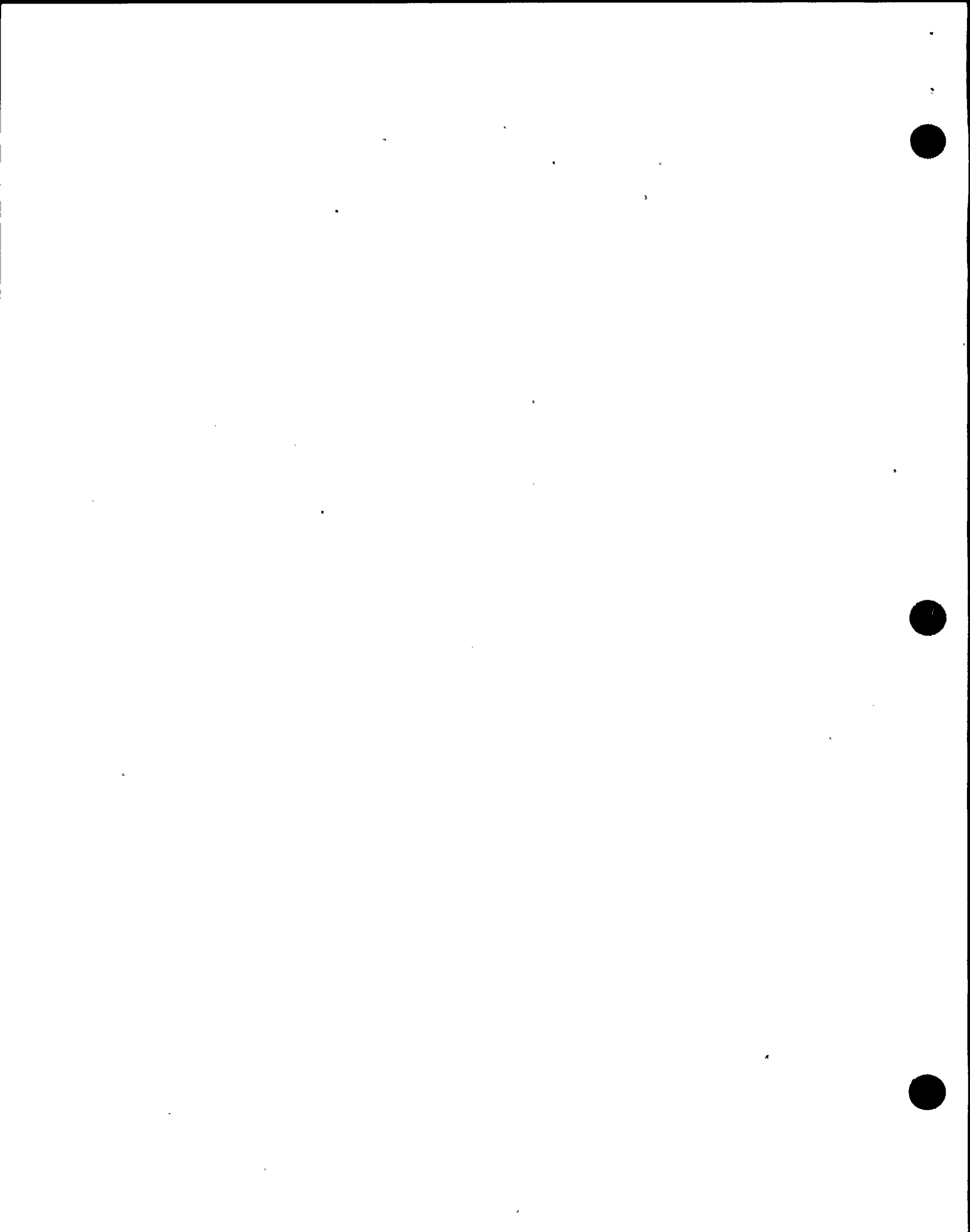
TIME	SCENARIO	INSTRUCTOR ACTIVITY	PLANT RESPONSE	OPERATOR ACTIONS	INSTRUCTOR COMMENTS
		Special Instructions: None			It is intended that C cond pump be running from SWG011, but it is not essential to this scenario.
		Simulator Operation: Initialize at IC-20	100% power, BOL		
		Preset Malfunctions: None			
		Preset Remote Functions: None			
		Preset I/O overrides: (Set the following to initiate at T = 3 minutes) 1,AN851501-51, +3:00,,0N 2,2CNM-PI105, +3:00,,37	"Turbine Building Floor Drain System Trouble". (Cond pump disch press falls to 150#)		
					Gives appearance that a high TB sump level is present and that B cond pump is working harder.



ATTACHMENT 2

FLOOR INSTRUCTOR AND CONSOLE OPERATORS GUIDE

TIME	SCENARIO	INSTRUCTOR ACTIVITY	PLANT RESPONSE	OPERATOR ACTIONS	INSTRUCTOR COMMENTS
		3,2CNM-PI115, +3:00,,25	(Cond bstr pump suct hdr press falls to 100#)		
		4,AM-2CNM-B51, +3:00,,60	(Cond pump B ammeter rises to 210 amps)		
		Distribute and discuss watch turnover sheets.			
		Initial Plant Conditions:			
		100% power			
		RWM Gr-147			
		Out of Service Equipment:			
		None			
		Surveillance Scheduled:			
		None			



ATTACHMENT 2

FLOOR INSTRUCTOR AND CONSOLE OPERATORS GUIDE

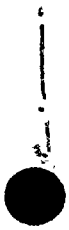
TIME	SCENARIO	INSTRUCTOR ACTIVITY	PLANT RESPONSE	OPERATOR ACTIONS	INSTRUCTOR COMMENTS
		Allow not more than 5 minutes to walk down panels.		Walk down the Control Room panels.	
T = 0		Begin the scenario		Assume the shift	
T = 3m	(Automatically) annunciator 851551 (Turb bldg flr drn system trouble) illuminates.			BOP/RO identify annunciators; report to SSS. Investigate.	
		Role Play As radwaste (if called) notify Control Room that the condensate pump area floor sump is in alarm. (Annunciator 513226)			



ATTACHMENT 2

FLOOR INSTRUCTOR AND CONSOLE OPERATORS GUIDE

TIME	SCENARIO	INSTRUCTOR ACTIVITY	PLANT RESPONSE	OPERATOR ACTIONS	INSTRUCTOR COMMENTS
(Automatically) the I/O preset functions will insert.			Cond pump disch pressure slightly low. Cond pump CNM-PIB amps indicate high.	<u>SSS/ASSS</u> If noticed, investigate by sending operator to condensate pumps.	No annunciator associated.
T = 5m (or shortly after operator sent to investigate		Role Play As non-licensed operator in the Turbine Bldg, inform Control Room the B condensate pump is leaking from the casing and spraying down the A and C condensate pumps.		<u>BOP/SSS</u> Monitor condensate pump parameters. Discuss starting C cond pump and securing B.	
T = 6m		Insert malfunction 1.FWO1A	A condensate pump trips on overload.	<u>SSS/CREW</u> Identify A cond pump trip and verify auto start of C cond pump. (May begin to reduce power <60% in order to remove B cond pump)	



ATTACHMENT 2

FLOOR INSTRUCTOR AND CONSOLE OPERATORS GUIDE

TIME	SCENARIO	INSTRUCTOR ACTIVITY	PLANT RESPONSE	OPERATOR ACTIONS	INSTRUCTOR COMMENTS
T = 7m		Insert malfunction 2,FW01C	C cond pump trips on overload. Auto scram on low level following RFP trip may result.	<u>SSS/RQ</u> Reduce recirc flow to get <60%. Manual scram may be initiated.	T0-1
		Then remove I/O Overrides: 2<CR> .3<CR>	Cond bstr pump suction and cond pump disch pressures will be "as read". (which will be low)		
T = 8m		Insert malfunction 3,FW01B	B cond pump trips on overload. Rx scram (low level) if not yet occurred.	<u>SSS/ASSS/RQ</u> Identify/declare loss of all RFPs. Scram reactor. Enter RPV control EOP at 159.3".	For role play purposes, A & C cond pumps overloaded due to ground fault (wetting); B cond pump trip on runout current. T0-2 T0-3 T0-4 T0-5 T0-6
		Remove I/O: 4<CR.	Cond Pump B ammeter goes to zero.		



ATTACHMENT 2

FLOOR INSTRUCTOR AND CONSOLE OPERATORS GUIDE

TIME	SCENARIO	INSTRUCTOR ACTIVITY	PLANT RESPONSE	OPERATOR ACTIONS	INSTRUCTOR COMMENTS
			Water level lowering.	<u>SSS/BOP</u> Start RCIC or HPCS, restore level 159.3" to 202.3" IAW EOP-RPV Control.	
		Remove I/O #1 approx. 7 minutes after MF3 entered: <CR>			
		End scenario when RPV water level is being controlled between 159.3" and 202.3" and the SSS exists RPV control.		<u>SSS</u> Exit RPV control after controlling RPV level 159.3" to 202.3".	RPV control should be exited when: <ul style="list-style-type: none"> • the entry conditions are cleared • <u>and</u> it has been determined that the emergency no longer exists.



ATTACHMENT 3
POST EXERCISE ASSESSMENT

LESSON CONTENT

DELIVERY NOTES

OBJECTIVES/
NOTES

- I. Post Exercise Assessment (Classroom)
 1. Review the Learning Objectives
 - a. The crew/individuals should state how each was met during the session.
 2. Participant's Self-Evaluation
 - a. Discussion should focus on measurable behaviors and how these contributed to or detract from meeting the objectives
 3. Instructors assessment and performance recommendations.
(NCTS)
 4. Session and program feedback.
 5. Document Session

Allow participants to evaluate themselves against learning objectives and tasks for the session.

Discussion should center on performance and not personal feelings or interpretation of actions.

1. Assess participants performance for those objectives and tasks not included in the crew self-assessment. Use the video tape in the assess to more effectively assess communications, teamwork, and prioritization, if necessary.

2. Provide feedback on ways to improve performance.

1. Distribute Simulator Training Evaluation Feedback Form.

2. Provide students with time to complete form.

1. Complete Post Training Summary, Attachment 4.



ATTACHMENT 3
POST EXERCISE ASSESSMENT

LESSON CONTENT

DELIVERY NOTES

OBJECTIVES/
NOTES

2. Place in file for next training session.
3. Document any NRC/INPO operating concerns as an items list attached to the training record. (TR)



ATTACHMENT 4

POST TRAINING SUMMARY

The area below is reserved for instructor's notes regarding the implementation of this session.

1. Training Program: _____
2. Lesson Plan Number: _____
3. Date: _____
4. Instructor(s): (floor)
(Console)
5. Participants: (SSS)
(ASSS)
(CSO)
(NAOE)
(NAOE)
(SPEC)
(OTHER)
(OTHER)



