

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

07-190-91

02-REQ-009-TRA-2-40 Revisions 0

TITLE: EHC REGULATOR FAILURE/A'PM FAILURE/LOSS OF
CONDENSER VACUUM/SDV RUPTURE

	SIGNATURE	DATE
PREPARED BY	<i>[Signature]</i>	7/2/91
VALIDATED BY	<i>[Signature]</i>	7/2/91
SUPERVISOR OPS TRAINING	<i>[Signature]</i> for J. Reich	7/15/91
PLANT SUPERVISOR/ USER GROUP SUPERVISOR	<i>[Signature]</i> for J.B. ELLEN	7/15/91

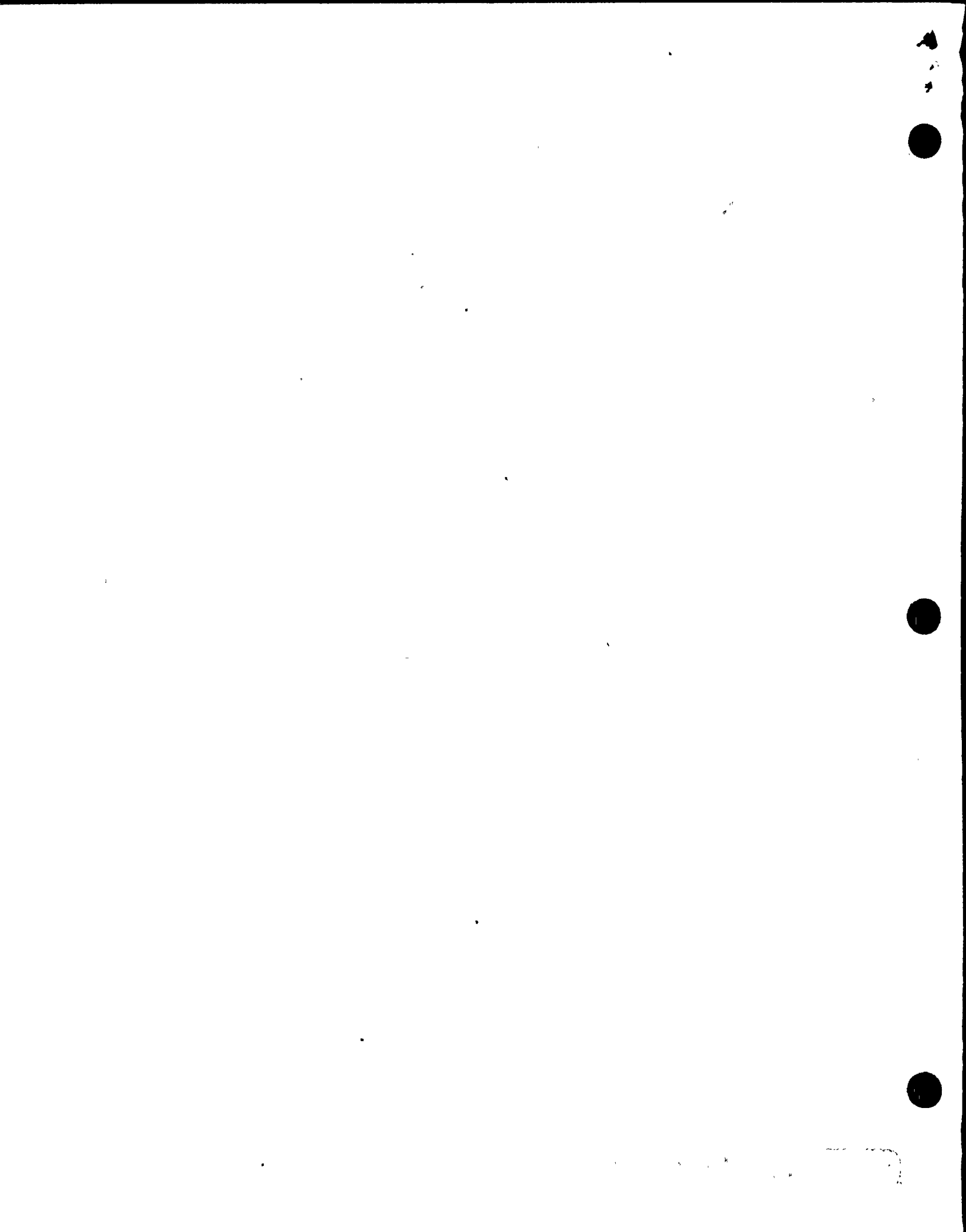
Summary of Pages

(Effective Date: 7/15/91)

Number of Pages: 10

Date	Pages
July 1991	1 - 10

MASTER
TRAINING DEPARTMENT RECORDS ADMINISTRATION ONLY:
VERIFICATION:
DATA ENTRY:
RECORDS:
CONTROLLED
DOCUMENT



A. TRAINING DESCRIPTION

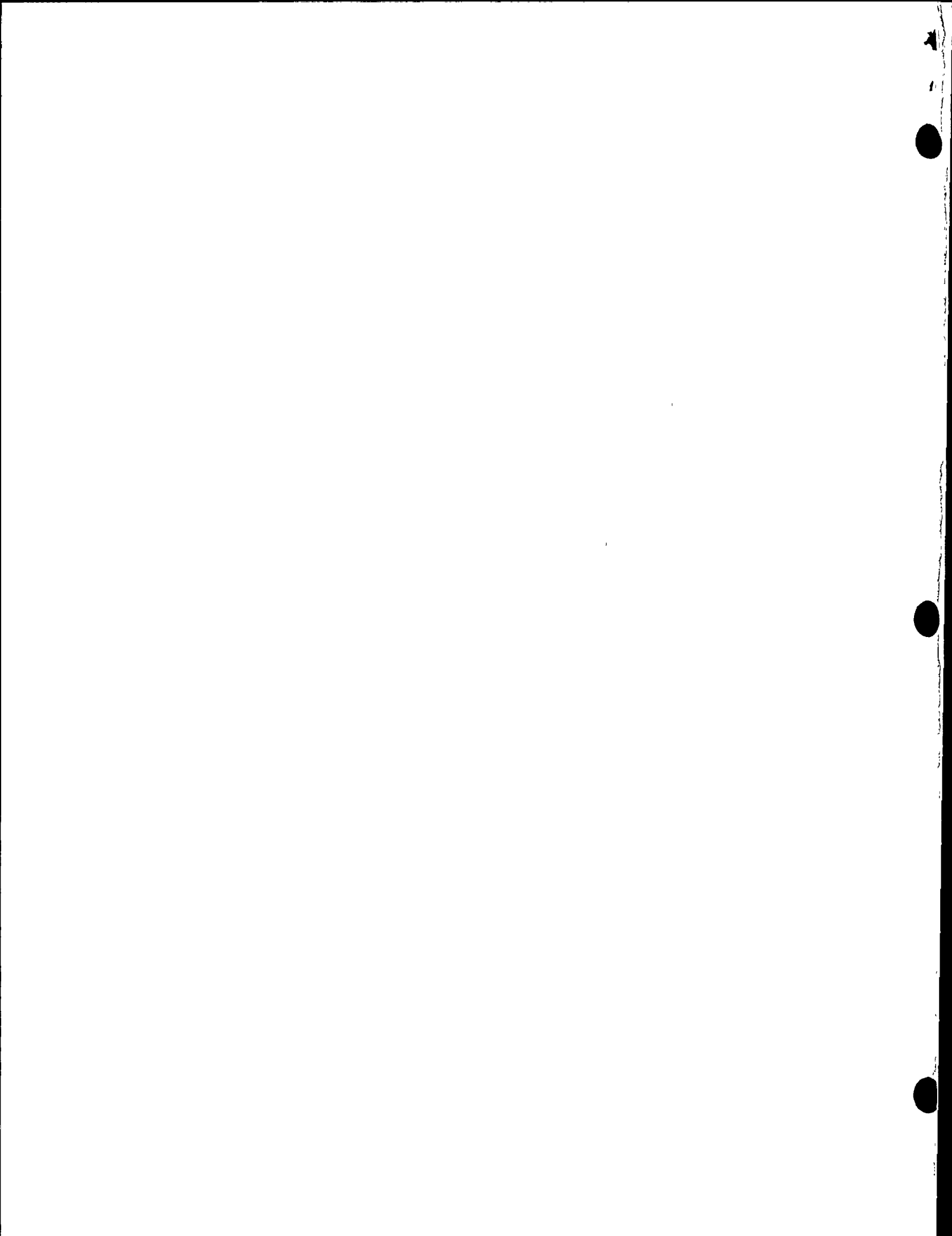
1. Title of Lesson Plan: EHC Regulator Failure/APRM Failure/Loss of Condenser Vacuum/SDV Rupture
2. Estimated Duration of Lesson: 1 hour
3. Prerequisites:
 - a. Instructor:
Qualified in accordance with NTP-16.
 - b. Trainees:
Meet eligibility requirements per 10CFR55.
4. References:
 - a. N2-OP-92 Neutron Monitoring Systems
 - b. N2-OP-10A Circulating Water System
 - c. N2-OP-9 Condenser Air Removal
 - d. N2-OP-101D Power Changes
 - e. N2-OP-101C Plant Shutdown
 - f. Technical Specifications
 - 1) 3/4.3.1 APRM Channels required for trip systems
5. Manipulations Performed:
 - a. B-12 Malfunction of Reactor Pressure Control System.
 - b. B-01 Loss of Condenser

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 to IC-20
2. Change the simulator conditions as follows:
 - a. Mark OOS the "C" circulating water pump.
3. Presets
 - a. Preset Malfunctions
 - 1) 1, RD16 SDV Rupture.
 - b. Preset I/O
None
 - c. Preset Remotes
None

E. POSITION ASSIGNMENTS

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

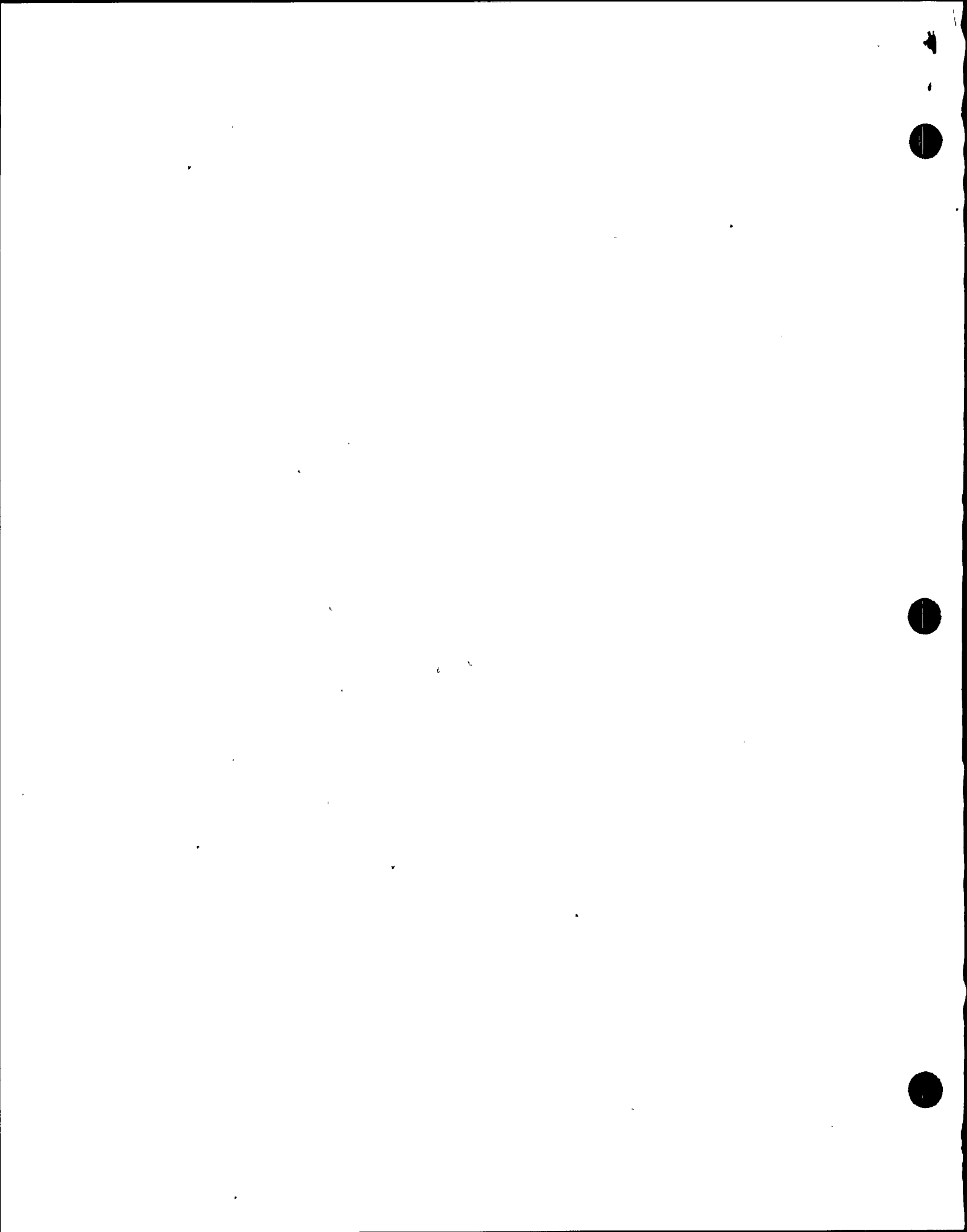
F. SCENARIO SUMMARY

The scenario begins with the crew relieving the shift at 100% power. Shortly afterwards the EHC regulator fails. After the EHC failure, APRM Channel "C" fails. After the APRM failure a loss of circulating water occurs which results in a turbine trip and reactor scram. When the scram occurs a leak develops in the SDV. The scenario end when the scram is reset to isolate the leak and the notifications have been initiated.

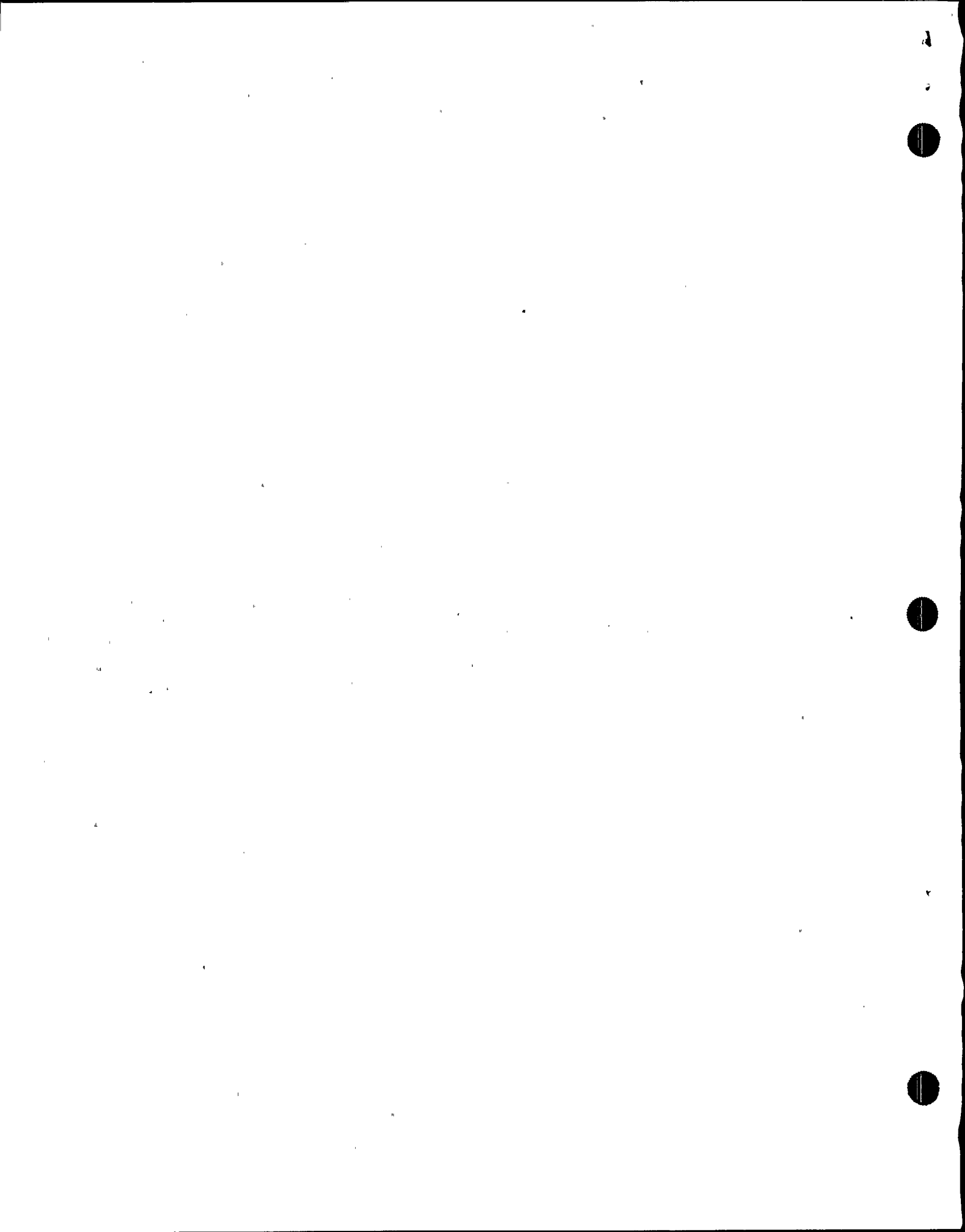
G. LEARNING OBJECTIVES

LO-1.0 Demonstrate effective communications in accordance with the Operations Department Instruction on verbal communications.

LO-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 the CSO/NAOE in accordance with Operation Department Instructions.



- LO-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.
- LO-4.0 Operators shall demonstrate "Self Verification" work practices in accordance with Operations Department Instructions.
- LO-5.0 Given an EHC regulator failure, the operating crew will transfer control to the "B" regulator.
Tasks:
SRO: Direct shift personnel actions to ensure plant safety during off normal conditions. (3440380303)
- LO-6.0 Given a failed APRM, the operating crew will bypass the failed channel and reset the 1/2 scram.
Tasks:
RO: Perform the actions required for an APRM/LPRM Failure. (2009040501)
- LO-7.0 Given a loss of Condenser Vacuum, the operating crew will (Scram) the reactor prior to an automatic scram on condenser vacuum.
Tasks:
SRO: Direct the actions required for a Loss of Condenser Vacuum. (3449170503)
RO: Perform actions for Loss of Condenser Vacuum. (2000080501)



LO-8.0 Given a steam leak in the Reactor Building, the operating crew will isolate the leak by resetting the scram prior to exceeding the release rate limits.

Tasks:

SRO: Direct the actions required per EOP-SC section SCT.
(3449460603)

LO-9.0 Given a reactor plant with a loss of condenser vacuum and SDV Rupture, the SSS will classify the event as an Unusual Event and start the notification requirements.

Tasks:

SRO: Classify emergency events requiring Emergency Plan Implementation. (3440190303)

SRO: Ensure required notifications of onsite and offsite personnel during off normal events. (3440390303)

H. LESSONS LEARNED

1. TCO-02-REQ-90-058

Operator weakness to determine required follow up actions on a Circ. Water pump trip. This was noted during the 1989 NRC exam.

2. TCO-02-REQ-90-67

Operator weakness noted on 1989 NRC exam to determine the plant response on a loss of condenser vacuum.

I. TURNOVER INFORMATION

1. Give the following information for initial conditions:

Core Life: BOL

Description: Xenon at equilibrium

Rod Sequence Information: RWM step 92

Plant Conditions: 100% power

02-REQ-009-TRA-2-40 -4 July 1991

2

3



2. Tech. Spec. limitations in effect:
 - a. None

3. Significant problems/abnormalities:
 - a. The "C" circulating water pump is OOS due to electrical maintenance.

4. Evaluations/maintenance for the on-coming shift:
 - a. Maintain power IAW plant procedures and load dispatchers requests.
 - b. The "C" circulating water pump should be returned to service within the day.

1911

INSTRUCTOR INFORMATION/
INSTRUCTOR ACTIVITIES

EXPECTED STUDENT RESPONSE

SAT/UNSAT/NA

COMMENTS

A. Turnover

Crew

1. Perform panel walkdowns

SSS

1. Assumes the shift. S/U/NA

B. EHC Malfunction

Two minutes after the SSS has relieved the shift insert the following malfunction:

MF; 2, TCO2A EHC pressure
Sensor - Low

Crew

1. Recognize/report annunciator 851148 S/U/NA
2. Recognize/report reactor pressure and power increase. S/U/NA
3. Recognize/report that the B EHC Regulator is in control. S/U/NA

Role Play: As the operator dispatched report that the bias has been adjusted to keep the "B" Regulator in Control.

SSS/ASSS

1. Dispatches NLO to transfer the EHC pressure regulator. S/U/NA LO-5.0
2. Dispatches I&C to investigate the EHC System. S/U/NA

JOHN S
PARKER

C. APRM Failure

Wait 2 minutes after the EHC regulator has been transferred and enter the following malfunctions:

MF; 3, NM11C APRM C Fails Upscale

Crew

- | | | | |
|----|--|--------|--|
| 1. | Recognize/report that APRM "C" has failed upscale. | S/U/NA | |
|----|--|--------|--|

SSS/ASSS

Role Play: As maintenance personnel report to the Control Room (as directed) and troubleshoot the failed APRM.

- | | | | |
|----|---|--------|--------|
| 1. | Refers to Tech. Specs. the minimum number of channels (section 3/4 3.1) | S/U/NA | |
| 2. | Directs the CSO/E to bypass the APRM channel. | S/U/NA | |
| 3. | Directs the CSO/E to reset the 1/2 scram. | S/U/NA | LO-6.0 |
| 4. | Directs maintenance personnel to troubleshoot the channel. | S/U/NA | |

CSO/E

- | | | | |
|----|---|--------|--|
| 1. | Bypasses the APRM channel (as directed) | S/U/NA | |
| 2. | Resets the 1/2 scram (as directed) | S/U/NA | |

STUDIOS
of
JULY 1951

100

D. Loss of Condenser Vacuum

Two minutes after the 1/2 scram has been reset insert the following:

MF; 4, CW04B,,Time Circ water pump
B Trip
ID; 1, AM-2CWSA51,Time,,90 Circ water pump
A Amp meter
reads 125 Amps

Crew

1. Reports/recognize the "B" circ. water pump trip.
2. Report/recognize the "A" circ. water pump high Amps.
3. Report the status of the condenser vacuum.

Role Play: As operator dispatched to the circ. water pumps, report that there is water spraying on the "A" pump from the "B" circ. water pump motor is completely sprayed with water.

SSS/ASSS

1. Direct operator to reduce reactor power per OP-101D. S/U/NA
2. Notifies the Rx. Engineer S/U/NA
3. Verifies turbine vacuum limits S/U/NA
 - a. Vacuum differential <2" Hga
 - b. Vacuum >24.6" Hga with load > 345 Mwe.
4. Monitor Feedwater System including: S/U/NA
 - a. RFP seals
 - b. 4th point heater drain pump
 - c. Feedwater heater level control.

1954
AS 2010

- | EXPECTED STUDENT RESPONSE | SAT/UNSAT/NA | COMMENTS |
|---|--------------|----------|
| 5. Directs the reactor scrambled when vacuum reaches 24.6" Hga. | S/U/NA | LO-7.0 |

CSO/E

- | | | |
|---|--------|--|
| 1. Reduce power IAW OP.101D | S/U/NA | |
| 2. Reports condenser vacuum status | S/U/NA | |
| 3. Scram the reactor (as directed) per OP-101C. | | |
| a. Mode switch to shutdown | S/U/NA | |
| b. Report power < 4% | S/U/NA | |
| c. Report RPV level | S/U/NA | |
| d. Reports PRV pressure | S/U/NA | |
| e. Reports all rods in | S/U/NA | |

E. SDV Rupture

As an operator, wait two minutes after the scram and report there is steam coming from the south scram discharge volume.

Crew

- | | | |
|--|--------|--|
| 1. Reports to the crew the steam leak in the Reactor Building. | S/U/NA | |
|--|--------|--|

SSS/ASSS

- | | | |
|----------------------------------|--|--|
| 1. Dispatches RP tech to the RB. | | |
|----------------------------------|--|--|

198 000 2.2752 . 216
. 5160

1980 000 2.2752 . 216
. 5160

Note: Ensure to discuss that in some cases both the scram and ARI logic must be reset.

2. Isolates the steam leak by directing the scram reset and resetting the ARI logic.

S/U/NA

LO-8.0

CSO/E

1. Resets the scram (as directed)
2. Resets ARI (as directed)

S/U/NA

S/U/NA

F. Notifications

SSS/ASSS

1. Classifies the event as an unusual event (as a minimum).
2. Initiates the notification requirements

S/U/NA

S/U/NA

LO-9.0

Termination Cue:

Terminate the scenario when the scram has been resets.

Note: During the post-exercise critique, ensure that the condenser vacuum trips are discussed.

3 120°

" "

" "

" "

" "

" "

" "

" "

" "

" "

" "

" "

" "

" "

" "

" "

" "

" "

" "

" "

" "

" "

" "

3 120°

ATTACHMENT 3

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 focus on individual performance. The comments from the Team Work Rating Scale should be global and should be focused on the team as a whole.

107

108
109
110
111
112
113
114
115
116
117
118
119
120
121
122
123
124
125
126
127
128
129
130
131
132
133
134
135
136
137
138
139
140
141
142
143
144
145
146
147
148
149
150
151
152
153
154
155
156
157
158
159
160
161
162
163
164
165
166
167
168
169
170
171
172
173
174
175
176
177
178
179
180
181
182
183
184
185
186
187
188
189
190
191
192
193
194
195
196
197
198
199
200

107 20

108
109
110
111
112
113
114
115
116
117
118
119
120
121
122
123
124
125
126
127
128
129
130
131
132
133
134
135
136
137
138
139
140
141
142
143
144
145
146
147
148
149
150
151
152
153
154
155
156
157
158
159
160
161
162
163
164
165
166
167
168
169
170
171
172
173
174
175
176
177
178
179
180
181
182
183
184
185
186
187
188
189
190
191
192
193
194
195
196
197
198
199
200

107 20

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 questions and the answer to the program coordinator for disposition.

2 3
1950
1951
1952

1953

1954

- 
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 weakness.

(NCTS 3)

