# NIAGARA MOHAWK POWER CORPORATION NINE MILE POINT NUCLEAR STATION

| 4                                  | 02-REQ-009-1DY-2-       | <u>9 Revision</u> | 0               |
|------------------------------------|-------------------------|-------------------|-----------------|
|                                    |                         | •                 | •               |
| TITLE:                             | APRM FAILURE/HPC        | CS INADVERTANT I  | NJECTION/FEED   |
|                                    | WATER LI                | INE BREAK/SDV RU  | IPTURE          |
|                                    |                         |                   |                 |
|                                    | <u></u>                 | IGNATURE          | DATE            |
| PREPARED BY                        | Le Company              | TOPPY             | 5/30/91         |
| · VALIDATED BY                     | ERL                     | Deply             | 5/30/9/         |
| UNIT OPERATION TRAINING SUPE       |                         |                   | 4/3/91          |
| PLANT SUPERVI<br>USER GROUP SU     |                         | alfea             | <u> </u>        |
|                                    | (Effect) ve Dat         |                   |                 |
|                                    | Number of Date May 1991 | Pages:17          | Pages<br>1 - 17 |
|                                    |                         | <b>2</b> 2        |                 |
| <u>TI</u>                          | RAINING DEPARTMENT F    | RECORDS ADMINIST  | RATION ONLY:    |
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### I. TRAINING DESCRIPTION

- A. Title of Lesson Plan: APRM Failure/HPCS Inadvertant Injection/Feed Water Line Break/SDV Rupture
- B. Lesson Description: The operating crew will assume the shift with the plant at approximately 100% power. Soon after the turnover, an APRM channel fails up-scale. Shortly after the APRM failure, the HPCS system inadvertently initiates and injects into the vessel. Following the HPCS system failure, the feed system breaks inside the steam tunnel. As the operating crew is taking actions for the feedwater line break, a report will be received from the Reactor Building that there is steam in the Reactor Building. The scenario ends when the RPV parameter are controlled per EOP-RPV and secondary containment parameters are controlled per EOP-SC.
- C. Estimated Duration of Lesson: 50 minutes
- D. Method of Evaluation, Grade Format, and Standard of Evaluation: Satisfactory completion of Simulator Evaluation performed in accordance with Nuclear Training Instruction 4.3.6.
- E. Prerequisites:
  - 1. Instructor:
    - a. Qualified as simulator instructor per NTP-16.1.
  - 2. Trainee:
    - a. Meet eligibility requirements per 10CFR55, or
    - b. Be recommended for this training by the Operations Supervisor, his designee, or the Operations Training Supervisor.

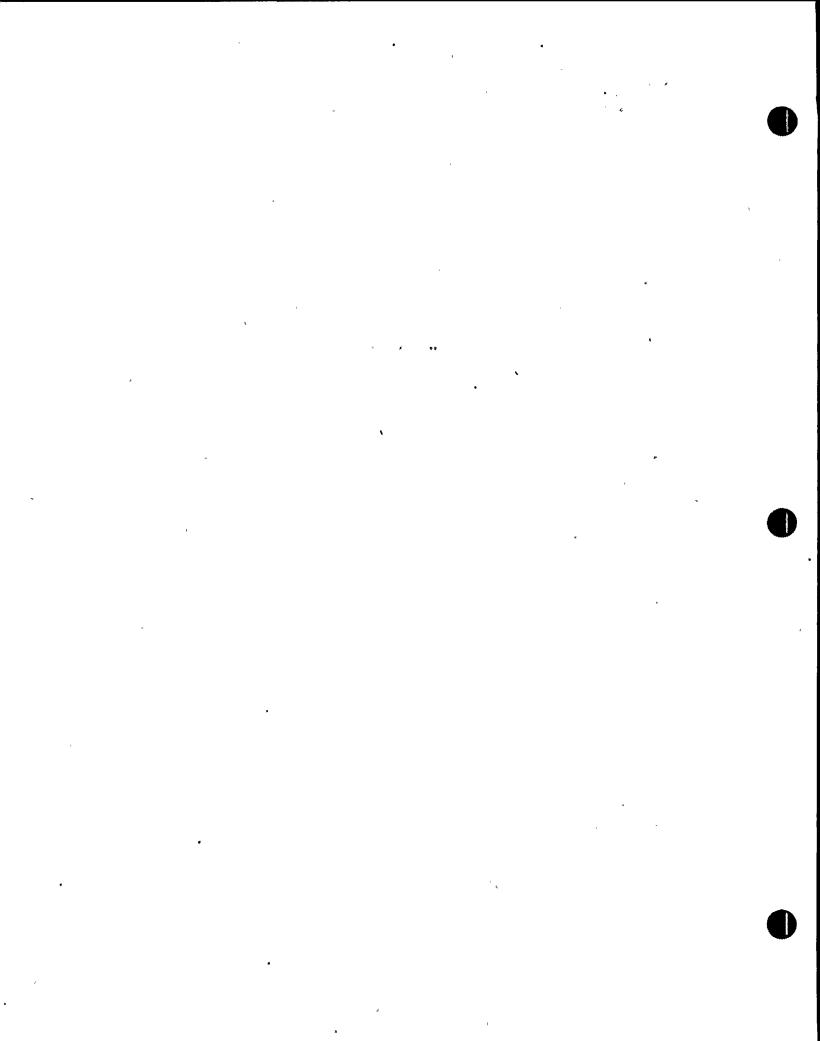
### F. References:

- 1. OP-92 Neutron-Monitoring
- 2. OP-33 HPCS System
- 3. Technical Specifications
  - a. 3/4 3.1, Reactor Protection System (Table 3.3.1-1)
  - b. 3/4 3.5.1.c, ECCS Systems HPCS Operability
- 4. EOP-RP RPV Control
- 5. EOP-SC Secondary Containment Control

### II. REQUIREMENTS

- A. 10CFR55.45 and 55.49
- B. NUREG 1021

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### III. SCENARIO OBJECTIVES

### A. ISCT Summary

ISCT #1 Direct the actions per EOP-RPV Section RP. (3449410603) SSS/ASSS K/A Rating 295025 SG. 12 - 4.5

ISCT #2 Perform the actions required for high Reactor Pressure.

CSO/E (2000180501)

K/A Rating 295025 SG. 10 - 3.9

ISCT #3 Respond to an automatic containment isolation.

CSO/E (3449420503)

K/A Rating 223002 A3.02

Perform the actions required for a small break LOCA,

outside the Primary Containment (2009130501). K/A Rating

223002 A3.02 - 3.5

ISCT #4 Direct the actions required per EOP-SC Section SCT.

SSS/ASSS (3449460603)

K/A Rating 295032 EA1.05 - 3.9

ISCT #5 Perform lineups on the RWCU System from the Control Room.

CSO/E (2040010101)

K/A Rating 204000 A2.13 - 3.4

ISCT #6 Direct the actions per EOP-SC Section SCT.

SSS/ASSS Task Number 3449460603

ISCT #7 Perform the actions required for a small break LOCA.

CSO/E outside the Primary Containment. (2009130501).

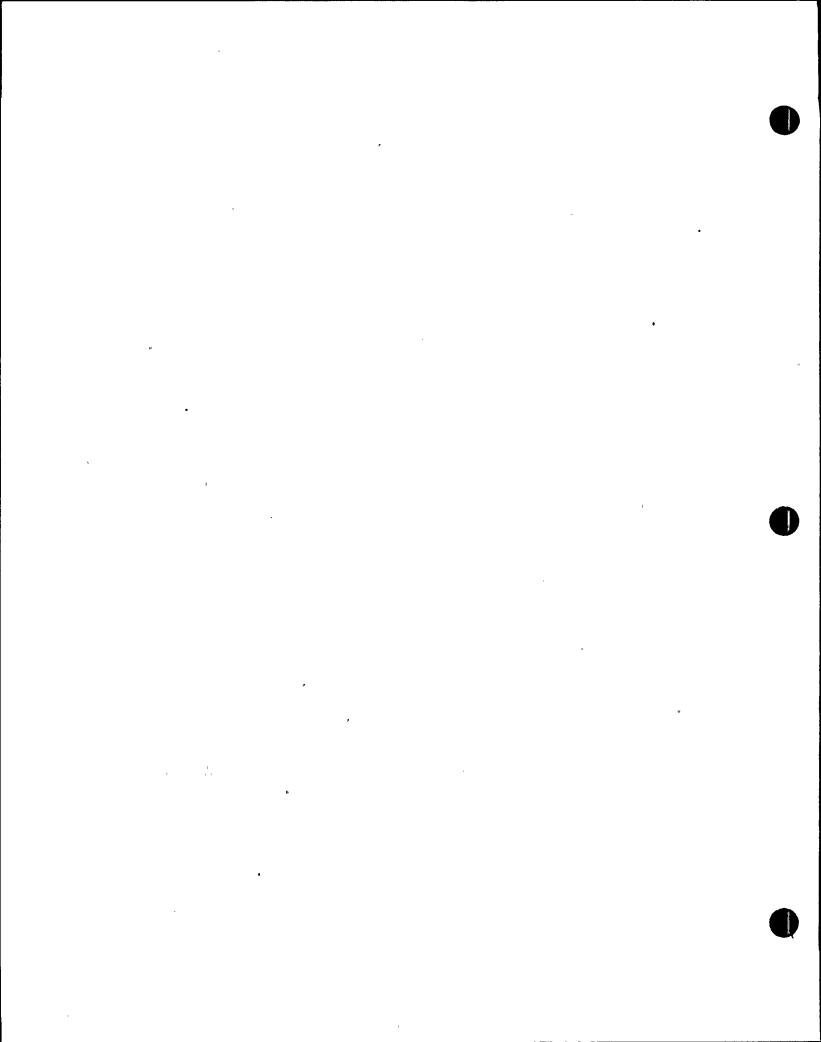
K/A Rating 295032 EA1.05 - 3.7

ISCT #8 Classify Emergency Events Requiring Emergency Plan

SSS/ASSS Implementation. (3440190303)

K/A Rating 294001 A 1.16 - 4.7

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ISCT #9 Ensure required notifications of on-site and off-site SSS/ASSS personnel during off-normal events. (3440390303) K/A Rating 294001 A 1.1.6 - 4.7

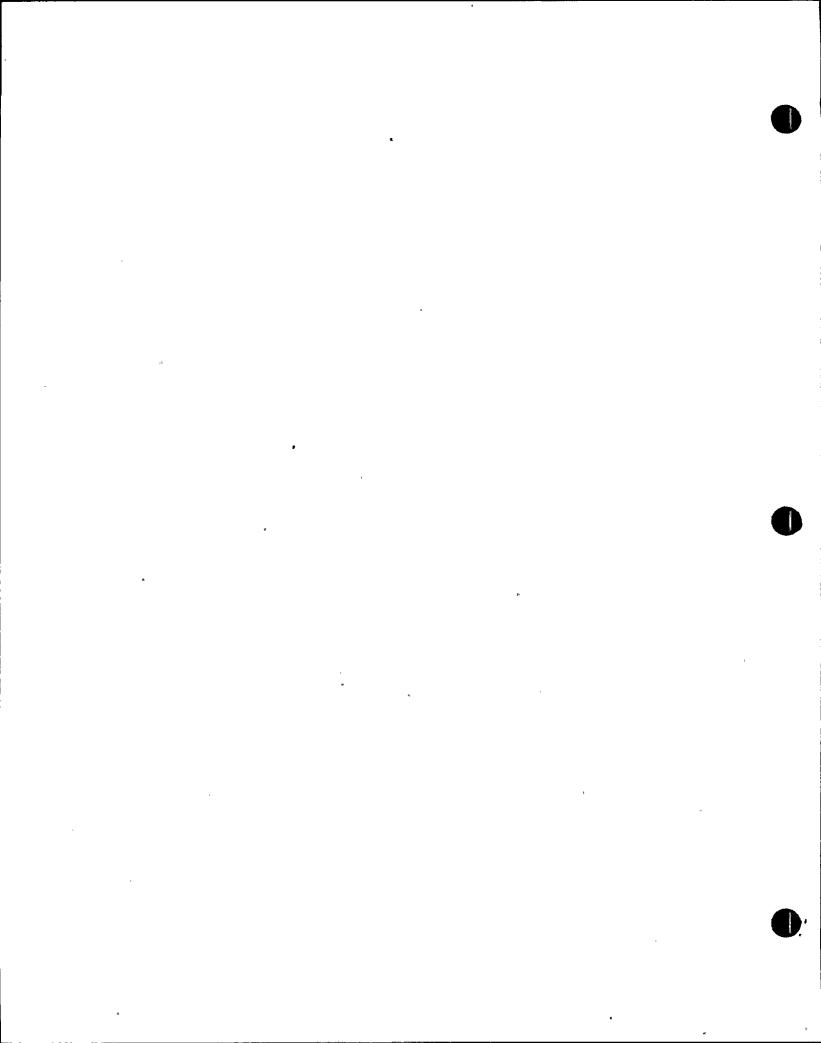
# B. Generic Objectives:

- 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 practice techniques in accordance with Operations Department instructions.

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|                                       |  |
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# C. Scenario Objectives:

- 1. Given a reactor plant at approximately 100% power with a malfunction that results in a 1/2 scram, the operating crew will review OP-92 and Technical Specification to bypass the failed APRM channel and reset the 1/2 scram.
- Given a reactor plant at approximately 100% power, a
  malfunction occurs that results in an inadvertent initiation of
  HPCS. The operating crew will determine that a initiation
  signal is not present and secure the HPCS System.
- 3. Given a reactor plant at approximately 100% power with a malfunction that results in a feed water line break, the operating crew will control RPV pressure <1037 psig and RP level between 159.3 and 202.3 inches per the EOPs.
- 4. Given a reactor plant following a scram and feedwater line break, a malfunction occurs that results in a leak into the Reactor Building. The operating crew should isolate the leak by resetting the scram.
- 5. Given a reactor plant with a feedwater line break and a leak into the Reactor Building the SSS should classify the event as an alert or higher and make the proper notifications with 15 minutes.



IV. LESSON CONTENT LESSON CONTENT

**DELIVERY NOTES** 

NOTES AND COMMENTS

- Establish Simulator initial conditions.
- Bring crew into the classroom and brief using Attachment 6, Simulator Briefing Checklist.
- Identify the roles and responsibilities and individuals performing the function for:
  - a. Crew Evaluator
  - b. SRO Evaluator
  - c. RO Evaluator(s)
  - d. Console Operator
  - e. If NRC is present introduce the NRC participants.
- 4. Identify the roles of the participants.
  - a. SSS
  - b. ASSS
  - c. CSO
  - d. AOEs
  - e. SEPC (if applicable)
- 5. Ensure video tape is running and participants are aware:

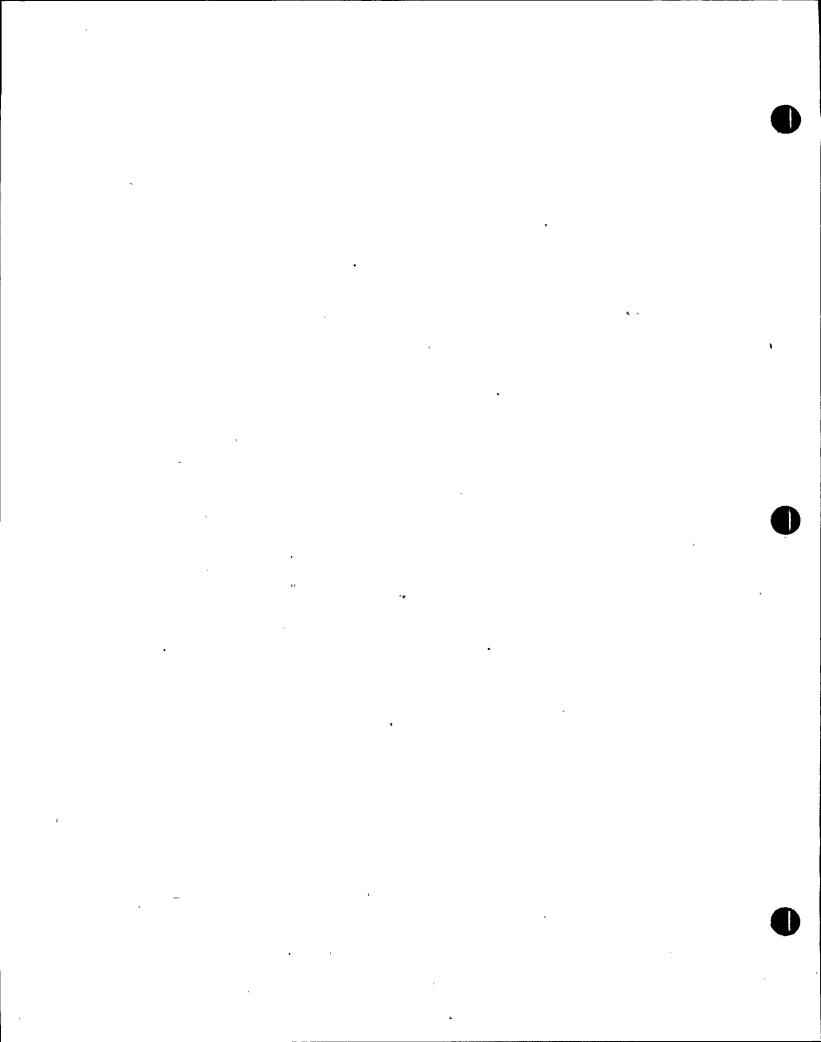
# (NCTS-2)

- a. That video taping is being conducted.
- b. The reason for the video tape.
- 6. Refer to Attachment 2. Turnover information and conduct shift turnover in the Simulator.

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Discuss each item on the checklist. This checklist should be discussed during the first evaluated lesson plan during a training week and prior to subsequent evaluated lesson plans as necessary.

Ensure the participants understand that the evaluators will be taking extensive notes during the session and not to be concerned with the evaluators actions.



# EVALUATOR AND CONSOLE OPERATORS GUIDE

TIME **EVENT** 

INSTRUCTOR ACTIVITY >

PLANT RESPONSE

OPERATOR ACTIONS

**EVALUATOR COMMENTS** 

Special Instructions:

Hang red Above the 100% rod line

sign.

Simulator Operator:

Initialize to IC-20

Preset malfunction:

1. MF, 1, CU08

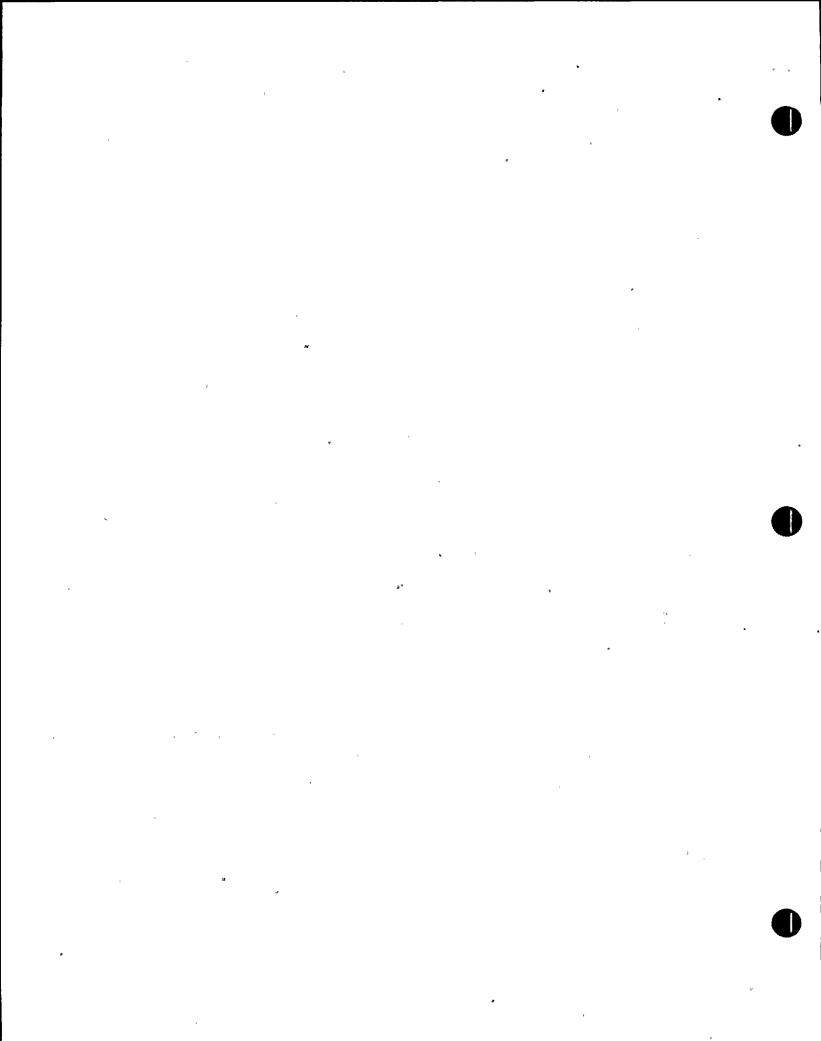
1. RWCU Isolation Failure

2. MF, 2, RD16

2. SDV Rupture

Preset I/O overrides

None



# EVALUATOR AND CONSOLE OPERATORS GUIDE

TIME EVENT

INSTRUCTOR ACTIVITY

PLANT RESPONSE

OPERATOR ACTIONS

**EVALUATOR COMMENTS** 

Provide the following turnover

information:

- 1. BOL 100% power
- 2. Above the 100% rod line
- 3. Maintaining power per OP-101D

Out of Service Equipment

None.

Surveillance required

None

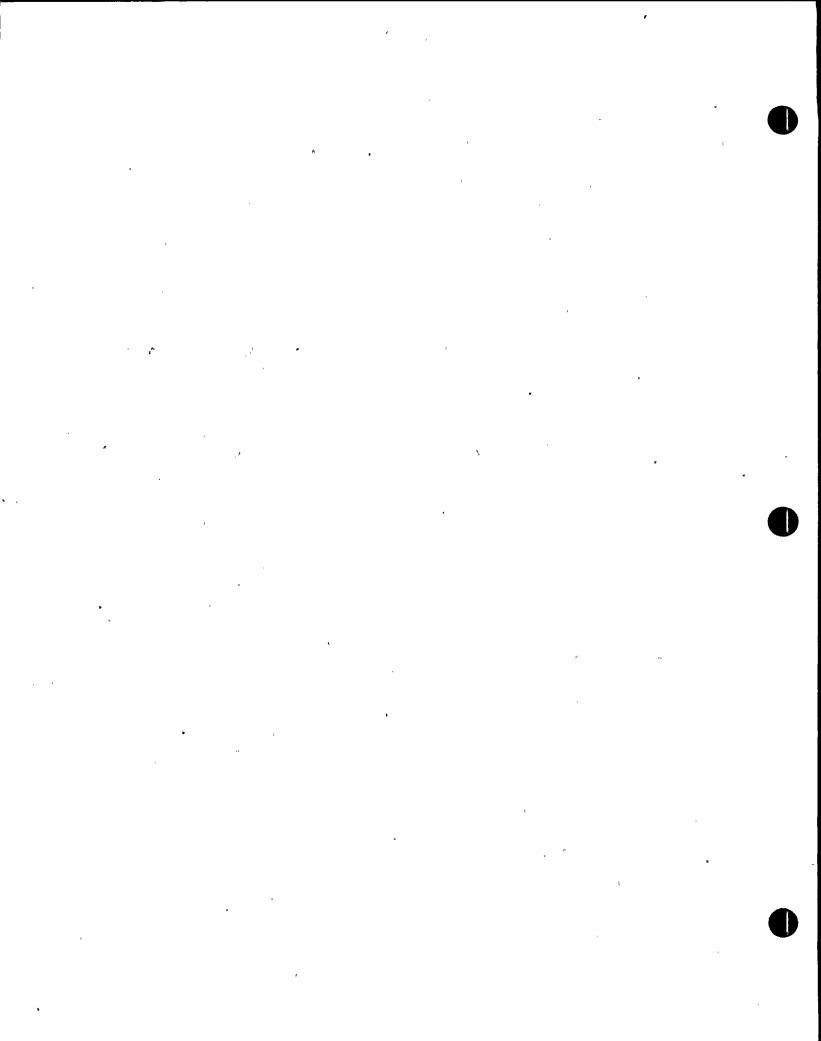
CREW

1. Performs panel walkdowns.

1. Relieves the shift.

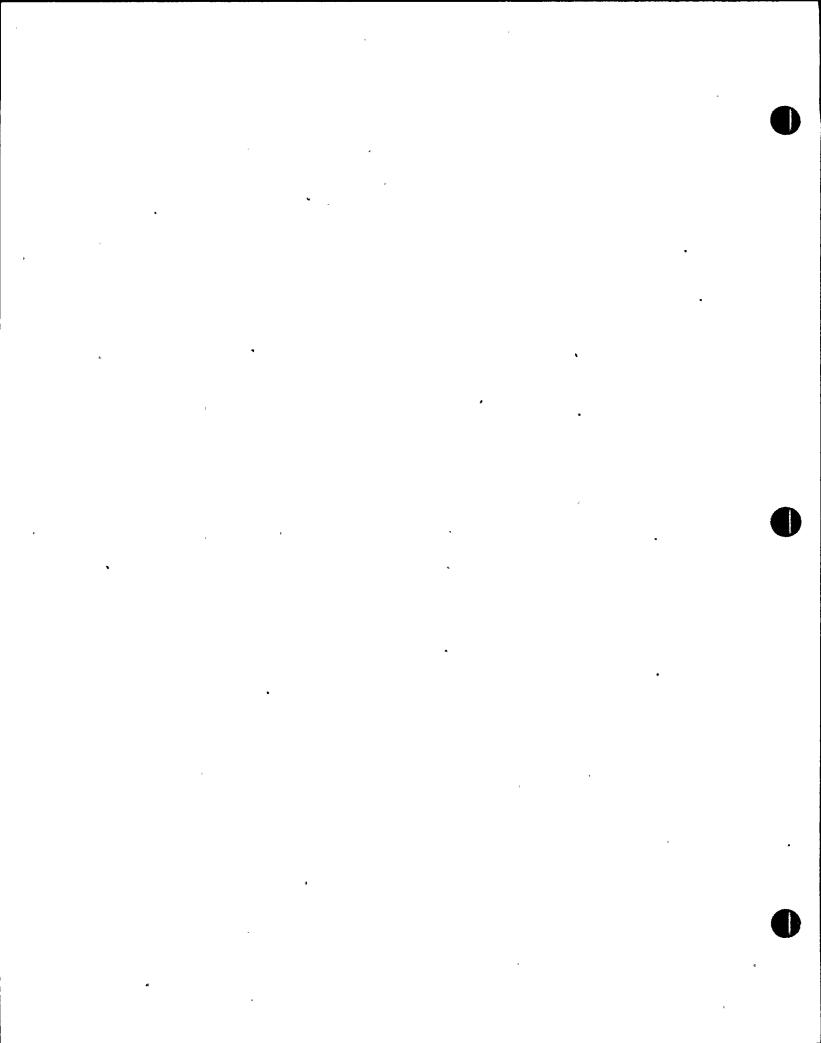
Sat/Unsat/NA

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# EVALUATOR AND CONSOLE OPERATORS GUIDE

| TIME | EVENT | INSTRUCTOR ACTIVITY               | PLANT RESPONSE | OP  | ERATOR ACTIONS             | EVALUATOR COMMENTS |
|------|-------|-----------------------------------|----------------|-----|----------------------------|--------------------|
|      |       | Wait approximately three minutes  | •              | CRI | <u>:</u> A                 |                    |
|      |       | after the crew has assumed the    | •              | 1.  | Report/recognize APRM      | Sat/Unsat/NA       |
|      |       | shift, and insert the following   |                |     | channel a failure.         |                    |
|      |       | malfunction:                      |                |     |                            |                    |
| -    | -     | MF; 3, NM20A                      |                | CSC | )/E .                      |                    |
|      |       |                                   | •              | 1.  | Reports that APRM Channel  | Sat/Unsat/NA       |
|      |       | APRM Channel A fails upscale.     |                |     | A has failed upscale.      |                    |
|      |       |                                   | -              | 2.  | Bypasses APRM Channel A    | Sat/Unsat/NA       |
|      |       |                                   |                |     | (as directed)              |                    |
|      |       |                                   |                | 3.  | Resets the 1/2 scram.      | Sat/Unsat/NA       |
| •    |       |                                   |                | cci |                            |                    |
| •    |       |                                   |                | žž  |                            |                    |
|      |       |                                   |                | 1.  | To determine               | Sat/Unsat/NA       |
| +    | 7     |                                   | -              |     | minimum number of Operable |                    |
|      |       | Role Play                         |                | ,   | Channels. (3/4.3.1)        |                    |
|      |       | As maintenance department         |                | 2.  | Directs CSO/E to bypass    | Sat/Unsat/NA       |
|      |       | personnel that were called to the |                | •   | APRM Channel A.            |                    |
|      |       | Control Room wait about three     |                | 3.  | Directs CSO/E to reset     | Sat/Unsat/NA       |
| -    |       | minutes and report that the       |                |     | 1/2 scram.                 |                    |
|      |       | count circuitry for APRM          | •              | 4.  | Call maintenance depart-   | Sat/Unsat/NA       |
| -    |       | Channel A has failed.             |                |     | ments to investigate the   |                    |
|      |       |                                   | •              |     | APRM Channel.              |                    |



# EVALUATOR AND CONSOLE OPERATORS GUIDE

TIME

**EVENT** 

INSTRUCTOR ACTIVITY

PLANT RESPONSE

**OPERATOR ACTIONS** 

**EVALUATOR COMMENTS** 

When the actions for the failed APRM Channel have been completed wait approximately three minutes and insert the following

malfunction:

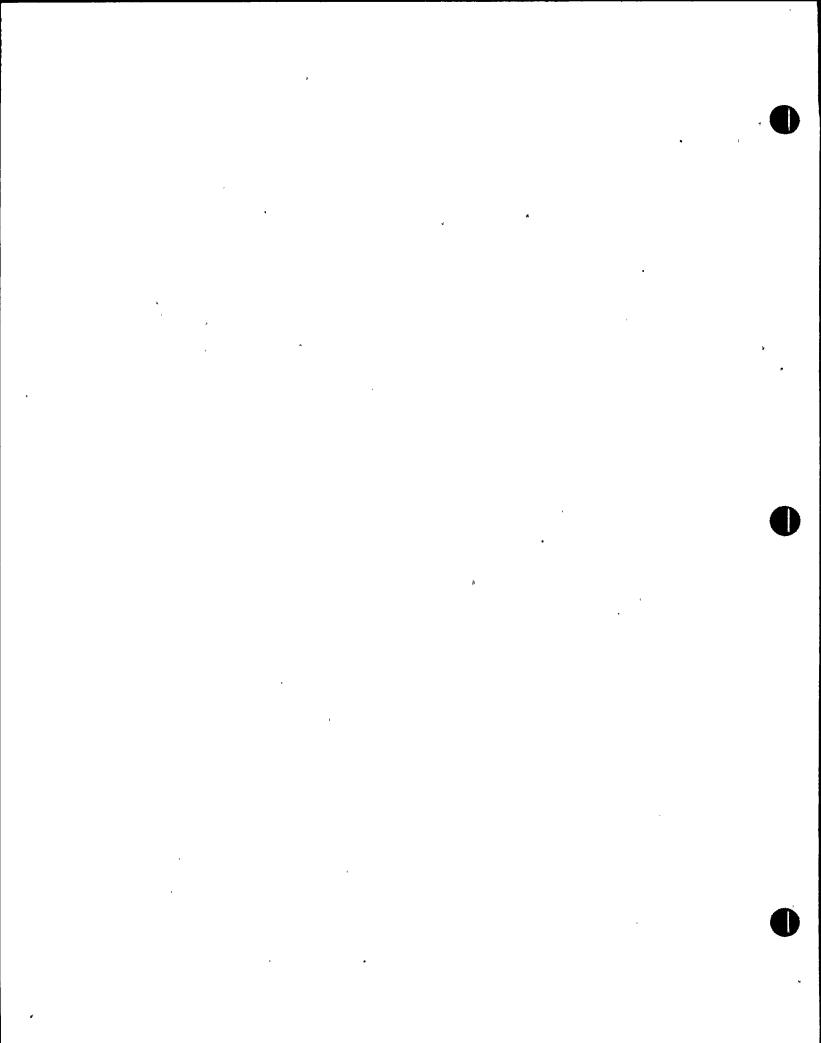
MF; 4, CS01

HPCS - Inadvertant Initiation

CREW

- Report/recognize power/ Sat/Unsat/NA pressure/level oscillations.
- Report/recognize that HPCS is inadvertently injecting by reporting:
  - a) Drywell pressure <1.68# Sat/Unsat/NA
  - b) RPV level >108.8 inches Sat/Unsat/NA

 Directs operators to secure Sat/Unsat/NA HPCS after verifying initiation signal is false.



#### EVALUATOR AND CONSOLE OPERATORS GUIDE

TIME EVENT

INSTRUCTOR ACTIVITY

PLANT RESPONSE

OPERATOR ACTIONS

EVALUATOR COMMENTS

Role Play

As the personnel called to investigate HPCS, wait three minutes and report that the reason is not apparent. Also report that it may take several hours to find the cause.

When the actions for the inadvertent HPCS initiation have been completed, insert the following malfunction:

MF; 5, FW. 32

Feedwater line break inside steam tunnel.

Call maintenance departments to investigate the HPCS System.

3. Consults T.S. for the HPCS

a) T.S. 3.5.1.c

Sat/Unsat/NA >

b) T.S. 3.5.1.f

Sat/Unsat/NA \*

4. Call station management in

Sat/Unsat/NA

regards to the HPCS becoming INOP.

CREW

Report/recognize MSIV Sat/Unsat/NA closure.

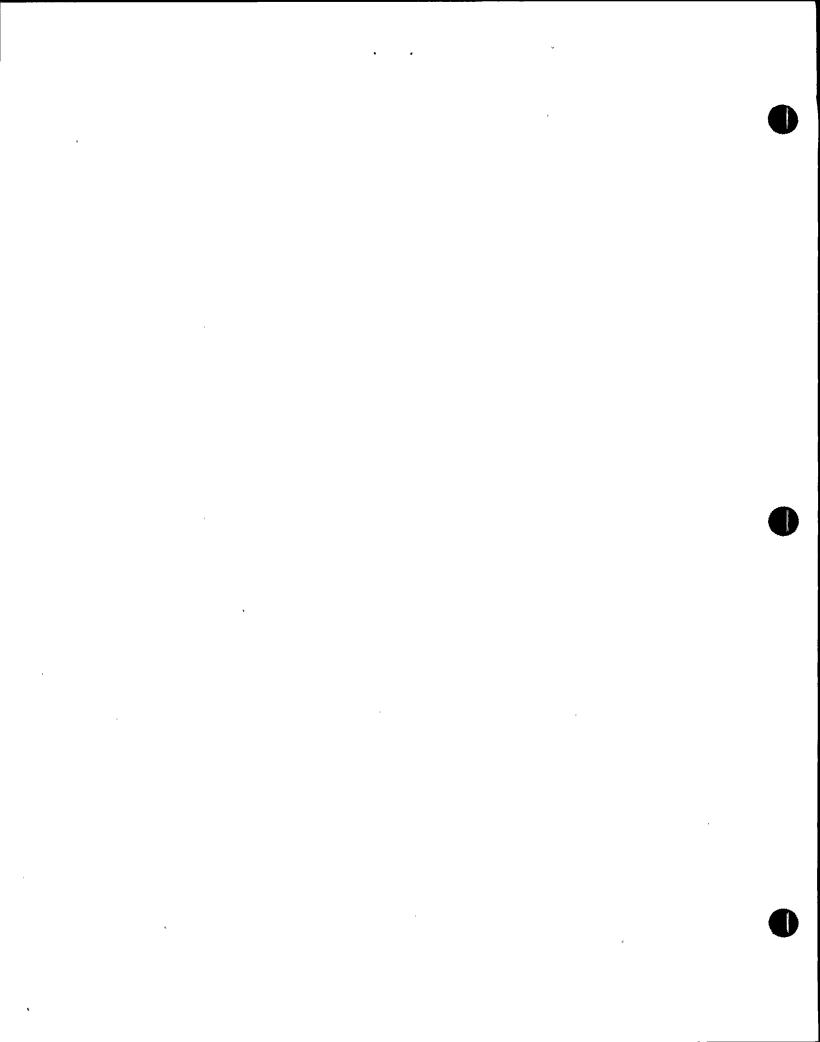
Report/recognize Reactor scram by reporting.

a) APRMs <4% power, and Sat/Unsat/NA

b) All rods in

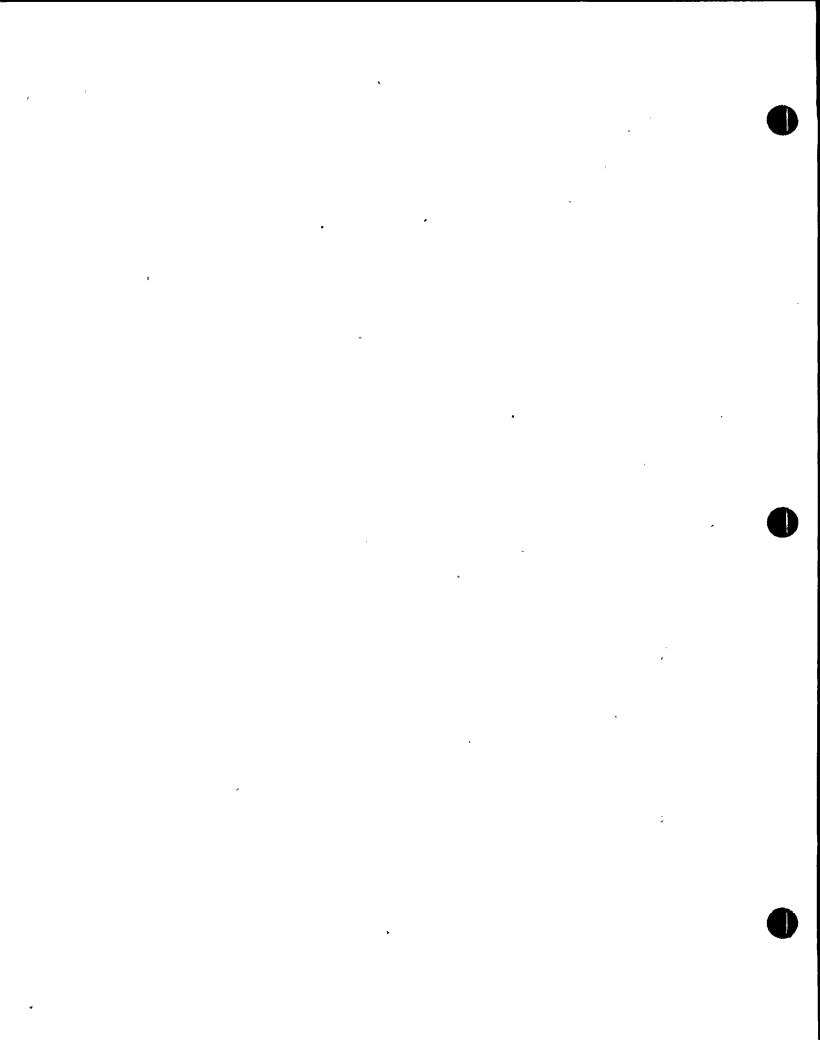
Sat/Unsat/NA

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# EVALUATOR AND CONSOLE OPERATORS GUIDE

| TIME | EVENT | INSTRUCTOR ACTIVITY              | PLANT RESPONSE | OPERATOR ACTIONS |                              | R ACTIONS               | EVALUATOR COMMENTS |  |
|------|-------|----------------------------------|----------------|------------------|------------------------------|-------------------------|--------------------|--|
| -    |       | NOTE -                           |                |                  |                              |                         |                    |  |
|      |       | Malfunctions 1 and 2 will become |                | SSS              | SSS                          |                         | •                  |  |
|      |       | active during this portion of    |                | 1.               | Dir                          | ects operators to       | ISCT #1            |  |
|      |       | the scenario.                    |                |                  | mai                          | ntain RPV pressure      | Sat/Unsat/NA       |  |
|      |       |                                  |                |                  | <10                          | 37#IAW EOPs using:      |                    |  |
|      |       |                                  |                |                  | a)                           | SRV's or                | Sat/Unsat/NA       |  |
| -    |       | ,                                |                |                  | b)                           | RCIC or                 | Sat/Unsat/NA       |  |
|      |       |                                  |                |                  | c)                           | RHÇU or                 | Sat/Unsat/NA       |  |
|      |       | •                                |                |                  | d)                           | Steam condensing        | Sat/Unsat/NA       |  |
|      |       | •                                |                | 2.               | Directs operator to maintain |                         | •                  |  |
|      |       |                                  |                |                  | RPV                          | level between 159.3 and | -                  |  |
|      |       |                                  |                |                  | 202                          | .3 with:                |                    |  |
|      |       |                                  |                |                  | a)                           | Condensate and feed     | Sat/Unsat/NA       |  |
|      |       |                                  |                |                  |                              | water, or               |                    |  |
|      |       |                                  |                |                  | b)                           | RCIC or                 | Sat/Unsat/NA       |  |
|      |       |                                  |                |                  | c)                           | CRD                     | Sat/Unsat/NA       |  |



### EVALUATOR AND CONSOLE OPERATORS GUIDE

TIME EVENT INSTRUCTOR ACTIVITY PLANT RESPONSE OPERATOR ACTIONS EVALUATOR COMMENTS

CSO/E

1. Maintains RPV pressure ISCT #2

 <1037# (as directed) Sat/Unsat/NA</pre>
2. Maintains RPV level between Sat/Unsat/NA
159.3 and 202.3 inches (as

3. Performs scram actions.

directed).

a) Mode switch to S/D. Sat/Unsat/NA

b) Inserts SRM/IRMs. Sat/Unsat/NA

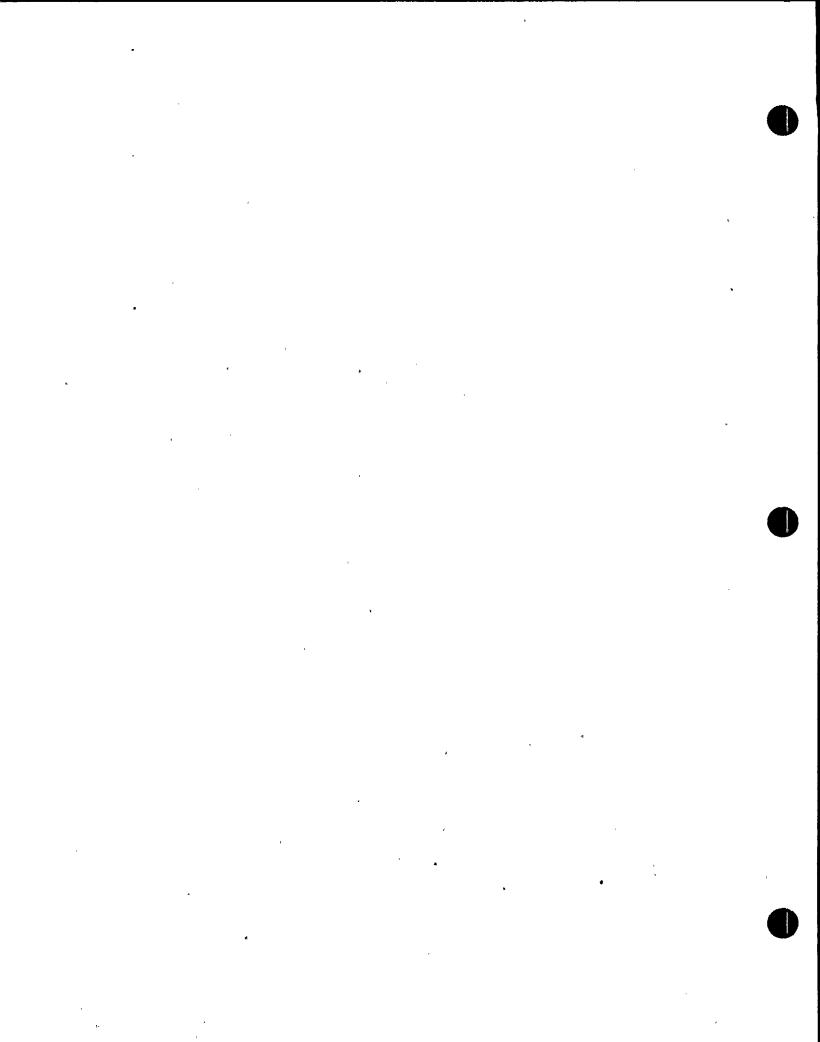
c) Switch recorders to IRM. Sat/Unsat/NA

d) Trips RWCU pumps. Sat/Unsat/NA

e) Verifies main turbine Sat/Unsat/NA trip.

f) Verifies RR pumps trans- Sat/Unsat/NA fer to the LFMG sets.

g) Verifies house load Sat/Unsat/NA have transferred.



### EVALUATOR AND CONSOLE OPERATORS GUIDE

TIME

**EVENT** 

INSTRUCTOR ACTIVITY

PLANT RESPONSE

**OPERATOR ACTIONS** 

**EVALUATOR COMMENTS** 

CREW

1. Reports/recognize that

ISCT #3

the RWCU system did not

Sat/Unsat/NA

isolate.

Role Play

As an operator in the plant, wait 2 minutes after the scram and report that there is steam in the Reactor Building.

1. Directs operators to ISCT #4 manually isolate the RWCU Sat/Unsat/NA system by shutting the 2WCS\*102 and 112 valves (IAW EOP-RPV).

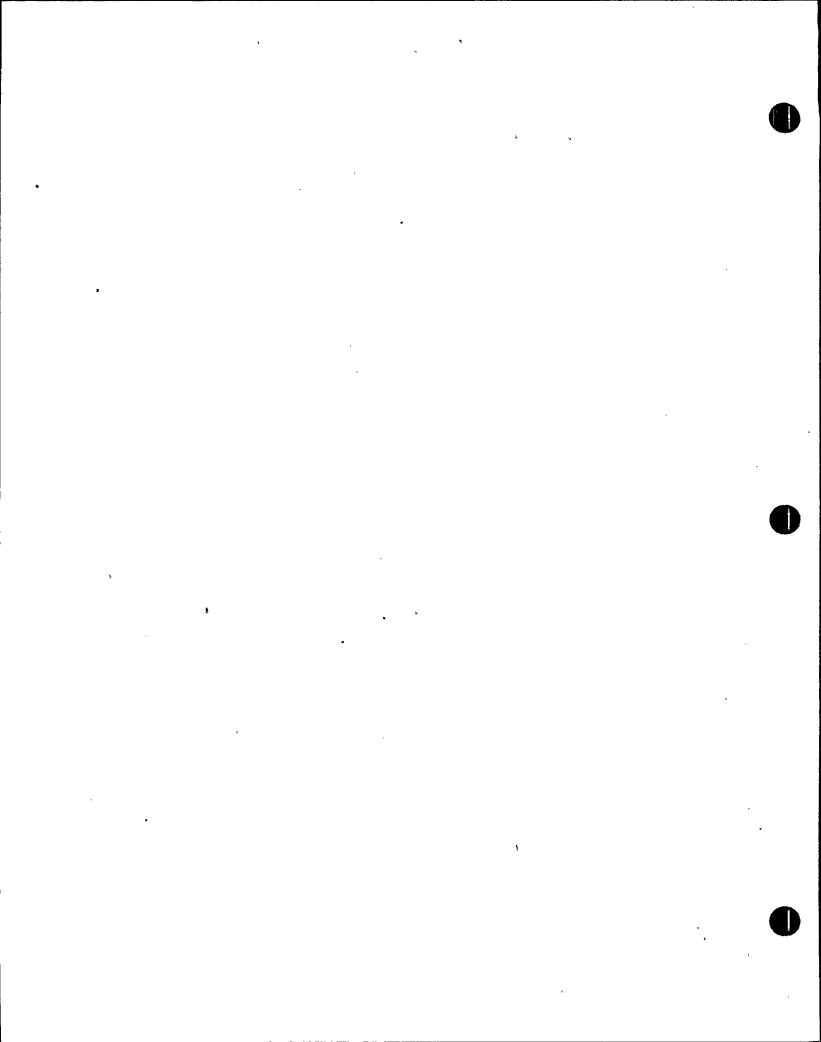
2. Calls RP to aid in investi- Sat/Unsat/NA gation of steam leak.

- Role Play

Wait 2 minutes from the initial report and report that the steam is from the south scram discharge volume.

CSQ/E

1. Shuts the 2WCS\*102 and 112 ISCT #5 valves (as directed). Sat/Unsat/NA



#### EVALUATOR AND CONSOLE OPERATORS GUIDE

TIME EVENT INSTRUCTOR ACTIVITY PLANT RESPONSE OPERATOR ACTIONS EVALUATOR COMMENTS

SSS/ASSS
1. Isolates the leak into the Reactor Building by either:

a) If a scram signal is ISCT #7 no longer present, Sat/Unsat/NA directs the scram reset

OR

%:,

b) If a scram signal is ISCT #4

present, directs Sat/Unsat/NA

installation of RPS

jumpers and scram

signal reset.

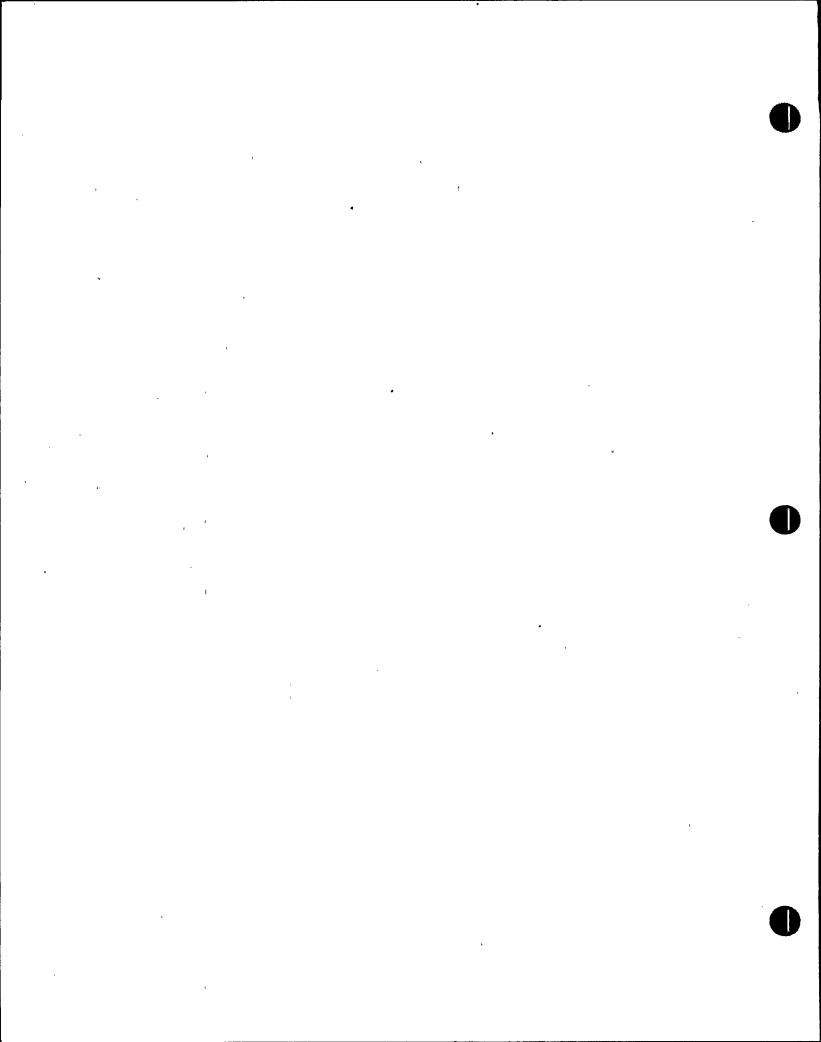
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### CSO/E

Isolates the leak into the Sat/Unsat/NA RB (as directed).
 a. Resets the scram. ISCT #8

OR Sat/Unsat/NA

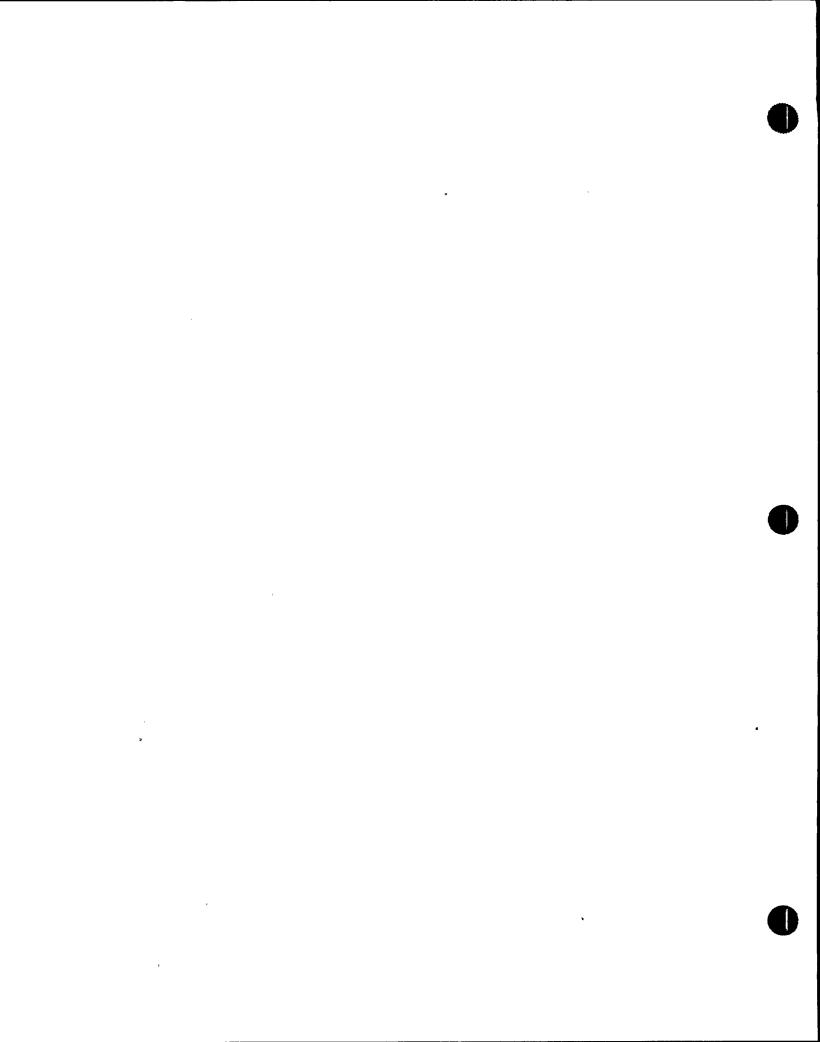
b. Installs RPS jumpers ISCT #8then resets the scram. Sat/Unsat/NA



1 4 74

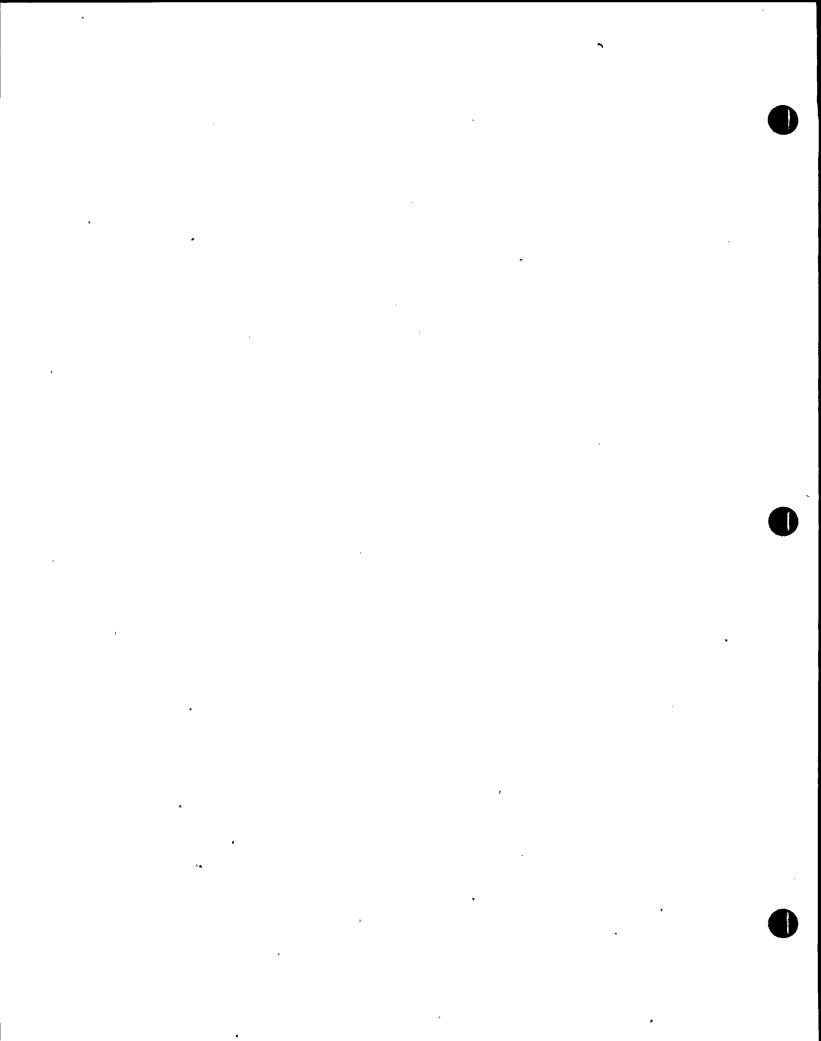
# EVALUATOR AND CONSOLE OPERATORS GUIDE

| TIME | EVENT | INSTRUCTOR ACTIVITY         | PLANT RESPONSE | OPERATOR ACTIONS           | EVALUATOR COMMENTS |
|------|-------|-----------------------------|----------------|----------------------------|--------------------|
|      | *     |                             |                |                            | и                  |
|      |       |                             | •              | SSS                        | ISCT #5            |
|      |       | •                           |                | 1. Classifies the event as | Sat/Unsat/NA       |
|      | •     | <u> Ierminating Cue</u>     |                | an alert or higher.        | •                  |
| 4    |       | Terminate the scenario when |                | 2. Make the notification   | ISCT #6            |
| A 1  |       | - RPS has been reset.       |                | within 15 minutes.         | Sat/Unsat/NA       |
| * ±  |       | - RPV parameters have been  | -              |                            |                    |
|      |       | stabilized.                 |                |                            |                    |
|      |       | - Classification complete.  |                |                            |                    |



NOTES AND COMMENTS

- 1. Ensure operators stand fast and do not communicate immediately after Simulator is placed in freeze.
- 2. Evaluators should caucus to determine if any follow-up questions are necessary.
- Ask follow-up questions before the SSS and crew is released.
- 4. Instruct the SSS to assess the session with the crew to determine crew strengths and areas for improvement. This should be documented in Attachment 4 for later evaluations.
  - Determine crew strengths and areas for improvements.
  - b. Conduct a crew evaluation in Attachment 13.
  - c. Determine SAT/UNSAT/NA for all critical tasks and who performed each task.
  - d. Conduct individual evaluations on Attachments 10 and 11.
- Following the evaluation (if NRC is present) the results of evaluation should be given to the NRC examiners.
- 6. Conduct a post exercise assessment as follows:
  - Review the learning objectives.
     Have the crew state how each was met during the session.



LESSON CONTENT

DELIVERY NOTES

NOTES AND COMMENTS

b. Participants Self-Evaluation

Discussion should focus on measurable behaviors and how these contributed to or detract from meeting the objectives.

c. Instructors assessment and performance(NCTS-2) recommendations.

- 7. Session and program feedback.
- Document session

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

Discussion'should center on performances and not personal feelings or interpretations and actions.

- Assess the participants performance for those objectives and tasks not included in the crew self-assessment.
   Use the video tape in the assessment to more effectively assess communications, teamwork, and prioritization, if necessary.
- 2. Provide feedback on ways to improve performance as appropriate.
- Distribute Simulator Training Evaluation Feedback Form, NTI-4.4 Attachment 13.
- Provide students with time to complete form.
- Complete Post Evaluation Summary, Attachment 4.
- 2. Place a copy in file for next training session.
- 3. Document any NRC/INPO operating concerns as an items list attached to the training record. (TR)

