

NIAGARA MOHAWK POWER CORPORATION

NINE MILE POINT NUCLEAR STATION

02-REQ-009-IDY-2-9 Revision 0

TITLE: APRM FAILURE/HPCS INADVERTANT INJECTION/FEED
WATER LINE BREAK/SOV RUPTURE

	SIGNATURE	DATE
PREPARED BY	<u>[Signature]</u>	<u>5/30/91</u>
VALIDATED BY	<u>[Signature]</u>	<u>5/30/91</u>
UNIT OPERATIONS TRAINING SUPERVISOR	<u>[Signature]</u>	<u>6/3/91</u>
PLANT SUPERVISOR/ USER GROUP SUPERVISOR	<u>[Signature]</u>	<u>6/4/91</u>

**MASTER
CONTROLLED
DOCUMENT**

Summary of Pages

(Effective Date: 6/4/91)

Number of Pages: 17

Date: May 1991 Pages: 1 - 17

TRAINING DEPARTMENT RECORDS ADMINISTRATION ONLY:

VERIFICATION: _____
DATA ENTRY: _____
RECORDS: _____

19

9304290175 911031
PDR ADDCK 05000410
S PDR

4/29/175



1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
25
26
27
28
29
30
31
32
33
34
35
36
37
38
39
40
41
42
43
44
45
46
47
48
49
50
51
52
53
54
55
56
57
58
59
60
61
62
63
64
65
66
67
68
69
70
71
72
73
74
75
76
77
78
79
80
81
82
83
84
85
86
87
88
89
90
91
92
93
94
95
96
97
98
99
100

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



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



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.



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.
2. 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.



ATTACHMENT 1
PRE-EVALUATION BRIEFING

IV. LESSON CONTENT
LESSON CONTENT

DELIVERY NOTES

NOTES AND
COMMENTS

1. Establish Simulator initial conditions.
2. Bring crew into the classroom and brief using Attachment 6, Simulator Briefing Checklist.
3. 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. AOE's
 - 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.

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.



ATTACHMENT 2

EVALUATOR AND CONSOLE OPERATORS GUIDE

TIME	EVENT	INSTRUCTOR ACTIVITY	PLANT RESPONSE	OPERATOR ACTIONS	EVALUATOR COMMENTS
		<p>Special Instructions:</p> <p>Hang red Above the 100% rod line sign.</p>			
		<p>Simulator Operator:</p> <p>Initialize to IC-20</p>			
		<p>Preset malfunction:</p> <ol style="list-style-type: none"> 1. MF, 1, CU08 2. MF, 2, RD16 	<ol style="list-style-type: none"> 1. RWCU Isolation Failure 2. SDV Rupture 		
		<p>Preset I/O overrides</p> <p>None</p>			



ATTACHMENT 2

EVALUATOR AND CONSOLE OPERATORS GUIDE

TIME	EVENT	INSTRUCTOR ACTIVITY	PLANT RESPONSE	OPERATOR ACTIONS	EVALUATOR COMMENTS
		<p>Provide the following turnover information:</p> <ol style="list-style-type: none"> 1. BOL - 100% power 2. Above the 100% rod line 3. Maintaining power per OP-101D 			
		<p>Out of Service Equipment</p> <p>None.</p>			
		<p>Surveillance required</p> <p>None</p>		<p><u>CREW</u></p> <ol style="list-style-type: none"> 1. Performs panel walkdowns. 	
				<p><u>SSS</u></p> <ol style="list-style-type: none"> 1. Relieves the shift. 	Sat/Unsat/NA



ATTACHMENT 2
EVALUATOR AND CONSOLE OPERATORS GUIDE

TIME	EVENT	INSTRUCTOR ACTIVITY	PLANT RESPONSE	OPERATOR ACTIONS	EVALUATOR COMMENTS
		<p>Wait approximately three minutes after the crew has assumed the shift, and insert the following malfunction:</p> <p>MF; 3, NM20A</p> <p>APRM Channel A fails upscale.</p>		<p><u>CREW</u></p> <ol style="list-style-type: none"> 1. Report/recognize APRM channel a failure. 	Sat/Unsat/NA
				<p><u>CS0/E</u></p> <ol style="list-style-type: none"> 1. Reports that APRM Channel A has failed upscale. 2. Bypasses APRM Channel A (as directed) 3. Resets the 1/2 scram. 	Sat/Unsat/NA Sat/Unsat/NA Sat/Unsat/NA
		<p><u>Role Play</u></p> <p>As maintenance department personnel that were called to the Control Room wait about three minutes and report that the count circuitry for APRM Channel A has failed.</p>		<p><u>SSS</u></p> <ol style="list-style-type: none"> 1. Consults T.S. to determine minimum number of Operable Channels. (3/4.3.1) 2. Directs CS0/E to bypass APRM Channel A. 3. Directs CS0/E to reset 1/2 scram. 4. Call maintenance departments to investigate the APRM Channel. 	Sat/Unsat/NA Sat/Unsat/NA Sat/Unsat/NA Sat/Unsat/NA



ATTACHMENT 2

EVALUATOR AND CONSOLE OPERATORS GUIDE

TIME	EVENT	INSTRUCTOR ACTIVITY	PLANT RESPONSE	OPERATOR ACTIONS	EVALUATOR COMMENTS
		<p>When the actions for the failed APRM Channel have been completed wait approximately three minutes and insert the following malfunction:</p> <p>MF; 4, CS01</p> <p>HPCS - Inadvertant Initiation</p>		<p><u>CREW</u></p> <ol style="list-style-type: none"> 1. Report/recognize power/pressure/level oscillations. Sat/Unsat/NA 2. Report/recognize that HPCS is inadvertently injecting by reporting: <ol style="list-style-type: none"> a) Drywell pressure <1.68# Sat/Unsat/NA b) RPV level >108.8 inches Sat/Unsat/NA <p><u>SSS</u></p> <ol style="list-style-type: none"> 1. Directs operators to secure HPCS after verifying initiation signal is false. Sat/Unsat/NA 	



ATTACHMENT 2

EVALUATOR AND CONSOLE OPERATORS GUIDE

TIME	EVENT	INSTRUCTOR ACTIVITY	PLANT RESPONSE	OPERATOR ACTIONS	EVALUATOR COMMENTS
		<p><u>Role Play</u></p> <p>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.</p>		<p>2. Call maintenance departments to investigate the HPCS System.</p> <p>3. Consults T.S. for the HPCS</p> <p>a) T.S. 3.5.1.c</p> <p>b) T.S. 3.5.1.f</p> <p>4. Call station management in regards to the HPCS becoming INOP.</p>	<p>Sat/Unsat/NA</p> <p>Sat/Unsat/NA</p> <p>Sat/Unsat/NA</p>
		<p>When the actions for the inadvertent HPCS initiation have been completed, insert the following malfunction:</p> <p>MF; 5, FW. 32</p> <p>Feedwater line break inside steam tunnel.</p>		<p><u>CREW</u></p> <p>1. Report/recognize MSIV closure.</p> <p>2. Report/recognize Reactor scram by reporting.</p> <p>a) APRMs <4% power, and</p> <p>b) All rods in</p>	<p>Sat/Unsat/NA</p> <p>Sat/Unsat/NA</p> <p>Sat/Unsat/NA</p>



ATTACHMENT 2

EVALUATOR AND CONSOLE OPERATORS GUIDE

TIME	EVENT	INSTRUCTOR ACTIVITY	PLANT RESPONSE	OPERATOR ACTIONS	EVALUATOR COMMENTS
		<u>NOTE</u> Malfunctions 1 and 2 will become active during this portion of the scenario.		<u>SSS</u> 1. Directs operators to maintain RPV pressure <1037#IAW EOPs using: a) SRV's or b) RCIC or c) RWCU or d) Steam condensing 2. Directs operator to maintain RPV level between 159.3 and 202.3 with: a) Condensate and feed water, or b) RCIC or c) CRD	ISCT #1 Sat/Unsat/NA Sat/Unsat/NA Sat/Unsat/NA Sat/Unsat/NA Sat/Unsat/NA Sat/Unsat/NA Sat/Unsat/NA



ATTACHMENT 2

EVALUATOR AND CONSOLE OPERATORS GUIDE

TIME	EVENT	INSTRUCTOR ACTIVITY	PLANT RESPONSE	OPERATOR ACTIONS	EVALUATOR COMMENTS
				<u>CSO/E</u>	
				1. Maintains RPV pressure <1037# (as directed)	ISCT #2 Sat/Unsat/NA
				2. Maintains RPV level between 159.3 and 202.3 inches (as directed).	Sat/Unsat/NA
				3. Performs scram actions.	
				a) Mode switch to S/O.	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 trip.	Sat/Unsat/NA
				f) Verifies RR pumps trans- fer to the LFMG sets.	Sat/Unsat/NA
				g) Verifies house load have transferred.	Sat/Unsat/NA



ATTACHMENT 2

EVALUATOR AND CONSOLE OPERATORS GUIDE

TIME	EVENT	INSTRUCTOR ACTIVITY	PLANT RESPONSE	OPERATOR ACTIONS	EVALUATOR COMMENTS
		<p><u>Role Play</u></p> <p>As an operator in the plant, wait 2 minutes after the scram and report that there is steam in the Reactor Building.</p>		<p><u>CREW</u></p> <p>1. Reports/recognize that the RWCU system did not isolate.</p>	<p>ISCT #3</p> <p>Sat/Unsat/NA</p>
		<p><u>Role Play</u></p> <p>Wait 2 minutes from the initial report and report that the steam is from the south scram discharge volume.</p>		<p><u>SSS</u></p> <p>1. Directs operators to manually isolate the RWCU system by shutting the 2WCS*102 and 112 valves (IAW EOP-RPV).</p> <p>2. Calls RP to aid in investigation of steam leak.</p>	<p>ISCT #4</p> <p>Sat/Unsat/NA</p> <p>Sat/Unsat/NA</p>
				<p><u>CSO/E</u></p> <p>1. Shuts the 2WCS*102 and 112 valves (as directed).</p>	<p>ISCT #5</p> <p>Sat/Unsat/NA</p>



ATTACHMENT 2
EVALUATOR AND CONSOLE OPERATORS GUIDE

TIME	EVENT	INSTRUCTOR ACTIVITY	PLANT RESPONSE	OPERATOR ACTIONS	EVALUATOR COMMENTS
				<u>SSS/ASSS</u>	
				1. Isolates the leak into the Reactor Building by either:	
				a) If a scram signal is no longer present, directs the scram reset	ISCT #7 Sat/Unsat/NA
				OR	OR
				b) If a scram signal is present, directs installation of RPS jumpers and scram signal reset.	ISCT #4 Sat/Unsat/NA
				<u>CSO/E</u>	
				1. Isolates the leak into the RB (as directed).	Sat/Unsat/NA
				a. Resets the scram.	ISCT #8
				OR	Sat/Unsat/NA
				b. Installs RPS jumpers then resets the scram.	ISCT #8 Sat/Unsat/NA



ATTACHMENT 2

EVALUATOR AND CONSOLE OPERATORS GUIDE

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



ATTACHMENT 3
POST EVALUATION ASSESSMENT

NOTES AND
COMMENTS

LESSON CONTENT

DELIVERY NOTES

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.
3. 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.
 - a. 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.
5. 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:
 - a. Review the learning objectives.
Have the crew state how each was met during the session.



ATTACHMENT 3
POST EVALUATION ASSESSMENT

NOTES AND
COMMENTS

LESSON CONTENT

DELIVERY NOTES

b. Participants Self-Evaluation

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

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.

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

1. 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.

7. Session and program feedback.

1. Distribute Simulator Training Evaluation Feedback Form, NTI-4.4 Attachment 13.

2. Provide students with time to complete form.

8. Document session

1. 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)

