NIAGARA MOHAWK POWER CORPORATION

NINE MILE POINT NUCLEAR STATION

UNIT II OPERATIONS

02-REQ-009-1DY-2-03 Revision 3

TITLE: LPRM FAILS DOWNSCALE/LOSS OF OFF-SITE 115 KV LINE 6/

DRYWELL LEAK WITH FAILURE OF DIV II ECCS TO AUTO START

	SIGNATURE	DATE
PREPARER		6/14/91
VALIDATED BY		6/14/91
TRAINING AREA SUPERVISOR		6/14/91
PLANT SUPERVISOR/ USER GROUP SUPERVISOR	FOR JBH	6/16/91

Summary of Pages

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TRAINING DEPARTMENT RECORDS ADMINISTRATION ONLY:

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I. TRAINING DESCRIPTION

A. Title of Lesson: LPRM Fails Downscale/Loss of Off-Site 115 KV Line 6/Drywell Leak with Failure of Div II ECCS to Auto Start

B. Lesson Description: The scenario begins with the crew operating at full power above the 100% rodline. The first event is a failure of LPRM 40-41B which drives the crew to review technical specifications, bypass the LPRM and reset the APRM C gain. The second event is a loss of off-site line 6. This requires the crew to take action to restore service water and drywell cooling. This event is concluded when the crew has reviewed tech specs and restored power to the RESV B transformer. The final event begins with a leak into the drywell that will ultimately require a reactor scram and drywell sprays. The event is complicated by a failure of DIV II ECCS systems to automatically initiate on the high drywell pressure. The scenario is terminated when the event has been classified and drywell pressure has been reduced below 1.68 psig.

C. Estimate of the Duration of the Lesson: Approximately 50 minutes

D. Method of Evaluation, Grade Format and Standard of Evaluation: Satisfactory completion of Simulator Evaluation performed in accordance with NTI-4.3.6.

E. Method and Setting of Instruction: Simulator Performance

F. Prerequisites:

1. Instructor:
   a. Qualified as a simulator instructor per NTP-16.1.
2. Trainee:
   a. As required per NTP-11

G. References:

1. N2-OP-11, Service Water System
2. N2-OP-29, Reactor Recirc System
3. N2-OP-31, Residual Heat Removal System
4. N2-OP-61A, Primary Containment Ventilation, Purge, and Nitrogen System
5. N2-OP-61B, Standby Gas Treatment
6. N2-OP-70, Station Electrical Feed and 115KV Switchyard
7. N2-OP-72, Standby and Emergency AC Distribution System

8. N2-OP-97, Reactor Protection System
9. N2-OP-101C, Plant Shutdown
10. N2-OP-101D, Power Changes
11. N2-Emergency Operating Procedures
12. N2-EOP-6 EOP Support Procedures
13. EAP-2 Emergency Classifications
14. EPP-20 Emergency Notifications
15. NMP2 Technical Specifications
    a. 3.3.1
    b. 3.8.1.1.a
    c. 3.4.3.2
16. SER 35-87

H. Manipulations

1. O2-REQ-MAN-A07-2-00, Small Loss of Coolant Inside Containment
2. O2-REQ-MAN-A11-2-00, Loss of Electrical Power/Degraded Sources
3. O2-REQ-MAN-B13-2-00, Reactor Scram

II. REQUIREMENTS

A. 10CFR55.45 and 55.49

III. PERFORMANCE OBJECTIVES/ISCT SUMMARY

A. ISCT Summary

ISCT #1 Direct the actions required per EOP-PC Section PCP.
SSS/ASSS (3449430603)
K/A Rating 295024 SG.12-4.5

ISCT #2 Perform the actions required for an automatic initiation
CSO/E of LPCI.
(2059450101)
K/A Rating 203000 A2.14-3.8

ISCT #3 Operate the containment spray system.
CSO/E (2050150101)
K/A Rating 295024 EA1.12-3.8

ISCT #4 Direct the actions required per EOP-PC Section PCP.
SSS (3449430603)
K/A 295024 SG12-4.5

ISCT #5 Operate the Containment Spray System.
CSO/E (2050150101)
K/A 295024 EA1.11-4.2

ISCT #6 Operate the Containment Spray System.
CSO/E (2050150101)
K/A 226001 Gen 13-3.5

ISCT #7 Operate the Containment Spray System.
CSO/E (2050150101)
K/A 230000 Gen 13-4.1

ISCT #8 Classify emergency events requiring emergency plan
SSS/ASSS implementation.
(3440190303)
K/A 294001 A1.16-4.7

ISCT #9 SSS/ASSS — Ensure required notification on on-site and off-site personnel during off normal events.
(3440390303)
K/A 294001 A1.16-4.7

B. Performance Objectives

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

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.

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.

4.0 Operators shall demonstrate "Self Verification" work practices in accordance with Operations Department Instructions.

5.0 Given a reactor plant operating at full power and indications of a failed LPRM the operating crew will bypass the failed LPRM and reset the APRM gains.

6.0 Given a reactor plant operating at full power and a loss of off-site line 6, the operating crew will take the actions required to restore drywell cooling and service water in accordance with procedure.

7.0 Given a reactor plant operating at power with a leak in the drywell the operating crew will take action to manually scram the reactor prior to drywell pressure exceeding 1.68 psig.

8.0 Given a shutdown reactor with a leak in the drywell the operating crew will take action to spray the drywell when suppression chamber pressure exceeds 10 psig.

9.0 Given a shutdown reactor plant with a leak in the drywell the SSS/ASSS/STA will classify the event as an Alert or higher and make the required notifications.

IV. LESSON CONTENT LESSON CONTENT	DELIVERY NOTES	OBJECTIVES/ NOTES
1. Establish simulator initial conditions.		
2. Bring crew into the classroom and brief using Attachment 6, Simulator Briefing Checklist.	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.	
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.	Ensure the participants understand that the evaluators will be taking extensive notes during the session and not to be concerned with the evaluators actions.	
4. Identify the roles of the participants. a. SSS b. ASSS c. CSO d. AOEs e. SEPC (as applicable) f. STA (as 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.		

LESSON CONTENT	DELIVERY NOTES	OBJECTIVES/ NOTES

6. Refer to Attachment 2. Turnover information and conduct shift turnover with the SSS.

TIME	EVENT	INSTRUCTOR ACTIVITY	PLANT RESPONSE	OPERATOR ACTIONS	EVALUATOR COMMENTS

Special Instructions:

Initialize to IC-20

Make a copy of N2-OSP-LOG-W001

Simulator Operation:

Preset Malfunctions:

1,RH14B

Div II ECCS fails to auto initiate

Preset Remote Functions:

None

Preset Instructor Overrides:

None

Provide Turnover Information to SSS

Initial Conditions:

100%, BOL, maintaining power per OP-101D

RWM Step 92, above the 100% rod line

TIME	EVENT	INSTRUCTOR ACTIVITY	PLANT RESPONSE	OPERATOR ACTIONS	EVALUATOR COMMENTS
		Out-of-service equipment: None. Surveillances scheduled: None			
		Allow not more than five minutes to walk down the panels.		Walk down control panels. SSS Briefs crew Crew assumes the shift. Continue with normal power operation.	
T = 0		Commence the Scenario			
T = 1		Enter Malfunction LPRM 40-41B Downscale failure 2,NM154041B			
T = 2		Malfunction 4 effective.	LPRM 40-41B fails AN 603211 LPRM Downscale (Recirc FCV's will ramp open if Recirc Flow Control in auto)	CSO/E Respond/report alarm	Sat/Unsat/NA P.O.#5
		NOTE: If operators ask if FCV LEDs are lit, inform them LED'S not lit. (If Recirc flow control in auto)	T/S requires APRM INOP if less than 2 LPRM's per level or less than 14 LPRM inputs to a channel.	SSS/ASSS Refers to Technical Specifications (3.3.1) 1. Determines TS total number and number per channel requirements met 2. Orders LPRM bypassed	Sat/Unsat/NA Sat/Unsat/NA

TIME	EVENT	INSTRUCTOR ACTIVITY	PLANT RESPONSE	OPERATOR ACTIONS	EVALUATOR COMMENTS
		If requested to bypass LPRM Set RF; page NM10; 128 then report LPRM bypassed.	Bypasses LPRM 40-41B	3. Checks APRMs for proper operation	Sat/Unsat/NA
				4. Contacts Reactor Analyst to calculate and adjust APRM C gain	Sat/Unsat/NA
		ROLE PLAY: If previously requested, as Reactor Analyst, call and tell the CSO you're ready to adjust APRM C gain.			
		Enter Remote Function NM2; 3,.77	Adjusts APRM C AGAF	5. Verifies APRM C AGAF within +/- .02	Sat/Unsat/NA
T = 10		Enter Malfunction 3,ED02B	Loss of power from off-site 115 KV line 6. Div II Diesel Generator starts and supplies the bus. Service water non-essential loads isolated.	Crew	P.O.#6
				1. Recognize/report loss of line 6.	Sat/Unsat/NA
				2. Report the Div II diesel is powering the emergency bus.	Sat/Unsat/NA

TIME	EVENT	INSTRUCTOR ACTIVITY	PLANT RESPONSE	OPERATOR ACTIONS	EVALUATOR COMMENTS
		Role Play: Report as Power Control that there is an electrical fault in the scriba switch yard and an operator is being dispatched.		SSS/ASSS	
				1. Direct actions to restore the service water system in accordance with OP-11.	Sat/Unsat/NA
				2. Direct drywell cooling restored.	Sat/Unsat/NA
				3. Direct instrument N2 restored.	Sat/Unsat/NA
				CSO/E	
				1. Establish service water flow to the A(B) RHR heat exchanger.	Sat/Unsat/NA
				a. Open 2SWP*MOV90A(B)	Sat/Unsat/NA
				b. Throttle 2SWP*MOV33A()B and establish flow greater than 3000 gpm.	Sat/Unsat/NA
				2. After a Div II service water pump starts restore service water.	
				a. Open 2SWP*MOV3A and B	Sat/Unsat/NA
				b. Open 2SWP*MOV19A and B	Sat/Unsat/NA
				c. Open 2SWP*MOV93A and B	Sat/Unsat/NA
				d. Open 2SWP*MOV599	Sat/Unsat/NA

TIME	EVENT	INSTRUCTOR ACTIVITY	PLANT RESPONSE	OPERATOR ACTIONS	EVALUATOR COMMENTS
				3. Restart DW unit coolers.	Sat/Unsat/NA
				4. Restore instrument N2.	
				a. Open 2IAS*SOV184	Sat/Unsat/NA
				b. Open 2IAS*SOV165	Sat/Unsat/NA
				5. Reports GTS running on the Reactor Building.	Sat/Unsat/NA
				6. Reports CMS inboard isolation closed.	Sat/Unsat/NA
				SSS/ASSS	
				1. Direct actions to power reserve B from line 5.	Sat/Unsat/NA
				2. Directs CMS inboard isolations opened.	Sat/Unsat/NA
				CSO/E	
				1. Power reserve B from line 5	
				a. Isolates line 6	
				1) Open MDS4	Sat/Unsat/NA
				2) Open MDS2	Sat/Unsat/NA
				b. Reset lockouts	
				1) Breaker 17-2 LO reset	Sat/Unsat/NA
				2) Breaker 103-4 LO reset	Sat/Unsat/NA

TIME	EVENT	INSTRUCTOR ACTIVITY	PLANT RESPONSE	OPERATOR ACTIONS	EVALUATOR COMMENTS
				c. Close MDS20	Sat/Unsat/NA
				d. Close MDS4	Sat/Unsat/NA
				e. Close BKR 17-2	Sat/Unsat/NA
				f. Close BKR 103-4	Sat/Unsat/NA
		Note: Crew may take action to restore off-site power to Div II switchgear.	3.8.1.1.a 1 hr. - Demonstrate operability of remaining AC sources, perform surv. req. 4.8.1.1.1 initially coolant least every 8 hrs. 24 hr. - If EDG 1/3 not tested within past 24 hrs. perform serv. req. 4.8.1.1.2.a.4 and 4.8.1.1.2.a.5. 72 hr. - Restore off-site circuit within 72 hrs. or be in at least hot shutdown within the next 12 hrs. and cold shut-down within the following 24 hrs.	SSS/ASSS 1. Review T/S 3.8.1.1.a and direct required actions.	Sat/Unsat/NA
				CSO/E 1. Commence N2-OSP-LOG-W001 to verify breaker lineups.	Sat/Unsat/NA
				2. Restores CMS inboard isolations.	
				a. Open 2CMS*SOV61B	Sat/Unsat/NA
				b. Open 2CMS*SOV61B	Sat/Unsat/NA
				c. Open 2CMS*SOV63A	Sat/Unsat/NA
				d. Open 2CMS*SOV63B	Sat/Unsat/NA
T = 20		Enter Malfunction 4,RR19,12	"DW Floor Drain Leak Rate High" Annunciator Drywell pressure/temp rising. Drywell floor drains leak rate rising.	Crew 1. Report drywell leak rate recorder readings.	Sat/Unsat/NA
				2. Monitor containment para-meters.	Sat/Unsat/NA

TIME	EVENT	INSTRUCTOR ACTIVITY	PLANT RESPONSE	OPERATOR ACTIONS	EVALUATOR COMMENTS
			Reports leak rate recorder upscale.	SSS/ASSS	
				1. Check TS for containment leakage 3.4.3.2 (>5 gpm unidentified, reduce to within limits within 4 hours or hot shutdown within 12 hours).	Sat/Unsat/NA
T = 25		Role Play: As power control report to the Control Room that a back hoe digging in the scriba yard severed the control power line to the breakers.		2. Check TS for containment pressure 3.6.1.5 (return pressure to within the limits in 1 hour or be in at least hot shutdown within next 12 hours).	Sat/Unsat/NA
				3. Determines validity of alarm and that drywell pressure is increasing.	Sat/Unsat/NA
				4. Directs SBGT placed on the drywell.	Sat/Unsat/NA
				5. Orders power reduction.	Sat/Unsat/NA

TIME	EVENT	INSTRUCTOR ACTIVITY	PLANT RESPONSE	OPERATOR ACTIONS	EVALUATOR COMMENTS
		After SBGT has been operating for 5 minutes raise leak rate to 25. Enter 4,25		CSO/E 1. Reduces recirc flow to minimum. 2. Place SBGT on the drywell per OP-61A. a. Start SGTS train b. Open 2GTS*SOV102 c. Open 2IAS*SOV168/180 d. Open 2CPS*AOV108/110	Sat/Unsat/NA Sat/Unsat/NA Sat/Unsat/NA Sat/Unsat/NA Sat/Unsat/NA
			DW pressure continues to rise.	Crew 1. Continues investigation into the source of the leak. 2. Reports DW pressure rising quickly.	Sat/Unsat/NA Sat/Unsat/NA
		After the mode switch is in shutdown raise the leak rate to 60. Enter 4,60		SSS/ASSS 1. Directs manual scram prior to drywell pressure exceeding 1.68 psig.	Sat/Unsat/NA P.O.#7

TIME	EVENT	INSTRUCTOR ACTIVITY	PLANT RESPONSE	OPERATOR ACTIONS	EVALUATOR COMMENTS
				CSO/E	
				1. Perform actions of OP-101C, H.1.0 mode switch to S/D	Sat/Unsat/NA
				2. Report all rods full in	Sat/Unsat/NA
				3. Verify/Report APRMs decreasing	
				Insert SRMs/IRMs	Sat/Unsat/NA
				4. Verify and report house loads transferred.	Sat/Unsat/NA
			Drywell pressure exceeds 1.68		
			Div II ECCS fails to start.	SSS	
				1. Enter EOP-RPV control: execute Sections RL, RP, and RQ concurrently.	Sat/Unsat/NA
				a. Directs level maintained 159.3" to 202.3".	Sat/Unsat/NA
				b. Direct RPV pressure maintained less than 1037.	Sat/Unsat/NA
				CSO/E	
				1. Takes appropriate action to maintain RPV pressure within the prescribed band.	Sat/Unsat/NA
				2. Takes appropriate action to maintain RPV level within the prescribed band.	Sat/Unsat/NA

TIME	EVENT	INSTRUCTOR ACTIVITY	PLANT RESPONSE	OPERATOR ACTIONS	EVALUATOR COMMENTS
				SSS	
				1. Enters EOP-PC:	Sat/Unsat/NA
				Execute DWT, SPL, PCP, PCH, and SPT concurrently.	
				a. Directs drywell cooling restored.	Sat/Unsat/NA
				b. Directs suppression chamber sprays be placed in service.	ISCT #1 Sat/Unsat/NA
				c. Directs H_2/O_2 analyzers restored.	Sat/Unsat/NA
				CSO/E	
				1. Restores DW cooling	
				a. DW unit cooler WTR DIV/ I/II LOCA overrides to on.	Sat/Unsat/NA
				b. Open 2CCP*MOV124/122/ 265, and 273.	Sat/Unsat/NA
				c. Unit cooler fans GR 1/2 LOCA overrides to on.	Sat/Unsat/NA
				d. Start unit coolers.	Sat/Unsat/NA
				2. Reports Div II ECCS failed to initiate.	ISCT #2 Sat/Unsat/NA
		Note: Div II ECCS will operate if manually started.			

TIME	EVENT	INSTRUCTOR ACTIVITY	PLANT RESPONSE	OPERATOR ACTIONS	EVALUATOR COMMENTS
				3. Places RHR A(B) in suppression chamber sprays per OP-31.	Sat/Unsat/NA
				a. Start/verify RHR pump A(B).	Sat/Unsat/NA
				b. Open SWP*MOV90A(B) and throttle SWP*MOV33A(B) to establish approximately 7400 gpm.	Sat/Unsat/NA
				c. Open FV 38A(B) establish approximately 7450 gpm.	Sat/Unsat/NA
				d. Open MOV33 to establish SP spray flow.	ISCT #3 Sat/Unsat/NA
				4. Restores H_2/O_2 analyzers to service.	Sat/Unsat/NA
				SSS/ASSS	
				1. Directs RHR B and C manually started.	Sat/Unsat/NA
				CSO/E	
				1. Manually starts RHR B and C pumps.	Sat/Unsat/NA

TIME	EVENT	INSTRUCTOR ACTIVITY	PLANT RESPONSE	OPERATOR ACTIONS	EVALUATOR COMMENTS
				2. Verifies min flow valves open.	Sat/Unsat/NA
				Crew	
				1. Continue to monitor and report plant parameters.	Sat/Unsat/NA
			Drywell pressure continues increasing.	ASSS/CSO/E	
					Sat/Unsat/NA
				1. Verify isolation groups 3, 4, 8, and 9 have isolated.	
		Note: SSS may decide to commence a cooldown to lower RPV pressure.			
T = 45			When suppression chamber exceeds 10 psig or before drywell temperature is above 340°F.	SSS	
				1. Direct actions for drywell spray.	ISCT #4 Sat/Unsat/NA P.O. #8
				a. Orders recirc pumps and drywell unit coolers tripped.	Sat/Unsat/NA
				b. Directs a loop of RHR to be placed in drywell sprays.	Sat/Unsat/NA

TIME	EVENT	INSTRUCTOR ACTIVITY	PLANT RESPONSE	OPERATOR ACTIONS	EVALUATOR COMMENTS
		NOTE: Crew cannot initiate DW spray on Div. II due to no initiations signal present. If Div. II is used for suppression pool spray it will not automatically terminate when DW pressure goes below 1.68 psig.		CSO/E	
				1. Initiate DW sprays	ISCT #5 Sat/Unsat/NA
				a. Close FV 38 (if open)	Sat/Unsat/NA
				b. Open MOV15	Sat/Unsat/NA
				c. Open MOV25	Sat/Unsat/NA
				2. When DW pressure drops below 1.68 psig, terminate DW sprays.	ISCT #6 Sat/Unsat/NA
				3. When suppression chamber pressure drops below 1.68, terminate suppression chamber sprays.	ISCT #7 Sat/Unsat/NA
				SSS/ASSS	
				1. Classify event as an alert condition.	ISCT #8 P.O. #9 Sat/Unsat/NA
				2. Makes/directs notifications to be made.	ISCT #9 Sat/Unsat/NA
		Termination Cue: Drywell pressure below 1.68 psig. RPV pressure and level being controlled in ordered bands.			

POST EVALUATION ASSESSMENT

LESSON CONTENT	DELIVERY NOTES	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.
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.
4. Evaluation Team Shall:
   a. Determine crew strengths and areas for improvement.
   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.

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