Scenario Title: LOSS OF ELECTRICAL POWER/FIRE (SWG+015/BYS*002B)

Scenario Duration: 2 hours

Scenario Number: 02-REQ-009-TRA-2-02

Revision Number: 0

Course: Licensed Operator Requalification

Q7-190-91

Reviewed By: _____ / 1/15/90
Operations Training Supervisor Date

Reviewed By: K.T. Sufnell / 1/26/90
Assistant Training Superintendent Date

Approved By: M.J. Colombo / 1/29/90
Superintendent of Operations Date

MASTER CONTROLLED DOCUMENT

ATTACHMENT 5
LESSON PLAN TEMPORARY/PUBLICATION/ADDENDUM CHANGE FORM

The attached change was made to:

Lesson plan title: Loss of Electrical Power / Fire

Lesson plan number: 02-REQ-009-TRA-2-02

Name of instructor initiating change: D. Pettit

(Pg 4) Reason for the change: Added a Industry Event section to the ref. portion of LP and added SOER-83-5 as a ref. - also added discussion of SOER 83-5 to scenario body pg 11 instructor comments section

Type of change:

1. Temporary change ____
2. Publication change ____
3. Addendum change ✓

Disposition:

✓ 1. Incorporate this change during the next scheduled revision.

____ 2. Begin revising the lesson plan immediately. Supervisor initiate the process.

____ 3. To be used one time only.

Approvals:

Instructor: David W. Pettit /Date 8-9-91

Supervisor Operations Training (or designee): [signature] /Date 8/9/91

SCENARIO SUMMARY

LOSS OF ELECTRICAL POWER
(LOSS OF SWG015, LOSS OF DIV 2 EMERGENCY DC BUS B DUE TO FIRE)

While operating at 100% power in the loop manual, a malfunction on 2 NNS-SWG015 will cause the following major loads to become deenergized.

a. CCP-P1B
b. CCP-P2B
c. RDS-P1B
d. WCS-P1B
e. DRS-UC1B, 2B, 3B
f. RPM-MG1B
g. MSOP
h. SOVP
i. RSOP
j. IAS - Air Compressor 1B

SCENARIO OBJECTIVES

A. Licensed Reactor Operators (CSO/NAOE):

RO-1	2000320501	Perform the actions required for a loss of DC power.
RO-2	2009170501	Perform the actions required for a normal electrical system failure.
RO-3	2000340401	Perform the actions required for a CRD System failure (pump trip)
RO-4	2000670501	Perform the actions required for a fire.
RO-5	2009020401	Perform the actions required for a loss of RPS channel.

B. Licensed Senior Reactor Operators (SSS/ASSS)

SRO-1	3449730403	Respond to a loss of CRD pumps during plant operations.
SRO-2	3449230503	Direct actions required for loss of a RPS channel.
SRO-3	3449150503	Direct actions required for a loss of electrical power.
SRO-4	3449140403	Perform required actions for a fire.
SRO-5	3449930403	Evaluate a fire's impact on station safety and operation.
SRO-6	3450420503	Classify/reclassify an emergency condition

(*) Individual Simulator Critical Task
(**) Crew Simulator Critical Task

NMP 2 CONTROL ROOM REFERENCES

PROCEDURES:

N2-OP-30, Control Rod Drive Hydraulics
N2-OP-13, Reactor Building Closed Loop Cooling Water
N2-OP-71, 13.8KV/4160V/600V AC Distribution
N2-OP-97, Reactor Protection
N2-OP-101C, Plant Shutdown
S-EAP-2, Classification of Emergency Conditions
S-EPP-2, Fire Fighting
S-EPP-20, Emergency Notifications

TECHNICAL SPECIFICATIONS:

3.4.4 Chemistry
3.8.2 DC sources, operating
3.7.1 Plant Service Water, operating
3.8.1 AC Sources, operating

Industry Events

SOER 83-5 Vital DC Power system failures (TRR G00801-09)

TIME	SCENARIO	INSTRUCTOR ACTIVITY	PLANT RESPONSE	OPERATOR ACTIONS	INSTRUCTOR COMMENTS

Special Instructions:

Markup as out-of-service:

"B" RDS Flow Control Valve

Simulator Operation:

Initialize: IC-18	100%, MOC, WINTER
Place "A" RDS Flow Control	Deicing ring in service
Valve in service	
Place "B" RDS Pump in service	

Preset Malfunctions:

1, ED04D,,,5	Electrical Fault on
	2NNS-SWG015

Initial Conditions:

100% power, MOC, maintaining

power per N2-OP-101A

RWM Group 147

Operating above 100% rod line

Maintenance repairing

B RDS Flow Control Valve

packing leaking severly

DRMS Computer is operational

B RDS pump is in service

TIME	SCENARIO	INSTRUCTOR ACTIVITY	PLANT RESPONSE	OPERATOR ACTIONS	INSTRUCTOR COMMENTS
5	1	Malf. 1, ED04D Electrical Fault on 2NNS-SWG015		<u>CSO/E</u> 1. Identify which annunciators are in alarm. 2. Silence alarms 3. Report loss of SWG015 due to electrical fault to SSS. 4. Identify the appropriate annunciator response procedure.	RO-2
			The following major equipment loses power: 1. RDS pump B 2. RBCLC pump P1B 3. RBCLC Booster Pump P3B 4. 2NJS-US6 a. RWCU pump B b. Inst Air comp B c. 2NHS-MCC009 1. RPS MG Set B	<u>SSS/ASSS</u> 1. Identify failure as a malfunction of 2NNS-SWG015 2. Direct actions per appropriate annunciator response procedure.	SRO-3
				<u>SSS/ASSS</u> 1. Directs electrical maintenance to go to 2NNS-SWG015 and report status.	

TIME	SCENARIO	INSTRUCTOR ACTIVITY	PLANT RESPONSE	OPERATOR ACTIONS	INSTRUCTOR COMMENTS
			Integrated plant response a. No RDS pump running. b. RHCU pump trips. c. Half scram due to loss of RPS MG set. d. Loss of B RBCLC pumps.	2. Directs E operator/ASSS to identify equipment lost using prints/load lists. CSO/E 1. Recognizes loss of RDS pump and reports commencing recovery to SSS. Performs the following per N2-OP-30 Section H. a. Monitors for absence of accumulator faults. b. Closes RDS FCV c. Starts RDS pump A d. Restores system to normal operation.	RO-3 Monitor for correct procedure implementation. Improper implementation could result in T.S. violation or control rod drift.
		In plant operator will discover a time overcurrent flag at 2NNS-SWG015.		2. Directs in plant operator to 2NNS-SWG015 to determine cause of trip.	SRO-3

TIME	SCENARIO	INSTRUCTOR ACTIVITY	PLANT RESPONSE	OPERATOR ACTIONS	INSTRUCTOR COMMENTS
				3. Requests electrician services at SWG015 to assist in determination of cause of the trip.	
				4. Starts or verifies started C RBCLC pumps per N2-OP-13 alarm response 601252.	
				5. Directs an E operator to transfer RPS to alternate B per N2-OP-97 Section G.	RO-5 Monitor for early recognition of need to reset EPA breakers.
				<u>SSS/ASSS</u>	
				1. Notifies chemistry of loss of RWCU A and sampling requirements of T.S. 3.4.4.	
				2. Directs any of the above actions not completed.	SRO-1, 2, 3
30	2	No malfunction: Plant electricians dispatched to 2NNS-SWG015 report a wisp of smoke coming from cable trays in the overhead. The electricians will attempt to identify the faulty tray when requested to, but will not be successful.	None	<u>SSS/ASSS</u>	
				1. Directs entry into EPP-2, response of fires.	SRO-4
				<u>CSO/E</u>	
				1. Sounds fire alarm and initiates EPP-2 actions..	RO-4

TIME	SCENARIO	INSTRUCTOR ACTIVITY	PLANT RESPONSE	OPERATOR ACTIONS	INSTRUCTOR COMMENTS
				SSS/ASSS 1. Reviews emergency plan and directs actions to determine exact fire location and whether safety related circuits are affected.	SRO-5
		Call as Nuclear Fire Chief and verify fire announcement. Approximately 5 minutes after the alarm report that fire department is on scene searching for fire.			
45	3	2,ED09B,,,45 loss of 2BYS*002B IO overrides to occur with malf. 2RCS*SOV79A-C/B-C,,ON 2RCS*SOV89A-C/B-C,,ON 2RCS*SOV81A-C/B-C,,ON 2RCS*SOV82A-C/B-C,,ON	Electrical fault on Division II 125V DC bus 2BYS*002B Major plant response 1. Loss of control for all Division 2 Equipment. 2. Division 2 Containment Isolation. 3. Division I Service Water Isolation. 4. Division 2 GTS initiates.	CSO/E 1. Recognize/report trip of Division II 125V DC. 2. Recognize/report isolation of SWP. 3. Recognize/report containment isolations; GTS initiation. SSS/ASSS 1. Direct action to maintain SWP System operation.	RO-1

TIME	SCENARIO	INSTRUCTOR ACTIVITY	PLANT RESPONSE	OPERATOR ACTIONS	INSTRUCTOR COMMENTS
		FREEZE IF NEEDED		2. Review emergency plan and declare an "Alert" based on a fire affecting one division of safety systems. 3. Direct restoration of drywell cooling. 4. Determines that reactor power control with recirc flow has been lost. 5. Determines that a reactor scram is needed. CSO/E 1. When directed, carries out scram actions per OP-101-C. 2. Restore drywell cooling. 3. Attains directed SWP lineup.	SRO-6 Indirectly the loss of SWP can be handled with the loss of Div II off-site power procedure of OP-11 and the SWP isolation recovered. The Div II pumps should be locally tripped to prevent running without protection which will require reactor shutdown. Discuss effects of loss of DC on plant equipment. 1. Div II SWP pumps cannot trip on fault. 2. Div II isolation valves are all closed.

TIME	SCENARIO	INSTRUCTOR ACTIVITY	PLANT RESPONSE	OPERATOR ACTIONS	INSTRUCTOR COMMENTS
					3. Drywell cooling can be restored using LOCA over-ride. (except fans without power) 4. Div II diesel will not start. 5. Div II SWG*103 will not trip normally on fault. 6. Unable to control power in normal manner. Discuss most prudent course of action. 1. Electrical fire of unknown scope affects an entire division of safe shutdown equipment.

TIME	SCENARIO	INSTRUCTOR ACTIVITY	PLANT RESPONSE	OPERATOR ACTIONS	INSTRUCTOR COMMENTS
					2. Unable to control reactor power normally. 3. SWP System: continued operation of Div II pumps is undesirable. 4. Deenergizing SWG*103 may be necessary. 5. Should judge continued operation with these problems imprudent and scram the reactor. 6. Discuss EAP-2 fire vs. loss of DC power action levels.
		Allow crew to complete actions through scram, restoring drywell cooling and completing initial notification fact sheet then terminate the session.			Discuss 50ER 83-5 with crew to identify that DC system failures have occured due to personnel error, lack of adequate procedures and internal component failure. (TRR 600801-09)