AMERICAN ELECTRIC POWER

COOK NUCLEAR PLANT TRAINING CENTER

Bridgman, Michigan

OPERATIONS JPM

TRAINING PROGRAM TITLE	INITIAL LICENSE TRAINING	**TIME:**	15 MINUTES
NUMBER AND TITLE:	NRC2010-Inp01 S/G 2/3 Level Control through AFW Unit Crosstie	**REVISION:**	0
SCOPE OF REVISION	**Initial Issue: From: NRC2007-INP02**		

			DATE:
PREPARED BY: (Exam Writer)	Name:		
	Signature:		
APPROVED BY: (Facility Reviewer)	Name:		
	Signature:		

REFERENCES/NRC KA/TASKS

Procedure:	02-OHP-4025-LS-3-1, R4	Steam Generator 2/3 Level Control
K/A Number:	APE 054 AA1.01	Ability to operate and / or monitor the following as they apply to the Loss of Main Feedwater (MFW): (CFR 41.7 / 45.5 / 45.6) *AFW controls, including the use of alternate AFW sources*
K/A Imp.:	RO: 4.5 SRO: 4.4	
Task Number:	05600290604	Establish Local Control of AFW to Maintain SG Level

TRAINING AIDS/TOOLS/EQUIPMENT

None

HANDOUTS

Task Briefing
02-OHP-4025-LS-3 Steam Generator 2/3 Level Control

ATTACHMENTS

None

EVALUATION SETTINGS

In-Plant

EVALUATION METHOD:	PERFORM: ☐	SIMULATE: ☒

SIMULATOR/LAB SETUP

None

EVALUATOR INSTRUCTIONS

Provide the operator with a of 02-OHP-4025-LS-3, Steam Generator 2/3 Level Control.

TASK BRIEFING

You are an RO on Unit 2

Unit 2 has experienced an Appendix R Fire event and is in the process of establishing local control. The Unit Supervisor has requested that you perform 02-OHP-4025-LS-3-1, Steam Generator 2/3 Level Control, to align the 1W MDAFP to Unit 2 SG 2/3.

GENERAL STANDARDS/PRECAUTIONS

Perform SG 2/3 level control operations locally in response to an Appendix R event forcing control room evacuation.

EXPECTED ACTIONS	CUES/STANDARDS ("**CS**" Indicates Critical Standard)

Number:	Title:	Revision Number:
2-OHP-4025 LS-3	**STEAM GENERATOR 2/3 LEVEL CONTROL**	4

STEP | ACTION/EXPECTED RESPONSE | RESPONSE NOT OBTAINED

LS-3-1
SG 2/3 Level Control Using 1W MDAFP

NOTE

- The following steps will be performed in Turbine Building on 613' elevation, in the Unit 2 4KV switchgear room mezzanine.
- If this procedure was entered via 2-OHP-4025-001-001 due to a fire in the 4KV mezzanine area, the following step may be N/A (21D bus has been de-energized).

1. Open Breakers:

- 2-EZC-D-R3B, 2-FMO-222 (2E MDAFP To #22 SG)
- 2-EZC-D-R3C, 2-FMO-232 (2E MDAFP To #23 SG)

NOTE

The following steps will be performed in the Auxiliary Building on 591' elevation, in the SUFT area.

2. Proceed To 2-LSI-2 And Locate The Following:

- 2-BLI-120, #22 SG Wide Range Level
- 2-BLI-130, #23 SG Wide Range Level

(LS-3-1, page 1 of 3)

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ACTIONS:

NOTE: To Open the Breakers the handle must be pushed down to the RESET position. Cue the operator that a "Click" sound is heard.

NOTE: If candidate desires to check internal breaker position, then provide picture of Breaker Internals. (Notch up on silver operator indicates OFF position)

STANDARD: **(CS)** The operator locates and simulates opening the supply breakers for 2-FMO-222 and 2-FMO232
SAT: ☐ UNSAT: ☐

STANDARD: The operator locates indications on 2-LSI-2.
SAT: ☐ UNSAT: ☐

EXPECTED ACTIONS	CUES/STANDARDS ("**CS**" Indicates Critical Standard)

Number:	Title:	Revision Number:
2-OHP-4025 LS-3	**STEAM GENERATOR 2/3 LEVEL CONTROL**	4

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED

LS-3-1
SG 2/3 Level Control Using 1W MDAFP

NOTE

Control Room wide range SG level indication for #22 and #23 SGs will be lost when SG level indication is placed in Local.

3. **Place SG Level Indication Remote/Local Switches In Local:**

   - 2-43-BLI-120, Steam Generator 2 Level 2-BLI-120 Indicator Select
   - 2-43-BLI-130, Steam Generator 3 Level 2-BLI-130 Indicator Select

4. **Verify Auxiliary Feedwater To #22 And #23 Steam Generators - AVAILABLE:**

   - 1W MDAFP - RUNNING

(LS-3-1, page 2 of 3)

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STANDARD: **(CS)** The operator places the switches for BLI-120 and BLI-130 to the LOCAL position.
SAT: ☐ UNSAT: ☐

CUE: Meters BLI-120 and BLI-130 come on scale

CUE: The 1W MDAFW PP is running and with manual crosstie to Unit 2 open.

EXPECTED ACTIONS	CUES/STANDARDS ("**CS**" Indicates Critical Standard)

Number:	Title:	Revision Number:
2-OHP-4025 LS-3	**STEAM GENERATOR 2/3 LEVEL CONTROL**	4

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED

LS-3-1
SG 2/3 Level Control Using 1W MDAFP

NOTE

Auxiliary feedwater flowrate will depend on steam generator steaming rate and RCS cooldown rate.

5. **Maintain #22 And #23 Steam Generators Levels - 50% TO 55%:**
   - Locally operate auxiliary feedwater flow control valves using handwheels:
     - 2-FMO-222, 2E/1W MDAFP To #22 SG
     - 2-FMO-232, 2E/1W MDAFP To #23 SG
   - Monitor the following at 2-LSI-2:
     - 2-BLI-120, #22 SG Wide Range Level
     - 2-BLI-130, #23 SG Wide Range Level
6. **Report 02-OHP-4025-LS-3, Steam Generator 2/3 Level Control, LS-3-1, SG 2/3 Level Control Using 1W MDAFP, Complete Upon Initiating Auxiliary Feedwater Flow To #22 And #23 Steam Generators**
7. **Stand By For Further Instructions**

-END OF ATTACHMENT-

(LS-3-1, page 3 of 3)

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CUE: Levels on BLI-120 and BLI-130 are currently 39% and slowly lowering

STANDARD: **(CS)** The operator locates and simulates manual operation of 2-FMO-222 and 2-FMO-232.
SAT: ☐ UNSAT: ☐
NOTE: Manual Valve Operation Actions/CUEs:

1. Engage Handle
2. Turn Handlewheel Counter Clockwise
3. Observe Stem Rising or Listen for Flow noise.

STANDARD: The operator locates monitors SG WR level on 2-LSI-2
SAT: ☐ UNSAT: ☐

CUE: Levels on BLI-120 and BLI-130 are currently 40% and slowly rising

STANDARD: The operator reports task is complete.
SAT: ☐ UNSAT: ☐

TERMINATION CUE: This JPM is complete.

Task Briefing

You are an RO on Unit 2

Unit 2 has experienced an Appendix R Fire event and is in the process of establishing local control. The Unit Supervisor has requested that you perform 02-OHP-4025-LS-3-1, Steam Generator 2/3 Level Control, to align the 1W MDAFP to Unit 2 SG 2/3.

AMERICAN ELECTRIC POWER

COOK NUCLEAR PLANT TRAINING CENTER

Bridgman, Michigan

OPERATIONS JPM

TRAINING PROGRAM TITLE	INITIAL LICENSE TRAINING	**TIME:**	10 MINUTES
NUMBER AND TITLE:	NRC2010-Inp02 Locally control the blender to Charging Pump suction (QRV-400)	**REVISION:**	0
SCOPE OF REVISION	**Initial Issue** **From: AE-O-E234**		

			DATE:
PREPARED BY: (Exam Writer)	Name:		
	Signature:		
APPROVED BY: (Facility Reviewer)	Name:		
	Signature:		

REFERENCES/NRC KA/TASKS

Procedure:	01-OHP-4025-R-12, R5	COMPONENT RESTORATION
K/A Number:	068.AA1.22	Ability to operate and / or monitor the following as they apply to the Control Room Evacuation: (CFR 41.7 / 45.5 / 45.6) *Flow control valve for RCS charging header*
K/A Imp.:	RO: 4.0 SRO: 4.3	
Task Number:	APR0030604	Locally control air operated isolation valves.

TRAINING AIDS/TOOLS/EQUIPMENT

None

HANDOUTS

Task Briefing
1-OHP 4025.R-12-18 Component Restoration

ATTACHMENTS

None

EVALUATION SETTINGS

In-Plant

EVALUATION METHOD:	PERFORM: ☐	SIMULATE: ☒

SIMULATOR/LAB SETUP

None

EVALUATOR INSTRUCTIONS

Note: This JPM is based on 1-OHP-4025-R-12-18 Rev. 5, Component Restoration. Any subsequent revisions to the procedures will require a review of this JPM to ensure that the

content of the JPM is still valid. This JPM may be used without revision if the procedure changes do not affect the JPM.

1. Brief student.
2. Announce start of JPM. Perform evaluation.
3. When evaluation is complete, announce end of JPM. +
4. Document evaluation (may be delayed until the end of a series of JPMs).
5. Give copy of Task Briefing to examinee.

TASK BRIEFING

The Shift Manager has implemented Emergency Remote Shutdown procedure 01-OHP-4025-001-001. **Unit 1** is in mode 3 with Control Air available.

The SM directs you to establish local control capability for 1-QRV-400, Blender to CHG Pump Suction, then OPEN the valve in accordance with 01-OHP-4025 Section R-12-18, Local Control of Air Operated Isolation Valves.

GENERAL STANDARDS/PRECAUTIONS

Establish local control of QRV-400, Blender to CHG Pumps Suction, in accordance with approved procedure and demonstrate proper operation of the valve.

EXPECTED ACTIONS	CUES/STANDARDS ("**CS**" Indicates Critical Standard)

Number: 1-OHP-4025 R-12	Title: COMPONENT RESTORATION	Revision Number: 5

STEP | ACTION/EXPECTED RESPONSE | RESPONSE NOT OBTAINED

R-12-18

Local Control Of Air Operated Isolation Valves

(Step 1 Continued From Previous Page)

TABLE 2

VALVE NUMBER	LOCATION
1-QRV-302	Aux bldg elev 633 by CCW valve from letdown
1-QRV-303 1-QRV-400	Aux bldg elev 609 by local VCT level indication
1-QRV-411 1-QRV-412	Aux bldg elev 587 south side of South BA Tank
1-WCR-901 1-WCR-902 1-WCR-903 1-WCR-913 1-WCR-914 1-WCR-915 1-WCR-921 1-WCR-922 1-WCR-923 1-WCR-933 1-WCR-934 1-WCR-935	Aux bldg elev 609 on the west wall before entering the East NE5W Valve Gallery
1-WCR-961 1-WCR-962 1-WCR-963 1-WCR-965 1-WCR-966 1-WCR-967	Aux bldg elev 612 on the outside of the east wall of the Instrument Ventilation Room by #4 feed reg valve

(Step 1 Continued On Next Page)

(R-12-18, page 2 of 4)

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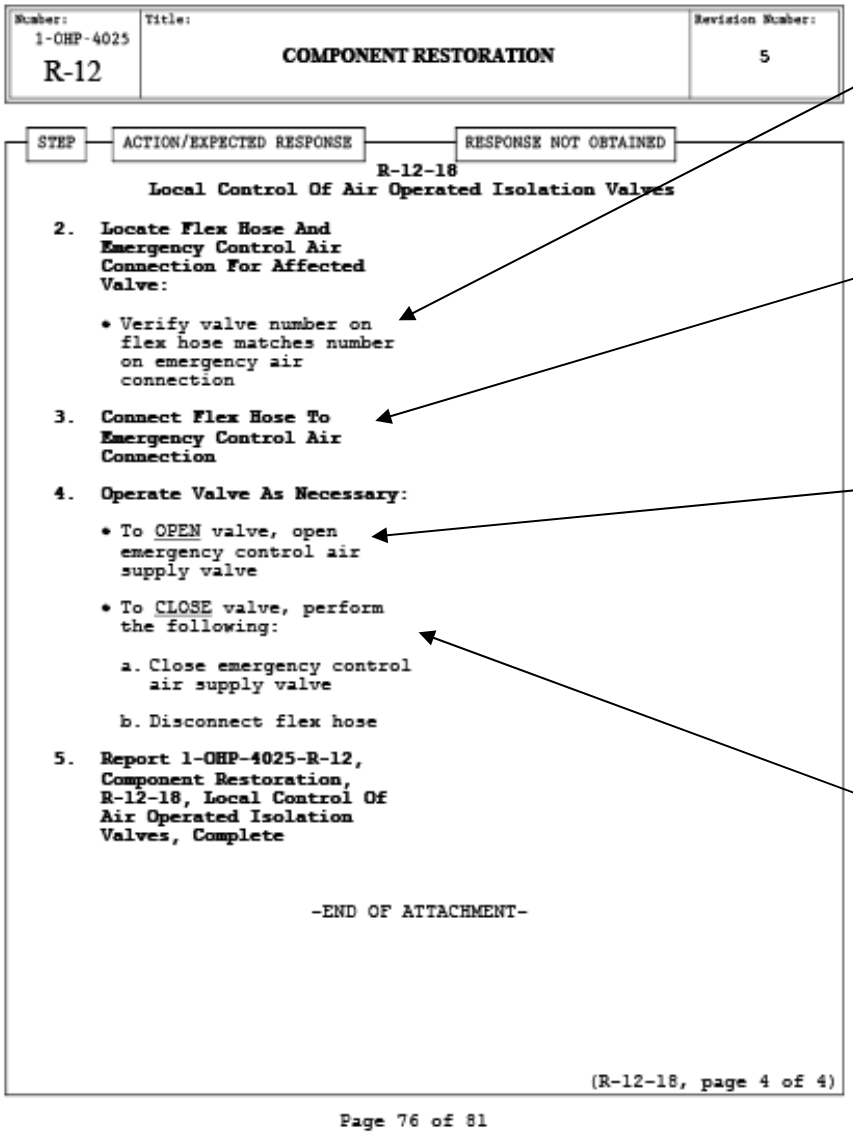
CUE: Typical response to operator when operating valves is when near end of travel "resistance is felt"

STANDARD: Operator correctly identifies QRV-400 in Table 2
SAT: ☐ UNSAT: ☐

EXPECTED ACTIONS	CUES/STANDARDS ("**CS**" Indicates Critical Standard)



Number:	Title:	Revision Number:
1-OHP-4025 R-12	**COMPONENT RESTORATION**	5

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED

R-12-18
Local Control Of Air Operated Isolation Valves

2. **Locate Flex Hose And Emergency Control Air Connection For Affected Valve:**
   - Verify valve number on flex hose matches number on emergency air connection
3. **Connect Flex Hose To Emergency Control Air Connection**
4. **Operate Valve As Necessary:**
   - To OPEN valve, open emergency control air supply valve
   - To CLOSE valve, perform the following:
     a. Close emergency control air supply valve
     b. Disconnect flex hose
5. **Report 1-OHP-4025-R-12, Component Restoration, R-12-18, Local Control Of Air Operated Isolation Valves, Complete**

-END OF ATTACHMENT-

(R-12-18, page 4 of 4)

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STANDARD: Operator verifies that the valve number on flex hose matches number on emergency connections.
SAT: ☐ UNSAT: ☐

STANDARD: **(CS)** - Operator pulls back retaining collar, then inserts hose and ensures retaining ring snaps back into place.
SAT: ☐ UNSAT: ☐

CUE: You hear a click when the hose is connected.

STANDARD: **(CS)** Operator simulates opening emergency control air supply valve.
SAT: ☐ UNSAT: ☐

CUE: States resistance is felt when simulating opening control air valve

CUE: When operator informs SM that QRV-400 is open state "SM directs operator to close QRV-400, Blender to Charging Pump Suction."

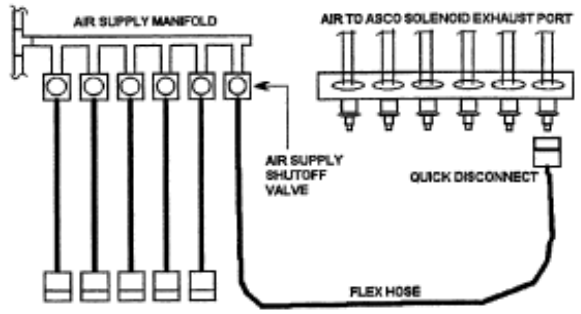
STANDARD: **(CS)** Operator simulates closing emergency control air supply valve and then removes hose from emergency air station.
SAT: ☐ UNSAT: ☐

CUE: A brief hiss of air can be heard when disconnecting hoses. Air flow can be continuous if control air isolation is not closed before removing the flex hose.

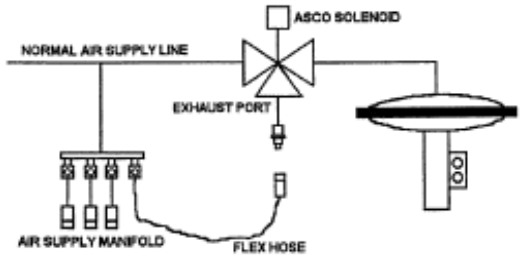
EXPECTED ACTIONS	CUES/STANDARDS ("**CS**" Indicates Critical Standard)

Number: 1-OHP-4025 R-12	Title: COMPONENT RESTORATION	Revision Number: 5

R-12-18
Figure 1, Remote Shutdown Station



SCHEMATIC OF INDIVIDUAL VALVE BYPASSES



-END OF FIGURE-

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TERMINATION CUE: When report is made that QRV-400, Blender to Charging Pump Suction, is closed, then, "**This JPM is complete."**

Task Briefing

The Shift Manager has implemented Emergency Remote Shutdown procedure 01-OHP-4025-001-001. **Unit 1** is in mode 3 with Control Air available.

The SM directs you to establish local control capability for 1-QRV-400, Blender to CHG Pump Suction, then OPEN the valve in accordance with 01-OHP-4025 Section R-12-18, Local Control of Air Operated Isolation Valves.

AMERICAN ELECTRIC POWER

COOK NUCLEAR PLANT TRAINING CENTER

Bridgman, Michigan

OPERATIONS JPM

TRAINING PROGRAM TITLE	INITIAL LICENSE TRAINING	**TIME:**	20 MINUTES
NUMBER AND TITLE:	NRC2010-Inp03 Perform Local DG Trip and Isolation (Alternate Path)	**REVISION:**	0
SCOPE OF REVISION	**Initial Issue.** **From: Audit07-INP03**		

			DATE:
PREPARED BY: (Exam Writer)	Name:		
	Signature:		
APPROVED BY: (Facility Reviewer)	Name:		
	Signature:		

REFERENCES/NRC KA/TASKS

Procedure:	2-OHP-4025-LTI-3, R2	Local Diesel Generator Trip and Isolation
K/A Number:	APE 068 AA1.31	Ability to operate and/or monitor the EDG as applied to Control Room Evacuation.
K/A Imp.:	RO: 3.9 SRO: 4.0	
Task Number:	0320250604	Locally trip the Emergency Diesel Generator

TRAINING AIDS/TOOLS/EQUIPMENT

None

HANDOUTS

Task Briefing
Copy of 2-OHP-4025-LTI-3, Local Diesel Generator Trip and Isolation
Picture of the inside of a 4KV Breaker Control Power (Top) Cubicle
Picture of Breaker Mechanical Trip Pushbutton and Flag

ATTACHMENTS

None

EVALUATION SETTINGS

In plant, Unit 2 591'elevation AB DG room and 609' elevation 4KV room

EVALUATION METHOD:	PERFORM: ☐	SIMULATE: ☒

SIMULATOR/LAB SETUP

None

EVALUATOR INSTRUCTIONS

Provide the operator with a of 2-OHP-4025-LS-3, Steam Generator 2/3 Level Control.

TASK BRIEFING

OPERATIONS JPM

Following a fire event on Unit 2, the 2AB Diesel Generator started but failed to load.

The US directs you to locally trip and isolate the 2AB Diesel Generator in accordance with 2-OHP-4025-LTI-3-1, DG2AB Local Trip and Isolation.

GENERAL STANDARDS/PRECAUTIONS

Perform a local trip and isolation on Unit 2 AB Diesel Generator per 2-OHP-4025-LTI-3, observing applicable precautions and limitations and procedural steps.

EXPECTED ACTIONS	CUES/STANDARDS ("**CS**" Indicates Critical Standard)

Number:	Title:	Revision Number:
2-OHP-4025 LTI-3	**LOCAL DIESEL GENERATOR TRIP AND ISOLATION**	2

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED

LTI-3-1
DG2AB Local Trip And Isolation

CAUTION

This procedure should only be performed if AB Diesel Generator is currently running and has failed to load.

1. Trip AB Diesel Generator Locally:

a. At Diesel Generator 2AB subpanel, depress DG2AB local Emergency Trip pushbutton

b. Check DG2AB - TRIPPED

b. **IF** AB diesel generator does not trip, **THEN** perform the following:

1) Close DG2AB starting air receiver outlet valves:

- 2-DG-184A
- 2-DG-186A

2) Close control air dryer inlet valves for DG2AB:

- 2-DG-138A
- 2-DG-144A

3) Open the following control air dryer drain valves to depressurize 100 psi control air header to DG2AB:

- 2-DG-252A
- 2-DG-254A

(LTI-3-1, page 1 of 2)

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NOTE: Double Hearing Protection is required if the EDG is running: It may be SIMULATED for the purpose of this JPM.

CUE: 2AB Diesel Generator started but failed to load after a fire event on Unit 2. If asked, indicate that fire areas do not interfere with the implementation of this task.

STANDARD: Operator (simulates) depressing local EMERGENCY TRIP
CUE: AB EDG is still Operating
SAT: ☐ UNSAT: ☐

STANDARD: **(CS)** Operator (Simulates) closing 2-DG-184A & 2-DG-186A
CUE: 2-DG-184A Handwheel has stopped turning.
CUE: 2-DG-186A Push pin is pulled out (Pin latches when handle is vertical).
SAT: ☐ UNSAT: ☐

STANDARD: **(CS)** Operator (Simulates) closing 2-DG-138A & 2-DG-144A
CUE: Handwheel has stopped turning. If asked, pressure is still at 100 psig.
SAT: ☐ UNSAT: ☐

STANDARD: **(CS)** Operator (Simulates) opening 2-DG-252A & 2-DG-254A
CUE: Handwheel has stopped turning. Air is blowing from the drain valves and air receiver pressure is lowering to 0 psig.
CUE: 2 AB EDG has stopped running.
SAT: ☐ UNSAT: ☐

EXPECTED ACTIONS	CUES/STANDARDS ("**CS**" Indicates Critical Standard)

Number: 2-OHP-4025 LTI-3	Title: LOCAL DIESEL GENERATOR TRIP AND ISOLATION	Revision Number: 2

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED

LTI-3-1
DG2AB Local Trip And Isolation

2. Isolate AB Diesel Generator From Buses T21A And T21B:

a. Breaker T21A11, DG2AB Output Breaker To Bus T21A:

1) Remove breaker control power fuses

2) Check breaker T21A11 - TRIPPED — 2) **IF** breaker T21A11 is **NOT** TRIPPED, **THEN** push mechanical trip pushbutton on front of breaker.

b. Breaker T21B4, DG2AB Output Breaker To Bus T21B:

1) Remove breaker control power fuses

2) Check breaker T21B4 - TRIPPED — 2) **IF** breaker T21B4 is **NOT** TRIPPED, **THEN** push mechanical trip pushbutton on front of breaker.

3. Report 02-OHP-4025-LTI-3, Local Diesel Generator Trip And Isolation, LTI-3-1, DG2AB Local Trip And Isolation, Complete

4. Stand By For Further Instructions

-END OF ATTACHMENT-

(LTI-3-1, page 2 of 2)

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NOTE: Operator leaves the 2AB DG room , proceeds to 4kV Switchgear Room and (simulates) dons Full Flash Equipment
EVALUATOR NOTE: Use attached picture (Inside of a 4KV Breaker Control Power [Top] Cubicle) to evaluate operator's ability to locate control power fuses.

CUE: GREEN light ON before removing fuse(s)

STANDARD: **(CS)** Operator locates T21A11 breaker and (simulates) removes control power fuses (lower fuse block).
CUE: GREEN lights OFF on front of breaker panel.
SAT: ☐ UNSAT: ☐

STANDARD: Operator verifies breaker T21A11 tripped
SAT: ☐ UNSAT: ☐

EVALUATOR NOTE: Provide attached picture of Breaker Mechanical Trip Pushbutton and Flag (green OPEN flag is showing.)

STANDARD: **(CS)** Operator locates T21B4 breaker and (simulates) removes control power fuses (lower fuse block).
CUE: GREEN lights OFF on front of breaker panel.
SAT: ☐ UNSAT: ☐

STANDARD: Operator verifies breaker T21B4 tripped
EVALUATOR NOTE: Provide attached picture of Breaker Mechanical Trip Pushbutton and Flag (green OPEN flag is showing.)
SAT: ☐ UNSAT: ☐

STANDARD: Reports task completed.
SAT: ☐ UNSAT: ☐

TERMINATION CUE: This JPM is complete.

Task Briefing

Following a fire event on Unit 2, the 2AB Diesel Generator started but failed to load.

The US directs you to locally trip and isolate the 2AB Diesel Generator in accordance with 2-OHP-4025-LTI-3-1, DG2AB Local Trip and Isolation.

AMERICAN ELECTRIC POWER

COOK NUCLEAR PLANT TRAINING CENTER

Bridgman, Michigan

OPERATIONS JPM

TRAINING PROGRAM TITLE	INITIAL LICENSE TRAINING	**TIME:**	15 MINUTES
NUMBER AND TITLE:	NRC2010-Sim01 Perform Emergency Boration due to Shutdown Margin Not Met (Alternate Path)	**REVISION:**	0
SCOPE OF REVISION	**Initial Issue.** **From: RO-O-E022A**		

			DATE:
PREPARED BY: (Exam Writer)	Name:		
	Signature:		
APPROVED BY: (Facility Reviewer)	Name:		
	Signature:		

REFERENCES/NRC KA/TASKS

Procedure:	1-OHP-4021-005-007, R4	Operation Of Emergency Boration Flow Paths
K/A Number:	APE 024 AA1.17	Ability to operate and / or monitor the following as they apply to Emergency Boration: (CFR 41.7 / 45.5 / 45.6) *Emergency borate control valve and indicators*
K/A Imp.:	RO: 3.9 SRO: 3.9	
Task Number:	EOP0880501	Emergency Borate the RCS

TRAINING AIDS/TOOLS/EQUIPMENT

None

HANDOUTS

Task Briefing
Copy of 1-OHP-4021-005-007 procedure

ATTACHMENTS

None

EVALUATION SETTINGS

Unit 1 Simulator

EVALUATION METHOD:	PERFORM: ☒	SIMULATE: ☐

SIMULATOR/LAB SETUP

1. Initialize to IC 995 (Mode 3 IC with Setups)
2. Insert Override ZGI101QMO410 to CLOSE — ZGI101QMO410_U1
3. Insert Override ZGI101IMO910 to CLOSE — ZGI101IMO910_U1
4. Insert Override ZGI101IMO911 to CLOSE — ZGI101IMO911_U1

EVALUATOR INSTRUCTIONS

1. Ensure simulator setup is complete
2. Brief the operator (May be performed by giving out Task Briefing Sheet)
3. Announce start of the JPM
4. Perform evolution
5. At completion of evolution, announce the JPM is complete.
6. Document evaluation performance.

TASK BRIEFING

You are the Reactor Operator. The crew has just performed 1-OHP-4021-001-012, Determination of Reactor Shutdown Margin and discovered that Shutdown Margin has NOT been met.

The Unit Supervisor directs you to initiate Emergency Boration to the RCS in accordance with 1-OHP-4021-005-007, Operation Of Emergency Boration Flow Paths, using the Preferred Method.

GENERAL STANDARDS/PRECAUTIONS

Operator has established Emergency Boration to the RCS.

EXPECTED ACTIONS	CUES/STANDARDS ("**CS**" Indicates Critical Standard)

Reference	01-OHP-4021-005-007	Rev. 4	Page 3 of 8
Operation Of Emergency Boration Flow Paths			

4 DETAILS

4.1 Align a Boration Source

NOTE: **[Current TS]** VCT pressure must be ≤ 37 psig to ensure emergency flow rate can meet the operability requirements of Technical Specifications

[Improved TS] VCT pressure must be ≤ 37 psig to ensure emergency flow rate can meet the operability requirements of Technical Requirements Manual.

4.1.1 **IF** Borating Via Emergency Boration Flowpath, **THEN** perform the following: (preferred)

a. Place Speed Selector for operating Boric Acid Transfer pump(s) to FAST:

- Boric Acid XFER Pump 1 Speed Selector ❑
- Boric Acid XFER Pump 2 Speed Selector ❑

b. Verify BA Transfer Pump Recirculation valves closed:

- 12-QRV-420, Middle BAT Recirc ❑
- 1-QRV-410, North BA Tank Recirc ❑

c. Verify closed the following valves:

- 1-QRV-411, Boric Acid To Blender ❑
- 1-QRV-412, Prim Water To Blender ❑

d. Open 1-QMO-410, Emer Boration To CHG Pump Suct. ❑

e. Verify 1-QFI-410, Emer Boration Flow, indicates – GREATER THAN OR EQUAL TO 44 gpm. ❑

STANDARD: Operator Places Speed Selector for operating Boric Acid Transfer pump in FAST. (May place both Speed Selectors in FAST)
SAT: ☐ UNSAT: ☐

STANDARD: Operator Verifies BA Transfer Pump Recirculation valves are closed.
SAT: ☐ UNSAT: ☐

STANDARD: Operator verifies 1-QRV-411 and 1-QRV-412 are closed.
SAT: ☐ UNSAT: ☐

STANDARD: **(CS)** Operator attempts to open 1-QMO-410.
SAT: ☐ UNSAT: ☐

STANDARD: Operator identifies failed 1-QMO-410, and no flow on 1-QFI-410
SAT: ☐ UNSAT: ☐

CUE: If asked, as Unit Supervisor direct the candidate to complete the boration using another method.

EXPECTED ACTIONS	CUES/STANDARDS ("**CS**" Indicates Critical Standard)

Reference	01-OHP-4021-005-007	Rev. 4	Page 4 of 8
Operation Of Emergency Boration Flow Paths			

4.1.2 **IF** Borating Via RWST, **THEN** perform the following:

a. OPEN at least one of the following valves to align charging pump suction to the RWST:

- 1-IMO-910, CHG Pumps Suct From RWST ❑
- 1-IMO-911, CHG Pumps Suct From RWST ❑

b. CLOSE at least one of the following valves to isolate the charging pump suction from the VCT:

- 1-QMO-451, CHG Pumps Suct From VCT ❑
- 1-QMO-452, CHG Pumps Suct From VCT ❑

Note: Step 4.1.2 is N/A (The IMO-910 and IMO-911 valves will fail to open if the operator attempts to use this flowpath.)

NOTE: Boron addition through the blender can be used as an alternate boration source but cannot be credited to meet Tech Specs because of design considerations and a lack of a TS surveillance to prove function. [Ref. 7.2.2e]

CUE: Blender is NOT aligned to CVCS HUT or RWST.

4.1.3 **IF** Borating Via Blender, **THEN** perform the following:

a. **IF** blender is aligned to CVCS HUT or RWST, **THEN** close 1-CS-388, South BA Blender 1-QP-21 To RWST Blender Shutoff Valve. ❑

STANDARD: **(CS)** Operator Verifies Speed Selector for operating Boric Acid Transfer pump in FAST. (Previously placed in FAST Speed)
SAT: ☐ UNSAT: ☐

b. Place Speed Selector for operating Boric Acid Transfer pump(s) to FAST:

- Boric Acid XFER Pump 1 Speed Selector ❑
- Boric Acid XFER Pump 2 Speed Selector ❑

c. Verify the following valves - CLOSED:

- 12-QRV-420, Middle BAT Recirc ❑
- 1-QRV-410, North BA Tank Recirc ❑
- 1-QRV-451, Blender To VCT ❑
- 1-QRV-412, Prim Water to Blender ❑

STANDARD: Operator verifies following closed:
- 12-QRV-420, Middle BAT Recirc
- l-QRV-410, North BA Tank Recirc
- 1-QRV-451, Blender To VCT
- 1-QRV-412, Prim Water to Blender

SAT: ☐ UNSAT: ☐

EXPECTED ACTIONS	CUES/STANDARDS ("**CS**" Indicates Critical Standard)

Reference	01-OHP-4021-005-007	Rev. 4	Page 5 of 8
Operation Of Emergency Boration Flow Paths			

d. Verify open the following valves:
- 1-QRV-400, Blender To CHG Pumps Suct ❑
- 1-QRV-411, Boric Acid To Blender ❑

e. Verify 1-QFC-411, Blender Boric Acid flow indicates – GREATER THAN OR EQUAL TO 36 gpm ❑

4.2 Verify Boration Flow Path to Reactor Coolant System.

4.2.1 Verify at least ONE Charging Pump running.
- 1-PP-50E, East Centrifugal Charging Pump ❑
- 1-PP-50W, West Centrifugal Charging Pump ❑

4.2.2 **IF** borating via the Charging Header, **THEN** perform the following:

a. Verify open the following:
- 1-QMO-200, Charging Flow To Regen ❑
- 1-QMO-201, Charging Flow To Regen ❑

b. Verify open **OR** throttled the following:
- 1-QRV-251, CCP Discharge Flow Control ❑
- 1-QRV-200, Charging HDR Press Ctrl ❑

c. Verify open at least ONE of the following:
- 1-QRV-61, Alt Chg Line To Cold Leg 1 ❑
- 1-QRV-62, Normal Chg Line To Cold Leg 4 ❑

d. **IF** 1-QRV-200, Charg Hdr Press Ctrl valve is failed closed, **THEN** open bypass valve 1-CS-319. ❑

4.2.3 **IF** borating via 1-QMO-410, Emer Boration To CHG Pump Suct, **THEN** verify 1-QFI-200, Charging Pumps Discharge Flow, indicates – GREATER THAN 60 gpm. ❑

STANDARD: **(CS)** Operator Opens 1-QRV-400 and 1-QRV-411.
SAT: ☐ UNSAT: ☐

STANDARD: **(CS)** Operator Verifies Flow at 1-QFC-411 Is Greater Than 36 gpm.
SAT: ☐ UNSAT: ☐

STANDARD: Operator verifies at least ONE Charging Pump running.
SAT: ☐ UNSAT: ☐

STANDARD: Operator verifies open the following 1-QMO-200 and l-QMO-201.
SAT: ☐ UNSAT: ☐

STANDARD: Operator verifies open OR throttled 1-QRV-251 and 1-QRV-200
SAT: ☐ UNSAT: ☐

STANDARD: Operator verifies open **EITHER** 1-QRV-61 **OR** 1-QRV-62.
SAT: ☐ UNSAT: ☐

CUE: QRV-200 is NOT failed closed

Note: Step 4.2.3 is N/A

EXPECTED ACTIONS	CUES/STANDARDS ("**CS**" Indicates Critical Standard)

Reference	01-OHP-4021-005-007	Rev. 4	Page 6 of 8
Operation Of Emergency Boration Flow Paths			

4.2.4 **IF** borating via RWST, **THEN** verify 1-QFI-200, Charging Flow, indicates – GREATER THAN 70 gpm. ❑

4.2.5 **IF** borating via boric acid blender, **THEN** verify 1-QFI-200, Charging Flow, indicates – GREATER THAN 50 gpm. ❑

4.2.6 **IF** the Charging flowpath is only through the Reactor Coolant Pump seals, **THEN** perform the following:

a. Verify open 1-QRV-251, CCP Discharge Flow Control. ❑

4.2.7 Divert letdown to the CVCS Holdup Tanks as necessary to maintain VCT level and pressure using the following.

- 1-RU-28, VCT Level Control (PREFERRED) ❑
- 1-QRV-303, VCT/HOLDUP TK Inlet Selector ❑

4.3 **WHEN** Emergency Boration is no longer required, **THEN** perform the following:

4.3.1 **IF** borating via 1-QMO-410, Emer Boration To CHG Pump Suct **OR** borating via boric acid blender, **THEN** perform the following:

a. Verify 1-QMO-410, Emer Boration To CHG Pump Suct. – CLOSED. ❑

b. Place Speed Selector for operating BA Transfer Pump(s) to – SLOW:

- Boric Acid XFER Pump 1 Speed Selector ❑
- Boric Acid XFER Pump 2 Speed Selector ❑

c. Verify closed the following:

- 1-QRV-411, Boric Acid To Blender ❑
- 1-QRV-400, Blender to CHG Pumps Suct ❑

d. Verify 1-QRV-303, VCT/HOLDUP TK Inlet Selector, in AUTO. ❑

Note: Step 4.2.4 is N/A

STANDARD:Operator Verifies Flow at 1-QFI-200 Is Greater Than 50 gpm..
SAT: ☐ UNSAT: ☐

Note: Step 4.2.6 is N/A

STANDARD: Operator Diverts Letdown as required to maintain VCT level and pressure.
SAT: ☐ UNSAT: ☐

TERMINATION CUE: This JPM is complete.

Task Briefing

You are the Reactor Operator. The crew has just performed 1-OHP-4021-001-012, Determination of Reactor Shutdown Margin and discovered that Shutdown Margin has NOT been met.

The Unit Supervisor directs you to initiate Emergency Boration to the RCS in accordance with 1-OHP-4021-005-007, Operation of Emergency Boration Flow Paths, using the Preferred Method.

AMERICAN ELECTRIC POWER

COOK NUCLEAR PLANT TRAINING CENTER

Bridgman, Michigan

OPERATIONS JPM

TRAINING PROGRAM TITLE	INITIAL LICENSE TRAINING	**TIME:**	15 MINUTES
NUMBER AND TITLE:	NRC2010-Sim02 Establish Letdown In Accordance With 1-OHP-4023-SUP-015 (Alternate Path)	**REVISION:**	0
SCOPE OF REVISION	**Initial Issue.** **From: NRC2007-SIM04**		

			DATE:
PREPARED BY: (Exam Writer)	Name:	_____	
	Signature:	_____	_____
APPROVED BY: (Facility Reviewer)	Name:	_____	
	Signature:	_____	_____

REFERENCES/NRC KA/TASKS

Procedure:	1-OHP-4023-SUP-015, R	OPERATION OF NORMAL AND EXCESS LETDOWN
K/A Number:	SYS 004 A2.07	Ability to (a) predict the impacts of the following malfunctions or operations on the CVCS; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those malfunctions or operations: (CFR: 41.5/ 43/5 / 45/3 / 45/5) Isolation of letdown/makeup
K/A Imp.:	RO: 3.4 SRO: 3.7	
Task Number:	0030020101	Place Letdown in Service
	0030240101	Place Excess Letdown in Service

TRAINING AIDS/TOOLS/EQUIPMENT

None

HANDOUTS

Task Briefing
Copy of 1-OHP-4023-SUP-015 procedure

ATTACHMENTS

None

EVALUATION SETTINGS

Unit 1 Simulator

EVALUATION METHOD:	PERFORM: ☒	SIMULATE: ☐

SIMULATOR/LAB SETUP

1. Reset to **IC 994** (IC 38 with an SI with ES-1.1 performed through Step 14)
2. Verify **ZGI101QRV111** override to **CLOSE** ZGI101QRV111_U1

EVALUATOR INSTRUCTIONS

1. Ensure simulator setup is complete
2. Brief the operator (May be performed by giving out Task Briefing Sheet)
3. Announce start of the JPM
4. Perform evolution
5. At completion of evolution, announce the JPM is complete.
6. Document evaluation performance.

TASK BRIEFING

You are the RO on Unit 1.

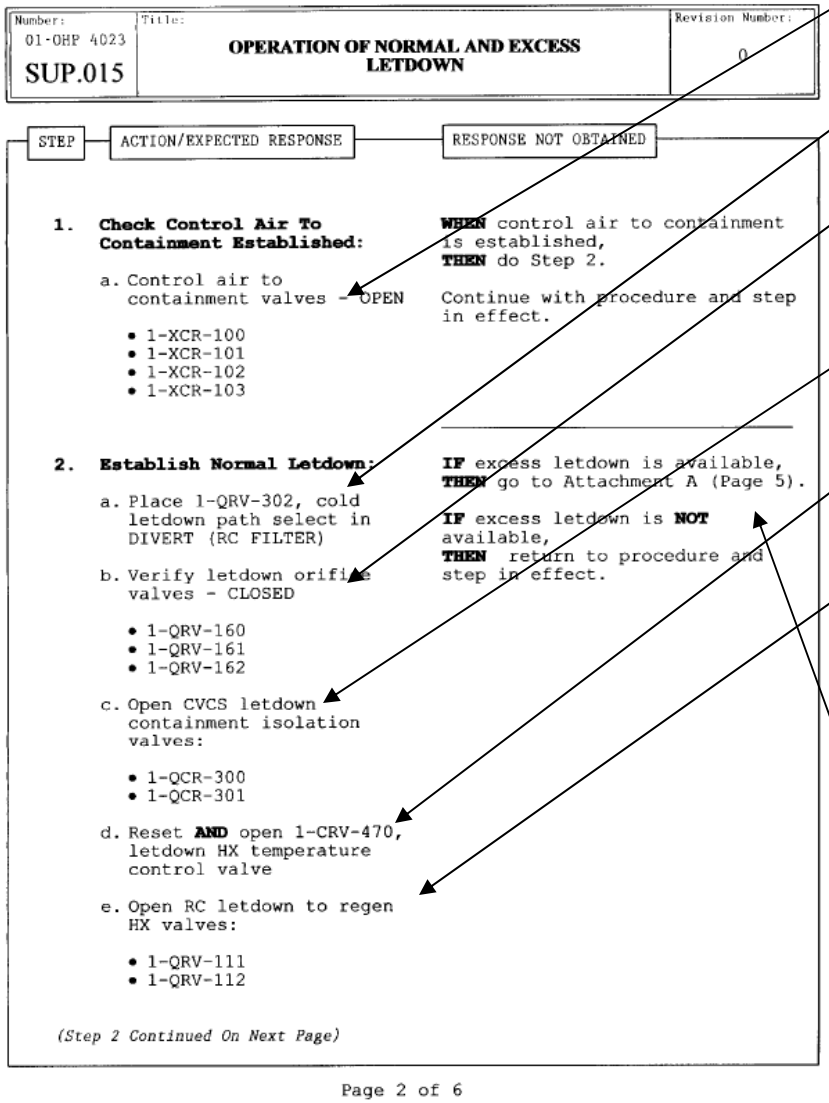
The unit has experienced a spurious Safety Injection. The crew has transitioned from E-0, Reactor Trip or Safety Injection, to ES-1.1, SI Termination.

The Unit Supervisor has requested that you place letdown in service in accordance with the 1-OHP-4023-SUP-015, OPERATION OF NORMAL AND EXCESS LETDOWN, per current procedure directions.

GENERAL STANDARDS/PRECAUTIONS

Place CVCS letdown in service in accordance with 1-OHP-4023-SUP-015. Recognize that normal letdown cannot be established and place Excess Letdown in service (Alternate Path).

EXPECTED ACTIONS	CUES/STANDARDS ("**CS**" Indicates Critical Standard)



Number: 01-OHP 4023 SUP.015

Title: **OPERATION OF NORMAL AND EXCESS LETDOWN**

Revision Number: 0

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
1.	**Check Control Air To Containment Established:**	**WHEN** control air to containment is established, **THEN** do Step 2.
	a. Control air to containment valves - OPEN • 1-XCR-100 • 1-XCR-101 • 1-XCR-102 • 1-XCR-103	Continue with procedure and step in effect.
2.	**Establish Normal Letdown:**	**IF** excess letdown is available, **THEN** go to Attachment A (Page 5).
	a. Place 1-QRV-302, cold letdown path select in DIVERT (RC FILTER)	**IF** excess letdown is **NOT** available, **THEN** return to procedure and step in effect.
	b. Verify letdown orifice valves - CLOSED • 1-QRV-160 • 1-QRV-161 • 1-QRV-162	
	c. Open CVCS letdown containment isolation valves: • 1-QCR-300 • 1-QCR-301	
	d. Reset **AND** open 1-CRV-470, letdown HX temperature control valve	
	e. Open RC letdown to regen HX valves: • 1-QRV-111 • 1-QRV-112	

(Step 2 Continued On Next Page)

Page 2 of 6

STANDARD: Operator verifies air is available to containment
SAT: ☐ UNSAT: ☐

Operator places QRV-302 in the DIVERT position.
SAT: ☐ UNSAT: ☐

Operator verifies orifice isolation valves are closed (may give switches a 'green target' is desired)
SAT: ☐ UNSAT: ☐

Operator opens QCR-300/301 open.
SAT: ☐ UNSAT: ☐

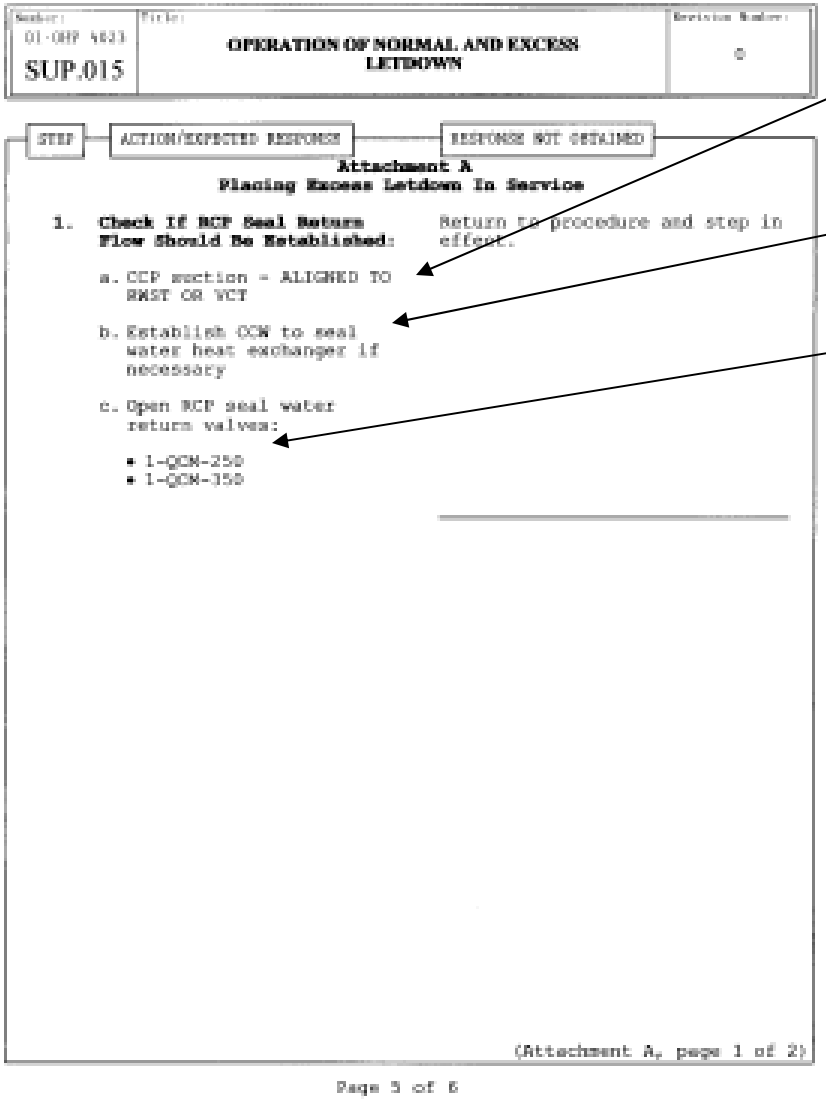
Operator resets and opens 1-CRV-470.
SAT: ☐ UNSAT: ☐

STANDARD: **(CS)** Operator attempts to open QRV-111.
SAT: ☐ UNSAT: ☐

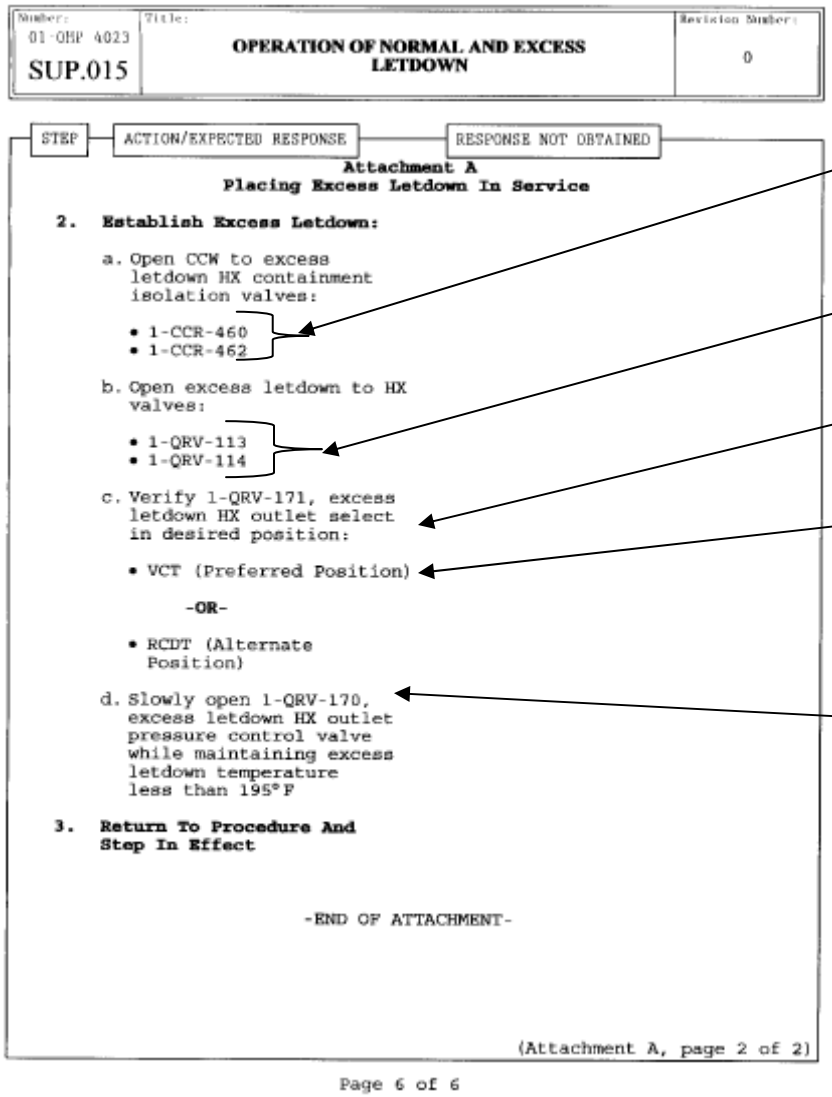
NOTE: QRV-111 will not open.

CUE: If asked inform operator that Excess Letdown is desired.

STANDARD: **(CS)**
Operator goes to Attachment A in accordance with Step 2 RNO due to failure of QRV-111 to open**.**
SAT: ☐ UNSAT: ☐

EXPECTED ACTIONS	CUES/STANDARDS ("**CS**" Indicates Critical Standard)
	STANDARD: Operator verifies CCP suction is aligned as required. **CUE**: If Required, Align CCP suction to the RWST. SAT: ☐ UNSAT: ☐ **CUE**: CCW flow has been established to seal water heat exchanger. STANDARD: **(CS)** Operator opens QCM-250/350 SAT: ☐ UNSAT: ☐

EXPECTED ACTIONS	CUES/STANDARDS ("**CS**" Indicates Critical Standard)



Number: 01-OHP 4023 SUP.015

Title: **OPERATION OF NORMAL AND EXCESS LETDOWN**

Revision Number: 0

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED

Attachment A
Placing Excess Letdown In Service

2. Establish Excess Letdown:

a. Open CCW to excess letdown HX containment isolation valves:

- 1-CCR-460
- 1-CCR-462

b. Open excess letdown to HX valves:

- 1-QRV-113
- 1-QRV-114

c. Verify 1-QRV-171, excess letdown HX outlet select in desired position:

- VCT (Preferred Position)

-OR-

- RCDT (Alternate Position)

d. Slowly open 1-QRV-170, excess letdown HX outlet pressure control valve while maintaining excess letdown temperature less than 195°F

3. Return To Procedure And Step In Effect

-END OF ATTACHMENT-

(Attachment A, page 2 of 2)

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STANDARD: **(CS)** Operator opens 2-CCR-460/462
SAT: ☐ UNSAT: ☐

STANDARD: **(CS)** Operator Opens QRV-113/114.
SAT: ☐ UNSAT: ☐

CUE: If asked, inform operator that excess letdown return will be aligned to the preferred flowpath.

STANDARD: Operator verifies QRV-171 in the VCT position
SAT: ☐ UNSAT: ☐

STANDARD: **(CS)** Operator opens QRV-170 while maintaining excess letdown temperature less than 195°F.
SAT: ☐ UNSAT: ☐

When Excess Letdown is in Service, then
TERMINATION CUE: This JPM is complete.

Task Briefing

You are the RO on Unit 1.

The unit has experienced a spurious Safety Injection. The crew has transitioned from E-0, Reactor Trip or Safety Injection, to ES-1.1, SI Termination.

The Unit Supervisor has requested that you place letdown in service in accordance with the 1-OHP-4023-SUP-015, OPERATION OF NORMAL AND EXCESS LETDOWN, per current procedure directions.

AMERICAN ELECTRIC POWER

COOK NUCLEAR PLANT TRAINING CENTER

Bridgman, Michigan

OPERATIONS JPM

TRAINING PROGRAM TITLE	INITIAL LICENSE TRAINING	**TIME:**	15 MINUTES
NUMBER AND TITLE:	NRC2010-Sim03 Isolate SI Accumulators during Post LOCA Cooldown and Depressurization	**REVISION:**	0
SCOPE OF REVISION	**Initial Issue.** **From: Audit07-Sim02**		

			DATE:
PREPARED BY: (Exam Writer)	Name:	_____	
	Signature:	_____	_____
APPROVED BY: (Facility Reviewer)	Name:	_____	
	Signature:	_____	_____

REFERENCES/NRC KA/TASKS

Procedure:	1-OHP-4023.ES-1.2, Rev. 9	Post LOCA Cooldown and Depressurization
K/A Number:	006 A4.02	Emergency Core Cooling System (ECCS) Ability to manually operate and/or monitor in the control room: (CFR: 41.7 / 45.5 to 45.8) *Valves*
K/A Imp.:	RO: 4.0 SRO: 3.8	
Task Number:	0080020101	Isolate Accumulators

TRAINING AIDS/TOOLS/EQUIPMENT

None

HANDOUTS

Task Briefing
Copy of 1-OHP-4023.ES-1.2, Post LOCA Cooldown and Depressurization, Step 26

ATTACHMENTS

None

EVALUATION SETTINGS

Unit 1 Simulator

EVALUATION METHOD:	PERFORM: ☒	SIMULATE: ☐

SIMULATOR/LAB SETUP

Post Trip conditions with IC 993 (~950 PSIG, ~485 ^{0}F CETCs, ES 1.2 step 25)
Malfunction: RC10B (severity 40%) ~600 GPM SBLOCA (run for ~ 40 minutes to be in ES 1.2)
U1_RC10B

- Insert Override ZGI101IMO120 to OPEN ZGI101IMO120_U1

Note: The **Booth Operator** is required to delete global malf 101IMO110, 101IMO120 and 101IMO130 when directed. ***Do Not delete the Global for 101IMO140 (T11A lost power but it may be restored via another JPM)***

EVALUATOR INSTRUCTIONS

1. Ensure simulator setup is complete
2. Brief the operator (May be performed by giving out Task Briefing Sheet)
3. Announce start of the JPM
4. Perform evolution
5. At completion of evolution, announce the JPM is complete.
6. Document evaluation performance.

TASK BRIEFING

You are an extra RO. The unit has experienced a small break LOCA with a Loss of Offsite Power. The crew has transitioned from E-1, Loss of Reactor or Secondary Coolant to ES-1.2, Post LOCA Cooldown and Depressurization.

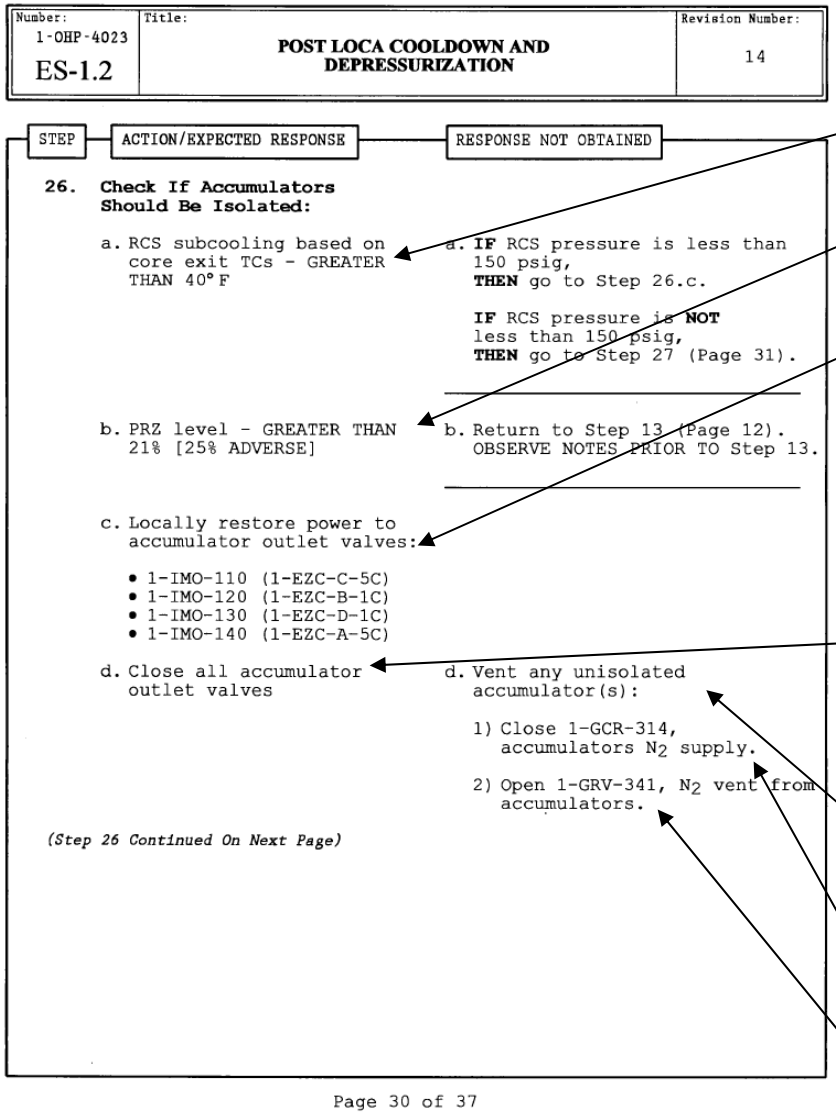
Bus T11A has NOT been Re-Energized.
Containment Pressure Has remained less than 2.8 psig.
Containment Radiation has remained less than 100R/Hr.

The Unit Supervisor directs you to perform Step 26 of ES-1.2 to check if accumulators should be isolated.

GENERAL STANDARDS/PRECAUTIONS

Operator has successfully isolated or vented ALL four accumulators per procedure ES 1.2 step 26.

EXPECTED ACTIONS	CUES/STANDARDS ("**CS**" Indicates Critical Standard)



Number: 1-OHP-4023 ES-1.2	Title: POST LOCA COOLDOWN AND DEPRESSURIZATION	Revision Number: 14

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
26.	**Check If Accumulators Should Be Isolated:**	
	a. RCS subcooling based on core exit TCs - GREATER THAN 40° F	a. **IF** RCS pressure is less than 150 psig, **THEN** go to Step 26.c. **IF** RCS pressure is **NOT** less than 150 psig, **THEN** go to Step 27 (Page 31).
	b. PRZ level - GREATER THAN 21% [25% ADVERSE]	b. Return to Step 13 (Page 12). OBSERVE NOTES PRIOR TO Step 13.
	c. Locally restore power to accumulator outlet valves: • 1-IMO-110 (1-EZC-C-5C) • 1-IMO-120 (1-EZC-B-1C) • 1-IMO-130 (1-EZC-D-1C) • 1-IMO-140 (1-EZC-A-5C)	
	d. Close all accumulator outlet valves	d. Vent any unisolated accumulator(s): 1) Close 1-GCR-314, accumulators N_2 supply. 2) Open 1-GRV-341, N_2 vent from accumulators.

(Step 26 Continued On Next Page)

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Evaluator Notes: #2 and #4 Accumulators isolation valves will not close. The RNO column actions will be required to vent N_2 pressure to complete step 26.

STANDARD: Operator checks RCS subcooling >40°F
SAT: ☐ UNSAT: ☐

STANDARD: Operator checks Prz level >21%
SAT: ☐ UNSAT: ☐

STANDARD: **(CS)** Operator directs Aux Operator to restore power
SAT: ☐ UNSAT: ☐

CUE: Local Aux Operator will restore power as directed
CUE: Booth Operator delete global malf 101IMO110, 101IMO120 and 101IMO130.

U1_101IMO110 U1_101IMO120 U1_101IMO130

CUE: Report back to Operator that all breakers are closed.

STANDARD: **(CS)** Operator closes 1-IMO-110 and 1-IMO-130 (1-IMO-120 will not close and 1-IMO-140 has no Power)
SAT: ☐ UNSAT: ☐

STANDARD: Operator determines RNO is needed for #2 and 4 Accumulators
SAT: ☐ UNSAT: ☐

STANDARD: Operator CLOSES: 1-GCR-314
SAT: ☐ UNSAT: ☐

STANDARD: **(CS)** Operator OPENS 1-GRV-341
SAT: ☐ UNSAT: ☐

EXPECTED ACTIONS	CUES/STANDARDS ("**CS**" Indicates Critical Standard)

Number:	Title:	Revision Number:
1-OHP-4023 ES-1.2	**POST LOCA COOLDOWN AND DEPRESSURIZATION**	14

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
	(Step 26 Continued From Previous Page)	
		3) Open nitrogen supply valve for unisolated accumulator(s): • 1-IRV-112 • 1-IRV-122 • 1-IRV-132 • 1-IRV-142 **IF** any accumulator can **NOT** be isolated or vented, **THEN** consult Plant Evaluation Team to determine subsequent actions prior to any RCS depressurization below 825 psig. Continue with Step 27 (Page 31).
27.	**Check If DGs Should Be Stopped:**	
a.	AC emergency buses - ENERGIZED BY OFFSITE POWER • T11A • T11B • T11C • T11D	a. Try to restore offsite power to AC emergency buses using SUP-002, Restoration of Reserve Power to 4KV Buses.
b.	Stop any unloaded DG and place in standby	
c.	Locally stop jacket water pumps for shutdown DG(s) and place in AUTO	

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STANDARD: **(CS)** Operator OPENS: 1-IRV-122 and 1-IRV-142
SAT: ☐ UNSAT: ☐

NOTE: Annunciator Panel 105 Drops 31 and 32 may alarm as the Accumulators are vented (containment pressure high alarms).

TERMINATION CUE: When Panel 106 Drops 22 and 24 are acknowledged (accumulator 2 & 4 low pressure alarms), then **"This JPM is complete."**

Task Briefing

You are an extra RO. The unit has experienced a small break LOCA with a Loss of Offsite Power. The crew has transitioned from E-1, Loss of Reactor or Secondary Coolant to ES-1.2, Post LOCA Cooldown and Depressurization.

Bus T11A has NOT been Re-Energized.
Containment Pressure Has remained less than 2.8 psig.
Containment Radiation has remained less than 100R/Hr.

The Unit Supervisor directs you to perform Step 26 of ES-1.2 to check if accumulators should be isolated.

AMERICAN ELECTRIC POWER

COOK NUCLEAR PLANT TRAINING CENTER

Bridgman, Michigan

OPERATIONS JPM

TRAINING PROGRAM TITLE	INITIAL LICENSE TRAINING	**TIME:**	15 MINUTES
NUMBER AND TITLE:	NRC2010-Sim04 Establish Cooling Flow to a Reactor Coolant Pump	**REVISION:**	0
SCOPE OF REVISION	**Initial Issue.** **From: NRC2008-SIM04**		

			DATE:
PREPARED BY: (Exam Writer)	Name:		
	Signature:		
APPROVED BY: (Facility Reviewer)	Name:		
	Signature:		

REFERENCES/NRC KA/TASKS

Procedure:	1-OHP-4023-SUP-007, R1a 1-OHP-4023-ES-1.2, R14	Restoration of RCP Cooling Post Loca Cooldown And Depressurization
K/A Number:	003 A4.08	Reactor Coolant Pump System (RCPS) Ability to manually operate and/or monitor in the control room: (CFR: 41.7 / 45.5 to 45.8) *RCP cooling water supplies*
K/A Imp.:	RO: 3.2 SRO: 2.9	
Task Number:	0020030501	Restore RCP Support Systems following Containment Isolation

TRAINING AIDS/TOOLS/EQUIPMENT

None

HANDOUTS

Task Briefing

1-OHP-4023-ES-1.2, R14	Post Loca Cooldown And Depressurization
1-OHP-4023-SUP-007, Rev 1a	Restoration of RCP Cooling (withhold until required)

ATTACHMENTS

None

EVALUATION SETTINGS

Unit 1 Simulator

EVALUATION METHOD:	PERFORM: ☒	SIMULATE: ☐

SIMULATOR/LAB SETUP

Post Trip conditions with IC 993 (~950 PSIG, ~485 ^{0}F CETCs, ES 1.2 step 28)
Malfunction: RC10B (severity 40%) ~600 GPM SBLOCA (run for ~ 40 minutes to be in ES 1.2)

- A SB LOCA in progress and ready to restart an RCP
- Verify/Close valves CCM-458, CCM-453 and CCM-451
- To Ensure Power Remains Off, Turn Off Light/Power Indications for valves CCM-459, CCM-454 and CCM-452, CCM-430, CCM-431, MCM-221

U1_101CCM459	U1_101CCM454	U1_101CCM452
U1_101CCM430	U1_101CCM431	U1_101MCM221

EVALUATOR INSTRUCTIONS

1. Ensure simulator setup is complete
2. Brief the operator (May be performed by giving out Task Briefing Sheet)
3. Announce start of the JPM
4. Perform evolution
5. At completion of evolution, announce the JPM is complete.
6. Document evaluation performance.

TASK BRIEFING

You are an extra RO. The unit has experienced a small break LOCA with a Loss of Offsite Power. The crew has transitioned from E-1, Loss of Reactor or Secondary Coolant to ES-1.2, Post LOCA Cooldown and Depressurization.

Bus T11A has NOT been Re-Energized.

The Unit Supervisor has requested you to "Check RCP Cooling Normal" per Step 28 of 1-OHP-4023-ES-1.2, Post LOCA Cooldown and Depressurization

GENERAL STANDARDS/PRECAUTIONS

Restore CCW Cooling to RCPs per 01-OHP-4023-SUP-007 while observing all applicable precautions and limitations and procedure steps.

EXPECTED ACTIONS	CUES/STANDARDS ("**CS**" Indicates Critical Standard)

Number: 1-OHP-4023 ES-1.2	Title: POST LOCA COOLDOWN AND DEPRESSURIZATION	Revision Number: 14

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED

28.	**Check RCP Cooling - NORMAL**
	• CCW flow:
	  • Lower bearing - AT LEAST 5 GPM
	  • Thermal barrier - AT LEAST 35 GPM
	  • Upper bearing - AT LEAST 97.5 GPM
	• Seal injection flow - 6 TO 12 GPM
		Establish normal cooling to RCPs using SUP-007, Restoration of RCP Cooling.

29.	**Check If RCP Seal Return Flow Should Be Established:**	
	a. CCP suction - ALIGNED TO RWST OR VCT	a. Go to Step 30 (Page 33)
	b. Establish CCW to seal water heat exchanger if necessary	b. Go to Step 30 (Page 33)
	c. Open RCP seal water return valves: • 1-QCM-250 • 1-QCM-350	

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STANDARD: Operator determines that CCW flows are less than required
SAT: ☐ UNSAT: ☐

STANDARD: Operator determines that SUP-007 is required
SAT: ☐ UNSAT: ☐

CUE: If required, The US directs you to perform SUP-007 Restoration of RCP Cooling. (Provide operator with 1-OHP-4023-SUP-007 copy)

EXPECTED ACTIONS	CUES/STANDARDS ("**CS**" Indicates Critical Standard)

Number:	Title:	Revision Number:
01-OHP-4023 SUP-007	**RESTORATION OF RCP COOLING**	1a

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED

NOTE

If RCP seal parameters have been exceeded, seal injection and CCW thermal barrier cooling should **NOT** be established to the RCPs.

1. Check RCP Seal Temperatures - NORMAL

- "RCP Seal 1 Outlet Temp High" annunciators - HAVE REMAINED CLEAR
  - Panel 107, Drop 14 (RCP 1)
  - Panel 107, Drop 34 (RCP 2)
  - Panel 107, Drop 74 (RCP 3)
  - Panel 107, Drop 94 (RCP 4)
- Lower bearing water temperatures - HAVE REMAINED LESS THAN 225° F

RCP	Indicator	Point
RCP 1	1-QTI-210	TO417A
RCP 2	1-QTI-220	TO437A
RCP 3	1-QTI-230	TO457A
RCP 4	1-QTI-240	TO477A

Perform the following:

a. Manually close CCW from RCP thermal barrier valves:
   - 1-CCM-453
   - 1-CCM-454

   IF at least one valve can **NOT** be manually closed, **THEN** locally close one valve.

b. Return to procedure and step in effect.

Page 2 of 4

STANDARD: Operator verifies Panel 107 Drops 14, 34, 74, and 94 NOT LIT

CUE: All RCP alarms currently standing are the only ones that have been in alarm.

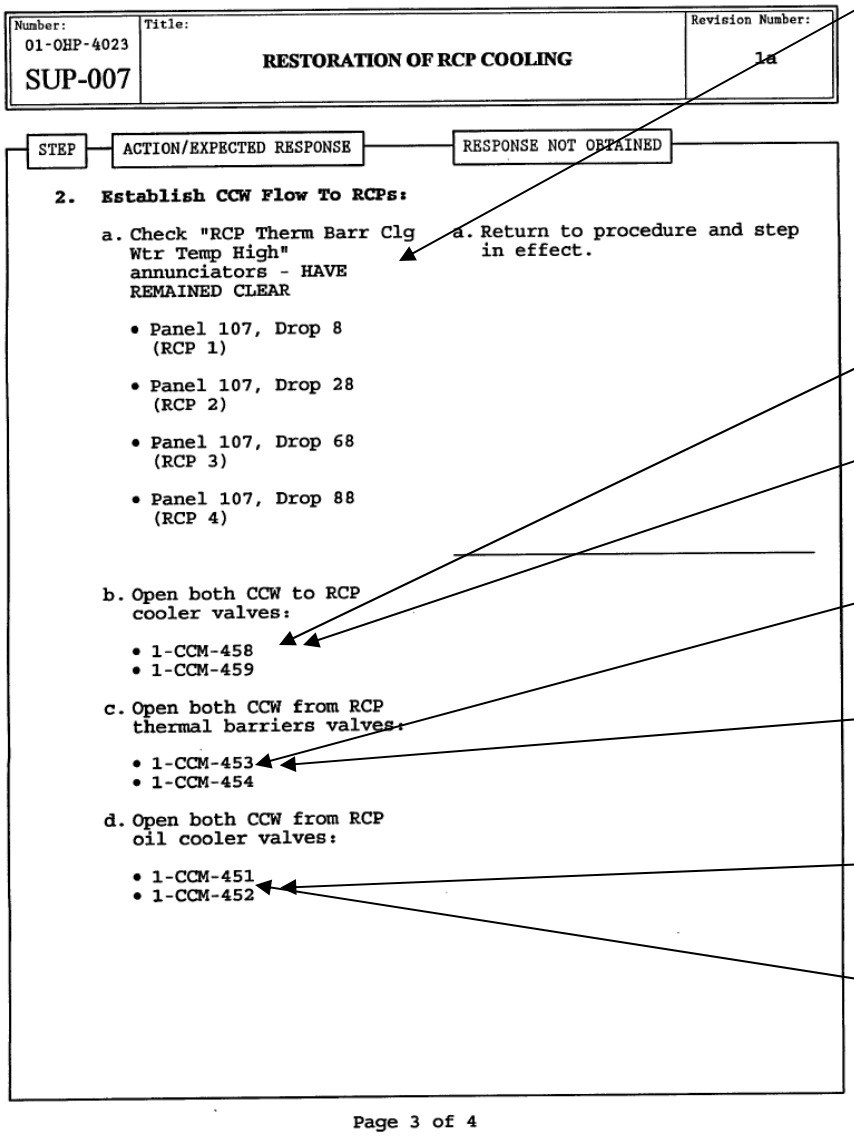
SAT: ☐ UNSAT: ☐

STANDARD: Operator verifies 1-QTI-210 through 1-QTI-240 are less than 225ºF

SAT: ☐ UNSAT: ☐

CUE: If Asked, Lower bearing temperatures have NOT exceeded 150ºF.

EXPECTED ACTIONS	CUES/STANDARDS ("**CS**" Indicates Critical Standard)



Number: 01-OHP-4023 SUP-007 | Title: RESTORATION OF RCP COOLING | Revision Number: 1a

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
2.	**Establish CCW Flow To RCPs:**	
	a. Check "RCP Therm Barr Clg Wtr Temp High" annunciators - HAVE REMAINED CLEAR • Panel 107, Drop 8 (RCP 1) • Panel 107, Drop 28 (RCP 2) • Panel 107, Drop 68 (RCP 3) • Panel 107, Drop 88 (RCP 4)	a. Return to procedure and step in effect.
	b. Open both CCW to RCP cooler valves: • 1-CCM-458 • 1-CCM-459	
	c. Open both CCW from RCP thermal barriers valves: • 1-CCM-453 • 1-CCM-454	
	d. Open both CCW from RCP oil cooler valves: • 1-CCM-451 • 1-CCM-452	

Page 3 of 4

STANDARD: Operator verifies Panel 107 Drops 8, 28, 68, 88 NOT LIT
CUE: All RCP alarms currently standing are the only ones that have been in alarm.
SAT: ☐ UNSAT: ☐

Instructor Note: Ann. 107 panel alarms for CCW flow mismatch and Low Cooling Flow to RCP Bearings may alarm/clear when restoring CCW flow to RCPs. CCM-459, CCM-454, & CCM-452 are de-energized, positions may be verified with status lights/flow after opening associated valves, or via Local Verification (***PROVIDE CUE** if Required, Valve is OPEN)

STANDARD: **(CS)** Operator places 1-CCM-458 CS to OPEN
SAT: ☐ UNSAT: ☐

STANDARD: Operator verifies 1-CCM-458 is OPEN with red light lit
*Operator verifies 1-CCM-459 is OPEN with NO light lit
SAT: ☐ UNSAT: ☐

STANDARD: **(CS)** Operator places 1-CCM-453 CS to OPEN
SAT: ☐ UNSAT: ☐

STANDARD: Operator verifies 1-CCM-453 is OPEN with red light lit
*Operator verifies 1-CCM-454 is OPEN with NO light lit
SAT: ☐ UNSAT: ☐

STANDARD: **(CS)** Operator places 1-CCM-451 CS to OPEN
SAT: ☐ UNSAT: ☐

STANDARD: Operator verifies 1-CCM-451 is OPEN with red light lit
*Operator verifies 1-CCM-452 is OPEN with NO light lit
SAT: ☐ UNSAT: ☐

EXPECTED ACTIONS	CUES/STANDARDS ("**CS**" Indicates Critical Standard)

Number: 01-OHP-4023 SUP-007	Title: RESTORATION OF RCP COOLING	Revision Number: 1a

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
3.	**Check Charging System:** • CCPs - AT LEAST ONE RUNNING -OR- • CVCS crosstie - ESTABLISHED	Return to procedure and step in effect.
4.	**Establish Normal Seal Injection Flow To RCPs:** a. Adjust 1-QRV-200, charging header pressure control valve as necessary to maintain: • RCP seal injection flow - 6 TO 12 GPM	
5.	**Return To Procedure And Step In Effect**	

-END-

Page 4 of 4

STANDARD: Checks Both CCP pumps running
SAT: ☐ UNSAT: ☐

STANDARD: Establishes RCP Seal Injection to 6-12 gpm
SAT: ☐ UNSAT: ☐

TERMINATION CUE: When operator returns to 1-OHP-4023-ES-1.2, then **"This JPM is complete."**

Task Briefing

You are an extra RO. The unit has experienced a small break LOCA with a Loss of Offsite Power. The crew has transitioned from E-1, Loss of Reactor or Secondary Coolant to ES-1.2, Post LOCA Cooldown and Depressurization.

Bus T11A has NOT been Re-Energized.

The Unit Supervisor has requested you to "Check RCP Cooling Normal" per Step 28 of 1-OHP-4023-ES-1.2, Post LOCA Cooldown and Depressurization

AMERICAN ELECTRIC POWER

COOK NUCLEAR PLANT TRAINING CENTER

Bridgman, Michigan

OPERATIONS JPM

TRAINING PROGRAM TITLE	INITIAL LICENSE TRAINING	**TIME:**	10 MINUTES
NUMBER AND TITLE:	NRC2010-Sim05 Perform Steam Generator Stop Valve Dump Valve Surveillance Test	**REVISION:**	0
SCOPE OF REVISION	**Initial Issue.** **From: NRC2008-Sim05**		

			DATE:
PREPARED BY: (Exam Writer)	Name:		
	Signature:		
APPROVED BY: (Facility Reviewer)	Name:		
	Signature:		

REFERENCES/NRC KA/TASKS

Procedure:	1-OHP-4030-151-018, R4	Steam Generator Stop Valve Dump Valve Surveillance Test
K/A Number:	039 K4.05	Knowledge of the Main Steam System design features which provide for automatic isolation of the steam line
K/A Imp.:	RO: 3.7 SRO: 3.7	
Task Number:	ADM1190301	Stroke a valve for Post Maintenance operability

TRAINING AIDS/TOOLS/EQUIPMENT

None

HANDOUTS

Task Briefing
1-OHP-4030-151-018
Stopwatch (with current cal due date sticker)

ATTACHMENTS

None

EVALUATION SETTINGS

Unit 1 Simulator

EVALUATION METHOD:	PERFORM: ☒	SIMULATE: ☐

SIMULATOR/LAB SETUP

1. Initialize simulator to IC 995 (Any Mode 1-3 IC)
2. FREEZE the simulator.
3. Stop Watch Required with Calibration Sticker

EVALUATOR INSTRUCTIONS

1. Ensure simulator setup is complete
2. Brief the operator (May be performed by giving out Task Briefing Sheet)
3. Announce start of the JPM
4. Perform evolution
5. At completion of evolution, announce the JPM is complete.
6. Document evaluation performance.

TASK BRIEFING

You are the Balance of Plant Operator.

Steam Generator Stop Valve Dump Valve Surveillance Test is required for 1-MRV-210 following a conduit repair. The Unit Supervisor directs you to perform 01-OHP 4030-151-018 on 1-MRV-210 (Section 4.1).

All personnel have been briefed and are locally standing by for the test of 1-MRV-210 Dump Valves.

GENERAL STANDARDS/PRECAUTIONS

Perform 1 OHP 4030-151-018, Steam Generator Stop Valve Dump Valve Surveillance Test on 1-MRV-210.

EXPECTED ACTIONS	CUES/STANDARDS ("**CS**" Indicates Critical Standard)

Continuous	1-OHP-4030-151-018	Rev. 4	Page 2 of 19
Steam Generator Stop Valve Dump Valve Surveillance Test			

1 PURPOSE AND SCOPE

1.1 To satisfy the full stroke testing requirements associated with the D.C. Cook Nuclear Plant Inservice Test Program in accordance with Tech Spec 5.5.6 and Technical Requirements Manual, Section 10.5.6. for the following valves:

1-MRV-211	1-MRV-221	1-MRV-231	1-MRV-241
1-MRV-212	1-MRV-222	1-MRV-232	1-MRV-242

2 PREREQUISITES **INIT**

2.1 The working copy of this procedure is the current revision. _____

2.2 A pre-test briefing has been conducted with the Shift Manager, Unit Supervisor, or WCC-SRO in accordance with PMP-4010-JOB-001, Pre-Job Briefs and Post-Job Reviews. _____

2.3 PMP-4030-EXE-001, Conduct of Surveillance Testing, Section 3.2, General Expectations for Test Prerequisite Activity, has been reviewed. _____

2.4 The steam generator stop valve dump valves are capable of being configured to allow testing or lined up normally. _____

2.5 Calibration of hand-held instruments shall be verified and documented prior to their use.

- Primary: Instrument No: SW-002
  Next Due Cal Date 12-25-2010
- Secondary: Instrument No: N/A (N/A if not used)
  Next Due Cal Date N/A _____

2.6 The hydraulic fluid reservoir for each stop valve to be tested is above the minimum level in the gauge glass. _____

2.7 **IF** 1-OHP-4030-114-034, Local Valve Position Verification Test, is scheduled for any SG Stop Valve Dump or Dump Selector valve, **THEN** performance of this procedure is being coordinated with the valve position verification surveillance. _____

General CUES:

Provide candidate marked up copy of 1-OHP-4030-151-018, Steam Generator Stop Valve Dump Valve Surveillance Test, (Marked to perform section 4.1).

CUE: If asked, all procedure prerequisites have been met and an AEO is stationed at the Valve and in communication

CUE: if asked, US acknowledges 1-MRV-210 is inoperable for testing.

Instructor Note: Primary Stop Watch Data is already entered. Secondary stopwatch data is N/A.

EXPECTED ACTIONS	CUES/STANDARDS ("**CS**" Indicates Critical Standard)

Continuous	1-OHP-4030-151-018	Rev. 4	Page 5 of 19
Steam Generator Stop Valve Dump Valve Surveillance Test			

4 DETAILS **INIT**

NOTE:
- To allow stop valves to be tested in an order that would expedite the surveillance, Step 4.1 (1-MRV-210), Step 4.2 (1-MRV-220), Step 4.3 (1-MRV-230) and Step 4.4 (1-MRV-240), may be performed in any order.
- **IF** 1-OHP-4030-114-034, Local Valve Position Verification Test, is scheduled for 1-MMO-210, 1-MRV-211, or 1-MRV-212, **THEN** Step 4.1 should be coordinated with the valve position verification surveillance.

4.1 1-MRV-210, SG 1 Stop Valve

4.1.1 Station an operator at 1-MRV-210 to watch for stop valve movement. _____

STANDARD: Operator verifies local operator stationed at stop valve.
CUE: If asked, per task brief an operator is stationed at stop valve.

NOTE:
- The steps for testing a Stop Valve Dump Valve are performed in rapid succession; documentation of step completion may be initiated after the steps have been completed for a specific Train.
- The time to open for 1-MRV-211 and 1-MRV-212 shall be measured from the time the neon lamps go out (above their respective control switches) until the dump valve is fully OPEN.

4.1.2 Test 1-MRV-211, SG 1 Stop Valve Dump Valve (Train A):

a. Place **AND** hold 1-MMO-210, Stm Gen Stop Valve Dump Valves 1 Test Selector in – POS. A. _____

STANDARD: **(CS)** Operator places AND holds 1-MMO-210 switch to the POS A position.
SAT: ☐ UNSAT: ☐

b. **WHEN** 1-MMO-210 runs to POSITION A, **THEN** verify the POSITION A white light is – LIT. _____

STANDARD: Operator verifies POS A light is LIT.
SAT: ☐ UNSAT: ☐

EXPECTED ACTIONS	CUES/STANDARDS ("**CS**" Indicates Critical Standard)

Continuous	1-OHP-4030-151-018	Rev. 4	Page 6 of 19
Steam Generator Stop Valve Dump Valve Surveillance Test			

c. Verify neon lamps have gone out and 1-MRV-211 has tripped - OPEN. _____

Stopwatch (Circle) Pri / Sec	IST MIN	As Found	IST MAX
	0 sec	____ sec	2 sec

- Is an Immediate Valve Retest Required per OHI-4016? (✓) ❑ Yes ❑ No _____

d. Locally have operator verify pressure bleeds off 1-MPI-211, 1-MRV-211 Inlet Pressure Indicator. _____

e. Return 1-MMO-210 control switch to – NORM. _____

f. Verify 1-MRV-211 is – CLOSED. _____

g. Verify 1-MMO-210 runs back to the mid-position and white NORMAL light (above control switch) is – LIT. _____

4.1.3 Test 1-MRV-212, SG 1 Stop Valve Dump Valve (Train B):

a. Place **AND** hold 1-MMO-210, Stm Gen Stop Valve Dump Valves 1 Test Selector in – POS. B. _____

b. **WHEN** 1-MMO-210 runs to POSITION B, **THEN** verify the POSITION B white light is – LIT. _____

c. Verify neon lamps have gone out and 1-MRV-212 has tripped - OPEN. _____

Stopwatch (Circle) Pri / Sec	IST MIN	As Found	IST MAX
	0 sec	____ sec	2 sec

- Is an Immediate Valve Retest Required per OHI-4016? (✓) ❑ Yes ❑ No _____

d. Locally have operator verify pressure bleeds off 1-MPI-212, 1-MRV-212 Inlet Pressure Indicator. _____

STANDARD: Verifies neon lamp for 2-MRV-211 is dark. (Starts Stopwatch)
SAT: ☐ UNSAT: ☐

STANDARD: Records OPEN time from Stopwatch (Stops Stopwatch when Green Light goes Dark & the RED light is lit)
SAT: ☐ UNSAT: ☐

CUE: AEO reports pressure indicates 0 psi on 1-MPI-211.

STANDARD: **(CS)** Operator places 1-MMO-210 switch to the NORM position.
SAT: ☐ UNSAT: ☐

STANDARD: Operator verifies 1-MRV-211indicates CLOSED.
SAT: ☐ UNSAT: ☐

STANDARD: Operator verifies NORMAL light is LIT.
SAT: ☐ UNSAT: ☐

STANDARD: **(CS)** Operator places AND holds 1-MMO-210 switch to the POS B position.
SAT: ☐ UNSAT: ☐

STANDARD: Operator verifies POS B light is LIT
SAT: ☐ UNSAT: ☐

STANDARD: Verifies neon lamp for 2-MRV-212 is dark. (Starts Stopwatch)
SAT: ☐ UNSAT: ☐

STANDARD: Records OPEN time from Stopwatch (Stops Stopwatch when Green Light goes Dark & the RED light is lit)
SAT: ☐ UNSAT: ☐

CUE: AEO reports pressure indicates 0 psi on 1-MPI-212.

EXPECTED ACTIONS	CUES/STANDARDS ("**CS**" Indicates Critical Standard)

Continuous	1-OHP-4030-151-018	Rev. 4	Page 7 of 19
Steam Generator Stop Valve Dump Valve Surveillance Test			

e. Return 1-MMO-210 control switch to – NORM. _____

f. Verify 1-MRV-212 is – CLOSED. _____

g. Verify 1-MMO-210 runs back to the mid-position and white NORMAL light (above control switch) is – LIT. _____

NOTE: **IF** 1-OHP-4030-114-034, Local Valve Position Verification Test, is scheduled for 1-MMO-220, 1-MRV-221, or 1-MRV-222, **THEN** Step 4.2 should be coordinated with the valve position verification surveillance.

4.2 1-MRV-220, SG 2 Stop Valve

4.2.1 Station an operator at 1-MRV-220 to watch for stop valve movement. _____

NOTE:
- The steps for testing a Stop Valve Dump Valve are performed in rapid succession; documentation of step completion may be initiated after the steps have been completed for a specific Train.
- The time to open for 1-MRV-221 and 1-MRV-222 shall be measured from the time the neon lamps go out (above their respective control switches) until the dump valve is fully OPEN.

4.2.2 Test 1-MRV-221, SG 2 Stop Valve Dump Valve (Train A):

a. Place **AND** hold 1-MMO-220, Stm Gen Stop Valve Dump Valves 2 Test Selector in – POS. A. _____

b. **WHEN** 1-MMO-220 runs to POSITION A, **THEN** verify the POSITION A white light is – LIT. _____

STANDARD: **(CS)** Operator places 1-MMO-210 switch to the NORM position.
SAT: ☐ UNSAT: ☐

STANDARD: Operator verifies 1-MRV-211indicates CLOSED.
SAT: ☐ UNSAT: ☐

STANDARD: Operator verifies NORMAL light is LIT.
SAT: ☐ UNSAT: ☐

STANDARD: Operator reports testing complete on 1-MRV-210.
SAT: ☐ UNSAT: ☐

TERMINATION CUE: This JPM is complete.

Task Briefing

You are the Balance of Plant Operator.

Steam Generator Stop Valve Dump Valve Surveillance Test is required for 1-MRV-210 following a conduit repair. The Unit Supervisor directs you to perform 01-OHP 4030-151-018 on 1-MRV-210 (Section 4.1).

All personnel have been briefed and are locally standing by for the test of 1-MRV-210 Dump Valves.

AMERICAN ELECTRIC POWER

COOK NUCLEAR PLANT TRAINING CENTER

Bridgman, Michigan

OPERATIONS JPM

TRAINING PROGRAM TITLE	INITIAL LICENSE TRAINING	**TIME:**	15 MINUTES
NUMBER AND TITLE:	NRC2010-Sim06 Restoration of 4kV T11A Power from SDG (Alternate Path)	**REVISION:**	0
SCOPE OF REVISION	**Initial Issue.** **NEW**		

			DATE:
PREPARED BY: (Exam Writer)	Name:		
	Signature:		
APPROVED BY: (Facility Reviewer)	Name:		
	Signature:		

REFERENCES/NRC KA/TASKS

Procedure:	1-OHP- 4023.SUP.009	Restoration of 4KV Power from EP
K/A Number:	SYS 062- A2.11	Ability to (a) predict the impacts of the following malfunctions or operations on the ac distribution system; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those malfunctions or operations: Aligning standby equipment with correct emergency power source (D/G)
K/A Imp.:	RO: 3.7 SRO: 4.1	
Task Number:	0820110501	Restoration of 4KV Power from EP

TRAINING AIDS/TOOLS/EQUIPMENT

None

HANDOUTS

Task Briefing
Copy of 1-OHP- 4023.SUP.009 procedure

ATTACHMENTS

None

EVALUATION SETTINGS

Unit 1 Simulator

EVALUATION METHOD:	PERFORM: ☒	SIMULATE: ☐

SIMULATOR/LAB SETUP

Reset to IC 993 (Setup complete, Small LOCA ES-1.2 with Loss of T11A11 and EP)

Setup SDG controls SDG1 & 2 Engine Controls to OFF/RESET

Master Mode Selector Switch to MANUAL

IMF EG13A T11A11 fail to Auto Close/Close

U1_EG13A

IMF ED01, ED04, Loss of all AC power (EP Xfrmr, 345kv lines)

U12_ED01

U1_ED04

Verify/Place West MDAFW, CCP, RHR, CTS, CCW, ESW, and the South SI Pumps in Pull to Loakout.

EVALUATOR INSTRUCTIONS

1. Ensure simulator setup is complete
2. Brief the operator (May be performed by giving out Task Briefing Sheet)
3. Announce start of the JPM
4. Perform evolution
5. At completion of evolution, announce the JPM is complete.
6. Document evaluation performance.

TASK BRIEFING

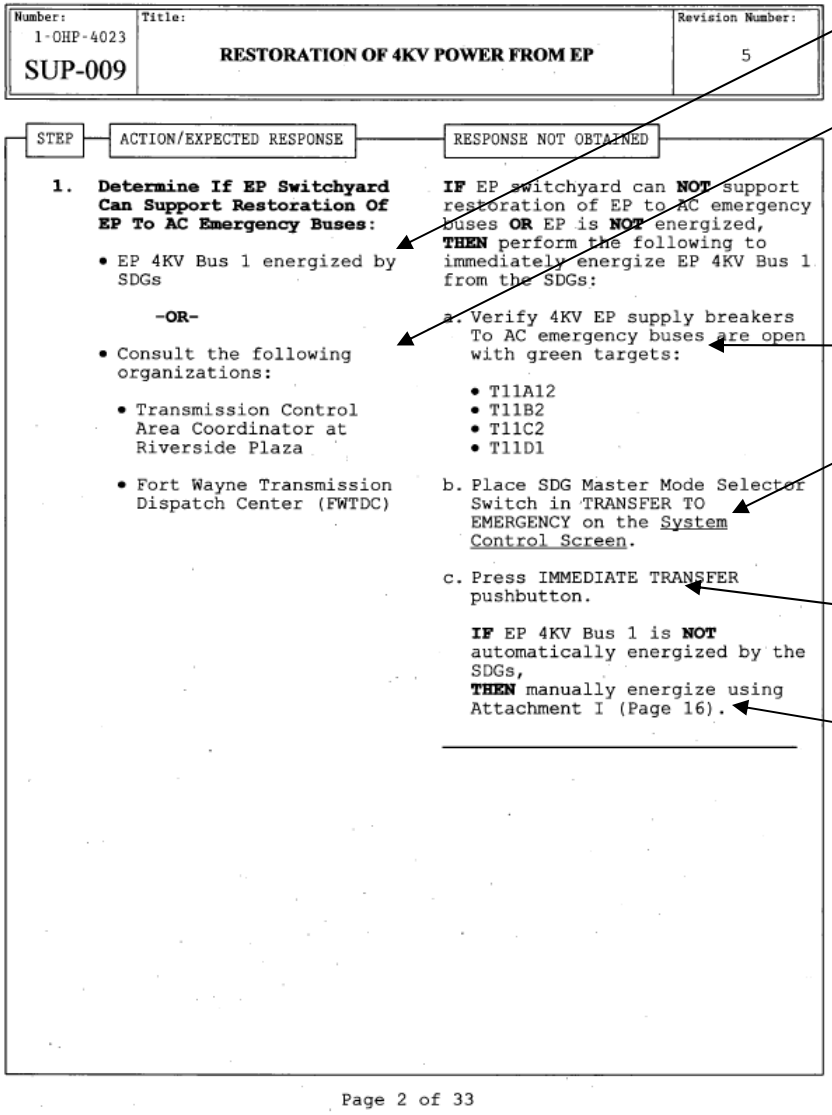
You are an extra RO. The unit has experienced a small break LOCA with a Loss of Offsite Power. The crew has transitioned from E-1, Loss of Reactor or Secondary Coolant to ES-1.2, Post LOCA Cooldown and Depressurization. Bus T11A has NOT been Re-Energized.

The Unit Supervisor directs you to, "Restore Bus T11A power from the EP per 01-OHP-4023.SUP.009."

GENERAL STANDARDS/PRECAUTIONS

When directed by the Unit Supervisor, restore 4kV power from EP as directed and within the time limits specified the accident analyses.

EXPECTED ACTIONS	CUES/STANDARDS ("**CS**" Indicates Critical Standard)



Number: 1-OHP-4023 SUP-009 | Title: **RESTORATION OF 4KV POWER FROM EP** | Revision Number: 5

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
1.	**Determine If EP Switchyard Can Support Restoration Of EP To AC Emergency Buses:** • EP 4KV Bus 1 energized by SDGs **-OR-** • Consult the following organizations: • Transmission Control Area Coordinator at Riverside Plaza • Fort Wayne Transmission Dispatch Center (FWTDC)	**IF** EP switchyard can **NOT** support restoration of EP to AC emergency buses **OR** EP is **NOT** energized, **THEN** perform the following to immediately energize EP 4KV Bus 1 from the SDGs: a. Verify 4KV EP supply breakers To AC emergency buses are open with green targets: • T11A12 • T11B2 • T11C2 • T11D1 b. Place SDG Master Mode Selector Switch in TRANSFER TO EMERGENCY on the System Control Screen. c. Press IMMEDIATE TRANSFER pushbutton. **IF** EP 4KV Bus 1 is **NOT** automatically energized by the SDGs, **THEN** manually energize using Attachment I (Page 16).

Page 2 of 33

STANDARD: Determines that EP 4KV Bus 1 is NOT Energized by SDGs
SAT: ☐ UNSAT: ☐

CUE: (If Required) FWTDC & Transmission control can NOT restore EP for another 4 hours.

CUE: (If Required) SM Directs that EP be restored from SDG.

STANDARD: Verify EP Supply Breakers are Open
SAT: ☐ UNSAT: ☐

STANDARD**: (CS):** Place SDG Master Mode Selector to Transfer to Emergency
SAT: ☐ UNSAT: ☐

STANDARD: **(CS):** Press Immediate Transfer Button
SAT: ☐ UNSAT: ☐

STANDARD: Candidate determines that Attachment I is required since SDGs do not start
SAT: ☐ UNSAT: ☐

CUE: (If Required) SM Directs that Attachment I be performed to manually restore power.

EXPECTED ACTIONS	CUES/STANDARDS ("**CS**" Indicates Critical Standard)

Number:	Title:	Revision Number:
1-OHP-4023 SUP-009	**RESTORATION OF 4KV POWER FROM EP**	5

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED

Attachment I
Restoration Of EP Bus Using SDGs

1. Check SDGs Available For Starting:

a. Check the following SDG controls in - AUTO (System Overview screen)

- SDG 1 Swgr Eng Ctrl
- SDG 1 Sync Ctrl
- SDG 2 Swgr Eng Ctrl
- SDG 2 Sync Ctrl
- 52T1 Sync Ctrl
- MDS Sync Ctrl
- System Master Mode

a. Place control(s) in AUTO on System Control screen.

b. Check SDG(s) Engine Status indicate - AVAILABLE (System Overview Screen)

- SDG 1
- SDG 2

b. **IF** BOTH SDG(s) are **NOT** available, **THEN** return to procedure and step in effect.

2. Check Motorized Disconnect Switch (MDS) - OPEN

Perform the following from the MDS Control Screen to open the motorized disconnect switch:

a. Place MDS Mode Switch in MANUAL.

b. Press MDS MANUAL OPEN pushbutton.

(Attachment I, page 1 of 4)

Page 16 of 33

STANDARD: **(CS)** Place SDG1 & SDG2 Eng Ctrl & Sync Ctrl to Auto
SAT: ☐ UNSAT: ☐

STANDARD: Verifies 52T1 & MDS Sync Mode in Auto
SAT: ☐ UNSAT: ☐

STANDARD: Place System Master Mode to Auto
SAT: ☐ UNSAT: ☐

STANDARD: Check SDGs AVAILABLE (Screen May indicate Running)
SAT: ☐ UNSAT: ☐

CUE: If required, SM & SRO Direct you to continue with Step 2

Check MDS Open
SAT: ☐ UNSAT: ☐

EXPECTED ACTIONS	CUES/STANDARDS ("**CS**" Indicates Critical Standard)

Number: 1-OHP-4023 SUP-009	Title: RESTORATION OF 4KV POWER FROM EP	Revision Number: 5

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED

Attachment I
Restoration Of EP Bus Using SDGs

3.	**Check SDGs - BOTH RUNNING**	Start all non-running SDGs from the System Control Screen by placing associated SDG Engine Control switch in START. **IF NEITHER** SDG can be started, **THEN** return to procedure and step in effect.
4.	**Check Output Breakers For Running SDGs - CLOSED** • 52G1 • 52G2	**IF** BOTH SDGs output breakers are open, **THEN** perform the following to close running SDG(s) output breaker(s): a. Select a running SDG. b. Place its Sync Mode Switch in MANUAL on the associated SDG Control screen. c. Press the associated SDG BKR MANUAL CLOSE PARALLEL pushbutton.

(Step 4 Continued On Next Page)

(Attachment I, page 2 of 4)

Page 17 of 33

STANDARD: Check SDGs both Running
SAT: ☐ UNSAT: ☐

STANDARD: Check Output Breakers 52G1 & G2 Closed
SAT: ☐ UNSAT: ☐

EXPECTED ACTIONS	CUES/STANDARDS ("**CS**" Indicates Critical Standard)

Number:	Title:	Revision Number:
1-OHP-4023 SUP-009	**RESTORATION OF 4KV POWER FROM EP**	5

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED

Attachment I
Restoration Of EP Bus Using SDGs

(Step 4 Continued From Previous Page)

IF BOTH SDGs are running **AND** only one SDG output breaker is open, **THEN** perform the following on the SDG Control Screen for the SDG with its output breaker open:

a. Place Sync Mode switch in MANUAL.

b. Adjust SDG voltage to match SDG Bus voltage.

c. Adjust engine speed until SDG frequency is slightly higher than SDG Bus frequency.

d. When sync scope indicates 11:00, **THEN** press and hold the associated SDG BKR MANUAL CLOSE PARALLEL pushbutton until the output breaker closes.

---

5. Check SDG Crosstie Breaker - CLOSED

- 52T1

Perform the following on the 52T1 Control Screen to close the SDG crosstie breaker:

a. Place Sync Mode switch in MANUAL.

b. Press 52T1 BKR MANUAL CLOSE PARALLEL pushbutton.

(Attachment I, page 3 of 4)

Page 18 of 33

STANDARD: Checks 52T1 Closed
SAT: ☐ UNSAT: ☐

EXPECTED ACTIONS	CUES/STANDARDS ("**CS**" Indicates Critical Standard)

Number:	Title:	Revision Number:
1-OHP-4023 SUP-009	**RESTORATION OF 4KV POWER FROM EP**	5

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED

Attachment I
Restoration Of EP Bus Using SDGs

6.	**Check 4KV EP Bus 1 - ENERGIZED**	Perform the following: a. Shutdown any running SDG by placing its Engine Control switch in COOLDOWN/STOP on the System Control Screen. b. Return to procedure and step in effect.
7.	**Check SDGs - BOTH RUNNING CONNECTED TO EP BUS 1**	**IF** EP Bus 1 is energized by one SDG, **THEN** limit load to 2250 kw.
8.	**Return To Supplement Body, Step 2 (Page 3)**	

-END OF ATTACHMENT-

(Attachment I, page 4 of 4)

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STANDARD: Verify EP bus energized
SAT: ☐ UNSAT: ☐

STANDARD: Verify both SDGs running and connected to EP bus
SAT: ☐ UNSAT: ☐

STANDARD: **(CS)** Return to Step 2
SAT: ☐ UNSAT: ☐

EXPECTED ACTIONS	CUES/STANDARDS ("**CS**" Indicates Critical Standard)

Number: 1-OHP-4023 SUP-009	Title: RESTORATION OF 4KV POWER FROM EP	Revision Number: 5

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
2.	**Check If Load Conservation Circuit Is Energized:**	
	a. Check EP 4KV Bus 1 - ENERGIZED BY SDG(s)	a. Go to Step 3 (Page 4).
	b. Check deenergized train(s) DG white indicating light - **NOT** LIT • Train A: • "DG1CD Trip Ctrl Bus Volt Fail" • Train B: • "DG1AB Trip Ctrl Bus Volt Fail"	b. **IF** the SDGs are powering the EP 4KV bus, **THEN** return to procedure and step in effect.
	c. Place deenergized train(s) Load Conservation Switch in LOAD CON: • Train A • Train B	

Page 3 of 33

STANDARD: Checks EP 4KV Bus Energized by SDG
SAT: ☐ UNSAT: ☐

STANDARD: Checks Train A DG1CD Trip Ctrl Bus Volt Fail – Not Lit
SAT: ☐ UNSAT: ☐

STANDARD: Checks Train B DG1AB Trip Ctrl Bus Volt Fail – Not Lit
SAT: ☐ UNSAT: ☐

STANDARD: **(CS)** Place Train B Load Conservation Switch to LOAD CON
SAT: ☐ UNSAT: ☐

NOTE: Train A is Energized – Placing Train A Load Conservation to LOAD CON causes a load shed of Train A Lighting Transformer

EXPECTED ACTIONS	CUES/STANDARDS ("**CS**" Indicates Critical Standard)

Number:	Title:	Revision Number:
1-OHP-4023 SUP-009	**RESTORATION OF 4KV POWER FROM EP**	5

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED

NOTE

- The maximum EP load limit to Unit 1 is 600 amps.
- The maximum SDGs load rating is 4500 kw (2250 kw each).

3. Check AC Emergency Buses - ALL ENERGIZED

- Bus T11A
- Bus T11B
- Bus T11C
- Bus T11D

Perform the following as desired:

- To energize Bus T11A from EP, go to Attachment A (Page 6).
- To energize Bus T11B from EP, go to Attachment B (Page 8).
- To energize Bus T11C from EP, go to Attachment C (Page 9).
- To energize Bus T11D from EP, go to Attachment D (Page 10).

Page 4 of 33

STANDARD: Go to Attachment A to Restore T11A
SAT: ☐ UNSAT: ☐

EXPECTED ACTIONS	CUES/STANDARDS ("**CS**" Indicates Critical Standard)

Number:	Title:	Revision Number:
1-OHP-4023 SUP-009	**RESTORATION OF 4KV POWER FROM EP**	5

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED

Attachment A
Energize Bus T11A From Emergency Power

1. **Check Bus T11A - NOT FAULTED**

   - "4KV Bus T11A CB T11A9 Trip" annunciator (Panel 119, Drop 75) - CLEAR
   - "TR11A Differential Operated" annunciator (Panel 119, Drop 88) - CLEAR

   Perform the following:

   a. Inform Unit Supervisor that Bus T11A can **NOT** be energized.

   b. Return to Supplement Body, Step 3 (Page 4). OBSERVE NOTES PRIOR TO Step 3.

2. **Place T11A11, DG1AB Supply To Bus T11A, In PULL TO LOCKOUT**

3. **Verify Bus T11A Breakers - OPEN WITH GREEN TARGET**

   - T11A9, Bus 1A Supply To Bus T11A
   - T11A6, 4KV Supply To TR11PHA

4. **Place Bus T11A Load Control Switches In PULL TO LOCKOUT:**

   - West MDAFW pump
   - West CCP
   - West RHR pump
   - South SI pump
   - West CTS pump
   - West CCW pump
   - West ESW pump

5. **Close T11A12, 4KV EP Supply To Bus T11A**

(Attachment A, page 1 of 2)

Page 6 of 33

STANDARD: Verify Annunciators are Not Lit
SAT: ☐ UNSAT: ☐

STANDARD: Place T11A11 in PULL TO LOCKOUT
SAT: ☐ UNSAT: ☐

STANDARD: Verify T11A9 & T11A6 Open with Green Targets
SAT: ☐ UNSAT: ☐

STANDARD: Verify Pumps in PTL
SAT: ☐ UNSAT: ☐

CUE: All pumps are in PTL

STANDARD: **(CS)** Close T11A12
SAT: ☐ UNSAT: ☐

EXPECTED ACTIONS	CUES/STANDARDS ("**CS**" Indicates Critical Standard)

Number:	Title:	Revision Number:
1-OHP-4023 SUP-009	**RESTORATION OF 4KV POWER FROM EP**	5

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED

Attachment A
Energize Bus T11A From Emergency Power

6. Return To Supplement Body, Step 3 (Page 4). OBSERVE NOTES PRIOR TO Step 3

-END OF ATTACHMENT-

(Attachment A, page 2 of 2)

Page 7 of 33

When Transition is made:

TERMINATION CUE: This JPM is complete.

Task Briefing

You are an extra RO. The unit has experienced a small break LOCA with a Loss of Offsite Power. The crew has transitioned from E-1, Loss of Reactor or Secondary Coolant to ES-1.2, Post LOCA Cooldown and Depressurization. Bus T11A has NOT been Re-Energized.

The Unit Supervisor directs you to, "Restore Bus T11A power from the EP per 01-OHP-4023.SUP.009."

AMERICAN ELECTRIC POWER

COOK NUCLEAR PLANT TRAINING CENTER

Bridgman, Michigan

OPERATIONS JPM

TRAINING PROGRAM TITLE	INITIAL LICENSE TRAINING	**TIME:**	15 MINUTES
NUMBER AND TITLE:	NRC2010-Sim07 Setup of Audio Count Rate Channel	**REVISION:**	0
SCOPE OF REVISION	**Initial Issue.** **New**		

			DATE:
PREPARED BY: (Exam Writer)	Name:		
	Signature:		
APPROVED BY: (Facility Reviewer)	Name:		
	Signature:		

REFERENCES/NRC KA/TASKS

Procedure:	1-OHP-4021-013-005, Rev. 13	Visual Audio Count Rate Channel (NIS)
K/A Number:	015 A4.02	Ability to manually operate and/or monitor in the control room: (CFR: 41.7 / 45.5 to 45.8) *NIS indicators*
K/A Imp.:	RO: 3.9 SRO: 3.9	
Task Number:	0130140101	Energize the Audio Count Rate Channel

TRAINING AIDS/TOOLS/EQUIPMENT

None

HANDOUTS

1. Task Briefing
2. Copy of 1-OHP-4021-013-005 (Attachment 1)

ATTACHMENTS

None

EVALUATION SETTINGS

Unit 1 Simulator

EVALUATION METHOD:	PERFORM: ☒	SIMULATE: ☐

SIMULATOR/LAB SETUP

1. Initialize to IC 995 (Any Mode 3 IC)
2. Align the Scaler Timer switches as follows:
   - POWER switch in OFF (Down)
   - Scaler Timer Polarity Toggle Switch is in the (+) position
   - Thumbwheels to 00000
   - Sampling Mode Toggle Switch to MAN

EVALUATOR INSTRUCTIONS

1. Ensure simulator setup is complete
2. Brief the operator (May be performed by giving out Task Briefing Sheet)
3. Announce start of the JPM
4. Perform evolution
5. At completion of evolution, announce the JPM is complete.
6. Document evaluation performance.

TASK BRIEFING

You are the Unit 1 RO.

MTI has just finished installing a new Scaler Timer Drawer. The Unit Supervisor has requested that you set up the Audio Count Rate Channel for a 60 second sample in accordance with 1-OHP-4021-013-005, VISUAL AUDIO COUNT RATE CHANNEL (NIS).

GENERAL STANDARDS/PRECAUTIONS

Operator has set up the Audio Count Rate Channel

EXPECTED ACTIONS	CUES/STANDARDS ("**CS**" Indicates Critical Standard)

Continuous	1-OHP-4021-013-005	Rev. 13	Page 5 of 18
Visual Audio Count Rate Channel (NIS)			
Attachment 1	Setup Of Audio Count Rate Channel		Pages: 5 - 7

1 PURPOSE AND SCOPE

1.1 This attachment provides direction for setting up Audio Count Rate Channel for visual/audible indication in the control room and audible indication in containment.

1.2 This attachment provides direction for setting up Audio Count Rate Channel for Standby after Reactor Start-up.

2 PREREQUISITES

2.1 None.

3 PRECAUTIONS AND LIMITATIONS

3.1 Source assembly movement during core alterations may reduce audible count rate suddenly. Adjustment of audio multiplier setting may be needed to maintain audio count rate signal.

4 DETAILS **INIT**

4.1 Verify scaler timer POWER switch in ON position. _____

4.2 Check the following lights are lit on AUDIO COUNT RATE CHANNEL drawer:

- AUDIO POWER ON _____
- SCALER POWER ON _____

4.3 Place CHANNEL SELECTOR switch to desired source range channel. _____

4.4 Verify Scaler Timer Polarity Toggle Switch is in the (-) position. _____

STANDARD: **(CS)** Operator verifies scaler timer "POWER" toggle switch in the "UP" position
SAT: ☐ UNSAT: ☐

STANDARD: Operator verifies lights lit
SAT: ☐ UNSAT: ☐

STANDARD: Operator verifies Channel Selector switch in "SRN31" or "SRN32" position
SAT: ☐ UNSAT: ☐

STANDARD: **(CS)** Operator verifies Scaler Timer Polarity switch is in the (-) position
SAT: ☐ UNSAT: ☐

EXPECTED ACTIONS	CUES/STANDARDS ("**CS**" Indicates Critical Standard)

Continuous	1-OHP-4021-013-005	Rev. 13	Page 6 of 18
Visual Audio Count Rate Channel (NIS)			
Attachment 1	Setup Of Audio Count Rate Channel		Pages: 5 - 7

4.5 Place SAMPLING MODE selector switch in the following positions:

- COUNT position on DISPLAY side _____
- SEC position on PRESET side _____

4.6 Volume control may be adjusted during sampling to any position that results in a comfortable volume for the audible count rate. _____

NOTE: In the current configuration, the thumbwheels enter time values to the nearest tenth of a second.

4.7 Position thumbwheels to 00600 or other value as desired. _____

4.8 Place SAMPLING MODE toggle switch in AUTO. _____

4.9 Press the following pushbuttons:

4.9.1 STOP

4.9.2 RESET

4.9.3 START _____

4.10 Check GATE light is lit. _____

- **IF** GATE light is NOT lit, **THEN** notify MTI. _____

STANDARD: Operator verifies sampling mode switch in "COUNT/SEC" position (second part of step on next page).
SAT: ☐ UNSAT: ☐

STANDARD: Operator verifies "VOLUME" switch in any position
SAT: ☐ UNSAT: ☐

STANDARD: **(CS)** Operator checks thumbwheels set to 00600
SAT: ☐ UNSAT: ☐

STANDARD: **(CS)** Operator verifies sampling mode toggle switch in "AUTO" position
SAT: ☐ UNSAT: ☐

STANDARD: Operator depresses the STOP and RESET pushbuttons
SAT: ☐ UNSAT: ☐

STANDARD: **(CS)** Depresses the START pushbutton
SAT: ☐ UNSAT: ☐

STANDARD: Operator verifies gate light lit
SAT: ☐ UNSAT: ☐

EXPECTED ACTIONS	CUES/STANDARDS ("**CS**" Indicates Critical Standard)

Continuous	1-OHP-4021-013-005	Rev. 13	Page 7 of 18
Visual Audio Count Rate Channel (NIS)			
Attachment 1	Setup Of Audio Count Rate Channel		Pages: 5 - 7

NOTE: **IF** Audio Count Rate Channel is being placed in Standby, **THEN** Steps 4.11 and 4.12 are N/A.

4.11 Place AUDIO MULTIPLIER switch in a position that results in a distinguishable gap between counts. (This step N/A if source range detectors are deenergized) _____

4.12 Verify count rate indication is audible in the following [Tech Spec 3.9.2 and NRC Commitments #4985 & 5777]:

- Control Room (This step N/A if source range detectors are deenergized) _____
- Containment (Mode 6 only) _____

Comments:

_____
_____
_____

Verified Complete By: _____ Date: ___/___/___

Reviewed By: _____ Date: ___/___/___
Supervisor/Manager Signature

STANDARD: Operator adjusts audio multiplier switch to produce a distinguishable gap in audio output
SAT: ☐ UNSAT: ☐

STANDARD: Operator determines Containment is N/A
SAT: ☐ UNSAT: ☐

STANDARD: Operator Signs for Attachment 1 being complete
SAT: ☐ UNSAT: ☐

TERMINATION CUE: This JPM is complete.

Task Briefing

You are the Unit 1 RO.

MTI has just finished installing a new Scaler Timer Drawer. The Unit Supervisor has requested that you set up the Audio Count Rate Channel for a 60 second sample in accordance with 1-OHP-4021-013-005, VISUAL AUDIO COUNT RATE CHANNEL (NIS).

AMERICAN ELECTRIC POWER

COOK NUCLEAR PLANT TRAINING CENTER

Bridgman, Michigan

OPERATIONS JPM

TRAINING PROGRAM TITLE	INITIAL LICENSE TRAINING	**TIME:**	15 MINUTES
NUMBER AND TITLE:	NRC2010-Sim08 Respond to an R5 High Alarm (Alternate Path) - (Auto Actions Failed)	**REVISION:**	0
SCOPE OF REVISION	**Initial Issue.** **New**		

		DATE:
PREPARED BY: (Exam Writer)	Name: _____	
	Signature: _____	_____
APPROVED BY: (Facility Reviewer)	Name: _____	
	Signature: _____	_____

REFERENCES/NRC KA/TASKS

Procedure:	01-OHP-4021-138, R9	ANNUNCIATOR #138 RESPONSE: RMS ELECTRO-LARM
K/A Number:	SYS 033 A1.02	Ability to predict and/or monitor changes in parameters (to prevent exceeding design limits) associated with Spent Fuel Pool Cooling System operating the controls including: Radiation monitoring systems
	SYS 034 A4.01	Fuel Handling Equipment System Ability to manually operate and/or monitor in the control room: Radiation levels
	APE 036 AA1.02	Ability to operate and / or monitor the following as they apply to the Fuel Handling Incidents: ARM system

K/A Imp.:	RO:	2.8	SRO:	3.3
		3.3		3.7
		3.1		3.5

Task Number:

TRAINING AIDS/TOOLS/EQUIPMENT

None

HANDOUTS

Task Briefing
Copy of 01-OHP-4021-138 procedure

ATTACHMENTS

None

EVALUATION SETTINGS

Unit 1 Simulator

EVALUATION METHOD:	PERFORM: ☒	SIMULATE: ☐

SIMULATOR/LAB SETUP

1. Initialize to IC 995 (Mode 3 IC with Setups)
2. Place Channel VRS-5000 to Poll OFF
3. Fail Outputs of R5 to simulate High Alarm

Fail R5 Meter High	**Fail R5 High Light On**
Fail R5 Electro Alarm ON	**AN23_U1(046)**

4. Place R5 Electro-Alarm in ALARM

EVALUATOR INSTRUCTIONS

1. Ensure simulator setup is complete
2. Brief the operator (May be performed by giving out Task Briefing Sheet)
3. Announce start of the JPM
4. Perform evolution
5. At completion of evolution, announce the JPM is complete.
6. Document evaluation performance.

TASK BRIEFING

When I tell you to begin, you are to respond to the ANN 123 DROP 46 alarm.. You may use any approved reference material that is normally available in the Control Room.

The Unit Supervisor directs you to respond to the ANN 123 DROP 46 alarm.

GENERAL STANDARDS/PRECAUTIONS

Operator has verified/completed automatic actions associated with R5 Westinghouse Radiation Monitor.

EXPECTED ACTIONS	CUES/STANDARDS ("**CS**" Indicates Critical Standard)

ANNUNCIATOR #123 RESPONSE: CIRCULATING WATER

INITIATING DEVICE(S) AEP	Alias	NOMINAL SETPOINT
RMS Electro-Alarms on panel FI	-	N/A

RMS
RAD LEVEL HI
OR SYSTEM ABN

1.0 PROBABLE CAUSE(S):

1.1 High radiation level.

1.2 Operation selector switch is in some other position than OPERATE.

1.3 Fuses are removed from drawer (power failure).

1.4 Low radiation alarm.

2.0 AUTOMATIC ACTION(S):

2.1 Varies with detector.

3.0 OPERATOR ACTION(S):

3.1 Check RMS panel for affected channel.

3.2 Refer to 1-OHP-4024-138, Annunciator #138 Response: RMS Electro-Larm.

STANDARD: **(CS)** Operator identifies that R5 is in Alarm.
SAT: ☐ UNSAT: ☐

STANDARD: Operator refers to 1-OHP-4024-138.
SAT: ☐ UNSAT: ☐

CUE: Provide Operator with a copy of 1-OHP-4024-138 Drop 5

EXPECTED ACTIONS	CUES/STANDARDS ("**CS**" Indicates Critical Standard)

1-OHP-4024-138

Level of Use: REFERENCE **Drop 5**

ANNUNCIATOR #138 RESPONSE: RMS ELECTRO-LARM

INITIATING DEVICE(S) AEP	Alias	NOMINAL SETPOINT
K201-R5 K202-R5 12-RRC-330	High Level Low Level	Variable – Contact RP for Setpoint

R5

SPENT FUEL

PIT AREA

1.0 PROBABLE CAUSE(S):

1.1 High Level

- Leaking fuel bundle
- Dropping water level in spent fuel pool
- Criticality
- Detector malfunction

1.2 Low Level

- Channel Failure

1.3 Console switch not in OPERATE.

2.0 AUTOMATIC ACTION(S):

2.1 High Level Alarm:

- Trips spent fuel area supply fans 12-HV-AFS-1, 12-HV-AFS-2, 12-HV-AFS-3, 12-HV-AFS-4.
- Opens charcoal filter outlet dampers on the fuel handling area exhaust unit 12-HV-AFX.

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Rev. 9

STANDARD: Operator may notify Radiation Protection and Unit Supervisor of High Alarm On R5
SAT: ☐ UNSAT: ☐

STANDARD: Operator verifies that R5 is indicating High Alarm with pegged indication.
SAT: ☐ UNSAT: ☐

CUE: If required, "The US directs you to perform the automatic actions"

STANDARD: Operator determines that 12-HV-AFS-1, 12-HV-AFS-2, 12-HV-AFS-3, and 12-HV-AFS-4 spent fuel area fans are still running.
SAT: ☐ UNSAT: ☐

STANDARD: **(CS)** Operator Stops 12-HV-AFS-1, 12-HV-AFS-2, 12-HV-AFS-3, and 12-HV-AFS-4 spent fuel area fans.
SAT: ☐ UNSAT: ☐

STANDARD: Operator determines that charcoal filter outlet dampers are CLOSED and the bypass dampers are OPEN.
SAT: ☐ UNSAT: ☐

EXPECTED ACTIONS	CUES/STANDARDS ("**CS**" Indicates Critical Standard)
1-OHP-4024-138 **Level of Use: REFERENCE** **Drop 5** • Closes charcoal filter bypass dampers on the fuel handling area exhaust unit 12-HV-AFX. 2.2 Low Level: • None **3.0 OPERATOR ACTION(S):** 3.1 High Level Alarm: • Notify RP. • Stop all fuel bundle movement. • Evacuate area 3.2 Low Level Alarm: • Suspend all fuel movement in spent fuel storage pool. • **[Current TS]** Every 24 hours, survey area with portable monitoring instrumentation (Tech. Spec. 3.3.3.1). **[Improved TS]** Every 24 hours, survey area with portable monitoring instrumentation (Technical Requirements Manual 8.3.8). 3.3 Verify only one fuel handling area exhaust fan running. • 12-HV-AFX-1 • 12-HV-AFX-2 3.4 Low Level Alarm: Repair and return to service as soon as possible. 3.5 **IF** cause is fuel handling accident in spent fuel storage area, **THEN** refer to 12-OHP 4022.018.006, Irradiated Fuel Handling Accident In Spent Fuel Storage Area – Control Room Actions. 3.6 **IF** cause is fuel handling accident in spent fuel storage area, **THEN** refer to 12-OHP 4022.018.005, Irradiated Fuel Handling Accident In Spent Fuel Storage Area – Local Actions. **Page 6 of 43** **Rev. 9**	STANDARD: **(CS)** Operator places charcoal filter outlet dampers to OPEN and the bypass dampers to CLOSE by selecting filter. SAT: ☐ UNSAT: ☐ CUE: If dispatched as AEO, Charcoal Filter Outlet dampers are OPEN and bypass Dampers are closed. STANDARD: Operator Provides notification to RP, verifies Fuel Movement Stopped, and Consults with Unit Supervisor on Evacuating the SFP. SAT: ☐ UNSAT: ☐ **CUE:** RP has been notified, No Fuel Movement is in place, RP is coordinating Evacuation of the SFP area. STANDARD: Operator verifies that only 1 fuel handling exhaust fan is running. SAT: ☐ UNSAT: ☐ **TERMINATION CUE: This JPM is complete.**

Task Briefing

When I tell you to begin, you are to respond to the ANN 123 DROP 46 alarm.. You may use any approved reference material that is normally available in the Control Room.

The Unit Supervisor directs you to respond to the ANN 123 DROP 46 alarm.