AMERICAN ELECTRIC POWER

COOK NUCLEAR PLANT TRAINING CENTER

Bridgman, Michigan

OPERATIONS JPM

TRAINING PROGRAM TITLE	Initial License Training	**TIME:**	15 MINUTES
NUMBER AND TITLE:	2020NRC-SIM01 (U2) Perform Emergency Boration due to Shutdown Margin Not Met (Alternate Path)	**REVISION:**	0

Examinee's Name: _____

Evaluator's Name: _____

Date Performed: _____

Result (Circle One): SAT / UNSAT

Number of Attempts: _____

Time to Complete: _____

Comments: _____
_____
_____
_____

REFERENCES/NRC KA/TASKS

Procedure:	2-OHP-4021-005-007	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: Emergency borate control valve and indicators (CFR 41.7 / 45.5 / 45.6)
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 2-OHP-4021-005-007 procedure

ATTACHMENTS

None

EVALUATION SETTINGS

Unit 2 Simulator

EVALUATION METHOD:	PERFORM: ☒	SIMULATE: ☐

SIMULATOR/LAB SETUP

1. Initialize to IC 820 (Mode 3 IC)
2. Insert Override ZGI101QMO420_U2 to CLOSE
3. Insert Override ZGI101QRV421_U2 to CLOSE

ZGI101QMO420_U2
ZGI101QRV421_U2

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. Last night Chemistry reported to Operations that their sampling equipment had been malfunctioning. As a result of the malfunction the reported boron numbers had been higher than actual RCS boron. The crew has just performed 2-OHP-4021-001-012, Determination of Reactor Shutdown Margin using the corrected numbers and discovered that Shutdown Margin has NOT been met.

The Unit Supervisor directs you to initiate Emergency Boration to the RCS from the Blender of 500 gallons in accordance with 2-OHP-4021-005-007, Operation of Emergency Boration Flow Paths, using the Preferred Method.

TASK STANDARDS

Operator has established Emergency Boration to the RCS.

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

Reference	2-OHP-4021-005-007	Rev. 8	Page 6 of 16
Operation Of Emergency Boration Flowpaths			
Attachment 1	Boric Acid Storage Tank Flowpath		Pages: 5 - 11

4 DETAILS

4.1 Align a Boration Source

NOTE: 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 3 Speed Selector ❑
- Boric Acid XFER Pump 4 Speed Selector ❑

b. Verify BA Transfer Pump Recirculation valves closed:

- 12-QRV-420, Middle BAT Recirc ❑
- 2-QRV-430, South BA Tank Recirc ❑

c. Verify closed the following valves:

- 2-QRV-421, Boric Acid To Blender ❑
- 2-QRV-422, Prim Water To Blender ❑

d. **IF** desired to minimize delay effect of adding Boric Acid with the Operating CCP ELO Open, **THEN** verify charging header flow is Greater Than 75 gpm **AND** Close the ELO for the operating Charging Pump:

- **IF** the East CCP is in service, **THEN** Close 2-QMO-225, EAST CCP Leakoff. ❑
- **IF** the West CCP is in service, **THEN** Close 2-QMO-226, WEST CCP Leakoff. ❑

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 2-QRV-430 is closed.
SAT: ☐ UNSAT: ☐

CUE: Unit 1 verifies 12-QRV-420 is closed when asked

STANDARD: Operator verifies 2-QRV-421 and 2-QRV-422 are closed.
SAT: ☐ UNSAT: ☐

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

Reference	2-OHP-4021-005-007	Rev. 8	Page 7 of 16
Operation Of Emergency Boration Flowpaths			
Attachment 1	Boric Acid Storage Tank Flowpath		Pages: 5 - 11

e. Open 2-QMO-420, Emer Boration To CHG Pump Suct. ❑

f. Verify 2-QFI-420, Emer Boration Flow, indicates – GREATER THAN OR EQUAL TO 44 gpm. ❑

STANDARD: Operator attempts to open 2-QMO-420.
SAT: ☐ UNSAT: ☐

STANDARD: Operator identifies failed 2-QMO-420, and no flow on 2-QFI-420
SAT: ☐ UNSAT: ☐

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

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

Candidate may choose to use Step 4.1.2 to borate through the Blender (will NOT work) or Use Attachment 2 to borate from the RWST (page 7).

a. **IF** blender is aligned to CVCS HUT or RWST, **THEN** perform the following:

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

1. **IF** makeup was aligned to blend to CVCS HUT, **THEN**:

- CLOSE 2-CS-386, South BA Blender 2-QP-21 to CVCS HUT and RWST Shutoff Valve ❑
- CLOSE 2-CS-390, South BA Blender 2-QP-21 to CVCS HUT Shutoff Valve ❑

STANDARD: Operator recognizes 4.1.2.a is not to be used (If chosen above)
SAT: ☐ UNSAT:

2. **IF** makeup was aligned to blend to RWST, **THEN**:

- CLOSE 2-CS-386, South BA Blender 2-QP-21 to CVCS HUT and RWST Shutoff Valve ❑
- CLOSE 2-CS-388, BA Blender 2-QP-21 to RWST Blender Shutoff Valve. ❑

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

- Boric Acid XFER Pump 3 Speed Selector ❑
- Boric Acid XFER Pump 4 Speed Selector ❑

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

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

Reference	2-OHP-4021-005-007	Rev. 8	Page 8 of 16
Operation Of Emergency Boration Flowpaths			
Attachment 1	Boric Acid Storage Tank Flowpath		Pages: 5 - 11

c. Verify the following valves - CLOSED:

- 12-QRV-420, Middle BAT Recirc ❑
- 2-QRV-430, South BA Tank Recirc ❑
- 2-QRV-451, Blender To VCT ❑
- 2-QRV-422, Prim Water to Blender ❑

d. Verify open the following valves:

- 2-QRV-400, Blender To CHG Pumps Suct ❑
- 2-QRV-421, Boric Acid To Blender ❑

e. Verify 2-QFC-421, Blender Boric Acid flow indicates – GREATER THAN OR EQUAL TO 36 gpm ❑

f. **IF** desired to minimize delay effect of adding Boric Acid with the Operating CCP ELO Open, **THEN** verify charging header flow is Greater Than 75 gpm **AND** Close the ELO for the operating Charging Pump:

- **IF** the East CCP is in service, **THEN** Close 2-QMO-225, EAST CCP Leakoff. ❑
- **IF** the West CCP is in service, **THEN** Close 2-QMO-226, WEST CCP Leakoff. ❑

4.2 Verify Boration Flow Path to Reactor Coolant System.

4.2.1 Verify at least ONE Charging Pump running.

- 2-PP-50E, East Centrifugal Charging Pump ❑
- 2-PP-50W, West Centrifugal Charging Pump ❑

STANDARD: Operator verifies following closed:
- 12-QRV-420, Middle BAT Recirc (Cue: Unit 1 reports 12-QRV-420 is Closed)
- 2-QRV-430, South BA Tank Recirc
- 2-QRV-451, Blender To VCT
- 2-QRV-422, Prim Water to Blender

SAT: ☐ UNSAT: ☐

STANDARD: Operator Opens 2-QRV-400 and attempts to open 2-QRV-421.
SAT: ☐ UNSAT: ☐

STANDARD: Operator identifies failed 2-QRV-421, and no flow on 2-QFC-421.
SAT: ☐ UNSAT: ☐

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

Candidate will need to use Attachment 2 to borate from the RWST (page 7).

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

Reference	2-OHP-4021-005-007	Rev. 8	Page 12 of 16
Operation Of Emergency Boration Flowpaths			
Attachment 2	Refueling Water Storage Tank Flowpath		Pages: 12 - 16

1 PURPOSE AND SCOPE

1.1 The purpose of this procedure is to provide instructions for:

- borating using the RWST as a boration source at greater than or equal to 60.1 gpm (70 gpm indicated)

2 PREREQUISITES

2.1 None

3 PRECAUTIONS AND LIMITATIONS

3.1 To ensure operability of the emergency boration flow path per Technical Requirements Manual, VCT pressure must be maintained at less than or equal to 37 psig to ensure adequate boration flow.

4 DETAILS

4.1 Align a Boration Source

NOTE:	VCT pressure must be ≤ 37 psig to ensure emergency flow rate can meet the operability requirements of Technical Requirements Manual.

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

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

CUE: If asked, as Unit Supervisor direct the candidate to commence boration while a volume of RWST water is calculated by chemistry.

STANDARD: **(CS)** Operator OPENS the following 2-IMO-910 and 2-IMO-911. (**ONLY 1 Required**)
SAT: ☐ UNSAT: ☐

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

Reference	2-OHP-4021-005-007	Rev. 8	Page 13 of 16
Operation Of Emergency Boration Flowpaths			
Attachment 2	Refueling Water Storage Tank Flowpath		Pages: 12 - 16

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

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

4.1.3 **IF** desired to minimize delay effect of adding Boric Acid with the Operating CCP ELO Open, **THEN** verify charging header flow is Greater Than 75 gpm **AND** Close the ELO for the operating Charging Pump:

a. Verify Charging flow is GREATER THAN 75 gpm **AND** CLOSE the Running CCP ELO:

- **IF** the East CCP is in service, **THEN** Close 2-QMO-225, EAST CCP Leakoff. ❑
- **IF** the West CCP is in service, **THEN** Close 2-QMO-226, WEST CCP Leakoff. ❑

4.2 Verify Boration Flow Path to Reactor Coolant System.

4.2.1 Verify at least ONE Charging Pump running.

- 2-PP-50E, East Centrifugal Charging Pump ❑
- 2-PP-50W, West Centrifugal Charging Pump ❑

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

a. Verify open the following:

- 2-QMO-200, Charging Flow To Regen ❑
- 2-QMO-201, Charging Flow To Regen ❑

STANDARD: **(CS)** Operator CLOSES the following 2-QMO-451and 2-QMO-452. (**ONLY 1 Required**)
SAT: ☐ UNSAT: ☐

STANDARD: **(CS)** Operator verifies 2-PP-50E East Charging Pump is operating.
SAT: ☐ UNSAT: ☐

STANDARD: Operator verifies open the following 2-QMO-200 and 2-QMO-201.
SAT: ☐ UNSAT: ☐

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

Reference	2-OHP-4021-005-007	Rev. 8	Page 14 of 16
Operation Of Emergency Boration Flowpaths			
Attachment 2	Refueling Water Storage Tank Flowpath		Pages: 12 - 16

b. Verify open **OR** throttled the following:

- 2-QRV-251, CCP Discharge Flow Control ❑
- 2-QRV-200, Charging HDR Press Ctrl ❑

c. Verify open at least ONE of the following:

- 2-QRV-61, Alt Chg Line To Cold Leg 1 ❑
- 2-QRV-62, Normal Chg Line To Cold Leg 4 ❑

d. **IF** 2-QRV-200, Charg Hdr Press Ctrl valve is failed closed, **THEN** open bypass valve 2-CS-319. ❑

4.2.3 Verify 2-QFI-200, Charging Flow, indicates – GREATER THAN 70 gpm. ❑

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

a. Verify open 2-QRV-251, CCP Discharge Flow Control. ❑

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

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

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

4.3.1 Verify OPEN both of the following valves to align charging pump suction to the VCT:

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

STANDARD: Operator verifies open OR throttled 2-QRV-251 and 2-QRV-200
SAT: ☐ UNSAT: ☐

STANDARD: Operator verifies open **EITHER** 2-QRV-61 **OR** 2-QRV-62.
SAT: ☐ UNSAT: ☐

CUE: QRV-200 is NOT failed closed
Note: Step 4.2.2.d is N/A

STANDARD: **(CS)** : Operator Verifies Flow at 2-QFI-200 Is Greater Than 70 gpm
SAT: ☐ UNSAT: ☐
Note: Step 4.2.4 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. Last night Chemistry reported to operations that their sampling equipment had been malfunctioning. As a result of the malfunction the reported boron numbers had been higher than actual RCS boron. The crew has just performed 2-OHP-4021-001-012, Determination of Reactor Shutdown Margin using the corrected numbers and discovered that Shutdown Margin has NOT been met.

The Unit Supervisor directs you to initiate Emergency Boration to the RCS from the Blender of 500 gallons in accordance with 2-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:**	20 MINUTES
NUMBER AND TITLE:	2020NRC-SIM02 Fill ECCS Accumulator 1-2	**REVISION:**	0

Examinee's Name: _____

Evaluator's Name: _____

Date Performed: _____

Result (Circle One): SAT / UNSAT

Number of Attempts: _____

Time to Complete: _____

Comments: _____
_____
_____
_____

REFERENCES/NRC KA/TASKS

Procedure:	1-OHP-4021-008-004 1-OHP-4023-008-007	Adjusting The Level Of An Accumulator - Attachment 3 Operation of the Safety Injection Pumps
K/A Number:	SYS 006 A1.13	Ability to predict and/or monitor changes in parameters (to prevent exceeding design limits) associated with operating the ECCS controls including: Accumulator pressure (level, boron concentration)
K/A Imp.:	RO: 3.5 SRO: 3.7	
Task Number:	0080240101	

TRAINING AIDS/TOOLS/EQUIPMENT

None

HANDOUTS

Task Briefing
Copy of 1-OHP-4021-008-004, Rev. 21, Adjusting the Level Of An Accumulator - Attachment 3
Copy of 1-OHP-4023-008-007 Operation of the Safety Injection Pumps

ATTACHMENTS

None

EVALUATION SETTINGS

U1 Simulator

EVALUATION METHOD:	PERFORM: ☒	SIMULATE: ☐

SIMULATOR/LAB SETUP

Reset to IC 872 (80%)

Adjust Accumulator 2 to exhibit a Low Level alarm.
Adjust Accumulator Liquid Mass – CSMS1LIQ(37) = 58700
Adjust Accumulator Gas Mass – CSMS1GAS(37) = 1155
Align South SI pump for Start – South SI in PTL, SI-111S Closed (U1_SIR13 to 0)

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 Extra RO in Unit 1.

ANNUNCIATOR #106, DROP 17 ACCUMULATOR 2 LEVEL HIGH OR LOW and DROP 22 ACCUMULATOR 2 PRESSURE HIGH OR LOW A in alarm for low level. There are no known leaks, Chemistry sampling has caused the level to lower.

The Unit Supervisor has directed you to return the accumulator to the normal level (~945 ft^3) in accordance with 1-OHP-4021-008-004, ATTACHMENT 3 Rev. 21, ADJUSTING THE LEVEL OF AN ACCUMULATOR.

The Starting Team is standing by to start the South SI pump in accordance with 01-OHP-4021-008-007 and to assist with Local Operations. The procedure is complete up to the step to start the pump per step 4.6.

TASK STANDARDS

The accumulator is filled to within Tech Spec requirements

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

Continuous	1-OHP-4021-008-004	Rev. 28	Page 25 of 60
Adjusting the Level of an Accumulator			
Attachment 3	Raising an Accumulator Level with the RCS Pressure above 1700 psig with the South Safety Injection Pump		Pages: 25 – 35

1 PURPOSE AND SCOPE

1.1 This attachment provides instructions to raise an accumulator level with Reactor Coolant System (RCS) pressure greater than 1700 psig with the South Safety Injection (SI) Pump.

2 PREREQUISITES **INIT**

2.1 Portions of the Nitrogen System required to regulate the accumulator pressure are available for use per 12-OHP-4021-030-001, Operation of the Reactor Nitrogen System. SW

NOTE: Prerequisites has been verified as met

3 PRECAUTIONS AND LIMITATIONS

3.1 If during MODE 1, 2, or 3 an accumulator level or pressure gets out of specifications, it must be returned to normal within 24 hours per Technical Specification 3.5.1.

3.2 If during MODE 1, 2, or 3 an accumulator boron concentration gets out of specifications, it must be returned to normal within 72 hours per TS 3.5.1.

3.3 When adjusting accumulator level during MODE 1, 2, or 3, the accumulator is INOPERABLE. The level adjustment evolution shall be halted and the system restored per Section 5.1 of this attachment in the event that a SI signal is received during the evolution.

3.4 When adjusting accumulator level during MODE 1, 2, or 3, care must be taken to ensure TS limits are not exceeded. Refer to 1-OHL-4030-SOM-031, Unit 1 Tours – U1 CR M1&2 Shift Cks, and 1-OHL-4030-SOM-029, Unit 1 Tours – U1 CR M3&4 Shift Cks, to ensure compliance with TS including instrument uncertainties.

3.5 If an accumulator level is raised by 10 ft^3 or more (that is NOT the result of addition from the RWST) in MODE 1, 2, or 3 it must be sampled within 6 hours to verify boron concentration.

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

Continuous	1-OHP-4021-008-004	Rev. 28	Page 26 of 60
Adjusting the Level of an Accumulator			
Attachment 3	Raising an Accumulator Level with the RCS Pressure above 1700 psig with the South Safety Injection Pump		Pages: 25 – 35

3.6 For venting of accumulators without evacuation of personnel from the Lower Containment Annulus, a Containment Purge Exhaust Fan exhausting air from lower containment must be in service per 1-OHP-4021-028-005, Operation of the Containment Purge System.

3.7 High concentrations of nitrogen in an area can cause suffocation due to insufficient oxygen. Atmospheric monitoring shall be performed prior to and during venting of accumulators if personnel are in the Lower Containment Annulus.

3.8 In Modes 1 – 3, Four Loop Injection must be maintained, requiring the ability to inject into both the RHR injection lines AND the Safety Injection lines to all four loops.

4 DETAILS **INIT**

CAUTION: Only one accumulator will be filled at a time in this attachment. In the event of an incident during filling requiring ECCS (e.g., Safety Injection actuation), the evolution should be stopped and components aligned per the Corrective Actions section of this attachment.

4.1 Indicate accumulator number that level is being raised:
❑ #11 ❑ #12 ❑ #13 ❑ #14 ____

4.2 Verify RCS pressure is greater than 1700 psig. ____

4.3 Verify 1-ICM-265, Safety Injection Discharge to Cold Legs 2 & 3 – OPEN. ____

Standard: Operator checks the #12 Accumulator box.
SAT: ☐ UNSAT: ☐

Standard: Operator verifies RCS pressure is greater than 1700 psig.
SAT: ☐ UNSAT: ☐

Standard: Operator verifies valve 1-ICM-265 is OPEN
SAT: ☐ UNSAT: ☐

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

Continuous	1-OHP-4021-008-004	Rev. 28	Page 27 of 60
Adjusting the Level of an Accumulator			
Attachment 3	Raising an Accumulator Level with the RCS Pressure above 1700 psig with the South Safety Injection Pump		Pages: 25 – 35

CAUTION: Oxygen monitoring of the Lower Containment Annulus atmosphere **SHALL** be performed prior to and during venting of accumulators if personnel are in the Lower Containment Annulus.

4.4 **IF** regulating accumulator pressure during fill, **THEN** perform the following:

4.4.1 Establish controls for personnel safety:

a. Verify all personnel evacuated from Lower Containment Annulus.

NA

-OR-

b. Perform the following:

- Establish monitoring of Lower Containment Annulus atmosphere with an oxygen monitor.
- Verify a Containment Purge Exhaust Fan is in service exhausting air from lower containment per 1-OHP-4021-028-005, Operation of the Containment Purge System.
- Verify that at least one Lower Containment Ventilation Fan is operating in Quadrant 2 or 3 per 1-OHP-4021-028-001, Containment Ventilation.

(**NOTE**: Accumulator pressure regulation should NOT be required.)
Operator should mark step 4.4 as N/A with initial and date.

CUE: (If asked) Accumulator pressure control is NOT required at this time.

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

Continuous	1-OHP-4021-008-004	Rev. 28	Page 28 of 60
Adjusting the Level of an Accumulator			
Attachment 3	Raising an Accumulator Level with the RCS Pressure above 1700 psig with the South Safety Injection Pump		Pages: 25 – 35

NOTE: Steps 4.5 through 4.8 may be N/A if **ALL** of the following conditions are met:

- More than one accumulator will be filled (requiring multiple passes through this attachment).
- This is not the first accumulator being filled
- This attachment was entered as directed by step 4.17 of the previous performance of Attachment 3.

4.5 Start South Safety Injection Pump per 1-OHP-4021-008-007, Operation of the Safety Injection Pumps. _____

NOTE: Provide a copy of 1-OHP 4021.008.007 to operator.
(See next page)

CAUTION: In Modes 1 – 3, Four Loop Injection must be maintained, requiring the ability to inject into both the RHR injection lines AND the Safety Injection lines to all four loops. RHR crosstie valve position and SI pump operability must be considered when performing the next step. (refer to T.S. 3.3.2 background). [Ref 7.2.1b.3]

4.6 Close one of the following valves:

- Close 1-IMO-270, Safety Injection Pump Disch Xtie. _____ IV

OR

- Close 1-IMO-275, Safety Injection Pump Disch Xtie. _____ IV

4.7 Open 1-IRV-60, SI Pumps Disch to Accum Fill Line. _____

4.8 Declare the accumulator indicated in Step 4.1 inoperable AND enter Tech Spec 3.5.1 Condition B.

Time entered: _____ Date: _____ _____

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

Continuous	1-OHP-4021-008-007	Rev. 10	Page 20 of 29
Operation of the Safety Injection Pumps			

NOTE: IF the Safety Injection Pump is required for operation while the Discharge Valve is closed, THEN re-align the SI Pump as directed in the Corrective Measures Section of this procedure.

4.5.2 IF starting the South Safety Injection Pump, THEN perform the following:

a. Make a Control Room Log Entry declaring the South Safety Injection Pump Inoperable. SW

S. Manager
Shift Manager/Unit Supervisor

NOTE: Performing the following step will cause Annunciator 106 drop 15, South SI Pump Abnormal or Locked Out to be received.

b. Place the South SI Pump Control Switch in Pull to Lock SW

c. Close 1-SI-111S, South SI Pump 1-PP-26S Discharge Header Shutoff Valve SW

4.6 Establish direct communications between the operator at the SI Pump and an operator in the Control Room. SW

4.7 Start the desired SI pump:

- 1-PP-26N, Safety Injection North Pump NA

-OR-

- 1-PP-26S, Safety Injection South Pump ____

4.8 Verify the following:

4.8.1 Recirculation flow is greater than 30 gpm within 10 seconds of pump start. [Ref 7.2.1d] ____

CUE: US acknowledges South SI pump is INOPERABLE with Discharge Valve 1-SI-111S CLOSED. Starting Party Standing Clear and Ready for South SI Pump Start

STANDARD (**CS**): Start South SI Pump
SAT: ☐ UNSAT: ☐

CUE: AEO has verified recirculation flow of 55 gpm within 5 seconds of start.

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

Continuous	1-OHP-4021-008-007	Rev. 10	Page 21 of 29
Operation of the Safety Injection Pumps			

4.8.2 **IF** the pump is operating on recirculation flow, **THEN** Verify the following:

- Vibration is within the limits of TDB Figure 15.2. _____
- Running current is approximately 30 amps (Control Room). _____

4.8.3 The following temperatures are normal (local) and not excessively hot to the touch:

- Pump/motor bearings _____
- Pump casing _____
- Recirculation line _____

CUE: AEO reports that all local indications are SAT for pump operation. {Vibration is lower than TDB 15.2 limits; lube oil pressure is > 10 psig}

CUE: AEO reports local temperatures are NORMAL and NO excessive hot spots exist.

CAUTION: If any of the listed pump limits cannot be met the SI Pump must be stopped from the Control Room and declared INOPERABLE.

4.9 Monitor the following parameters on a periodic basis during pump operation (local): _____

PARAMETER	LIMIT
Vibration Amplitude	Within Limits of TDB Figure 15.2 (when on recirculation)
Pump Flow	Greater than 30 gpm [Ref 7.2.1d]
Lube Oil Pressure	Greater than or equal to 10 psig [Ref. 7.2.1c]

CAUTION: If SI pump current fluctuates excessively indicating possible cavitation, the SI pump must be stopped from the Control Room and declared INOPERABLE.

4.10 Monitor SI pump current frequently during pump operation (Control Room). _____

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

Continuous	1-OHP-4021-008-007	Rev. 10	Page 22 of 29
Operation of the Safety Injection Pumps			

This Page Is NA

4.11 **IF** LCO 3.4.12 is applicable, **THEN** perform the following:

LCO 3.4.12 is NOT Applicable

NOTE: South Safety Injection Pump Discharge Header pressure can be monitored in the control room at 1-IPI-265, South SI Pump discharge pressure indicator.

4.11.1 **IF** the South SI Pump was started, **THEN** Slowly open 1-SI-111S, South SI Pump 1-PP-26S Discharge Header Shutoff Valve, to equalize pressure in the discharge line. _____

NOTE: North Safety Injection Pump Discharge Header pressure can be monitored in the control room at 1-IPI-260, North SI Pump discharge pressure indicator.

4.11.2 **IF** the North SI Pump was started, **THEN** Slowly open 1-SI-111N, North SI Pump 1-PP-26N Discharge Header Shutoff Valve, to equalize pressure in the discharge line. _____

4.12 **IF** the SI Pump was started with RCS pressure > 1500 psig, **THEN** perform the following:

RCS Pressure Is > 1500 Psig

4.12.1 **IF** the North SI Pump was started, **THEN** perform the following to equalize pressure in the discharge line:

South SI Pump Was Started

NOTE: North Safety Injection Pump Discharge Header pressure can be monitored in the control room at 1-IPI-260, North SI Pump discharge pressure indicator.

a. Slowly open 1-SI-111N, North SI Pump 1-PP-26N Discharge Header Shutoff Valve, to equalize pressure in the discharge line. _____

b. Independently verify 1-SI-111N, North SI Pump 1-PP-26N Discharge Header Shutoff Valve, is – OPEN AND install seal. _____

IV

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

Continuous	1-OHP-4021-008-007	Rev. 10	Page 23 of 29
Operation of the Safety Injection Pumps			

c. Make a Control Room Log entry declaring the North SI Pump OPERABLE. _____

Unit Supervisor/Shift Manager

4.12.2 IF the South SI Pump was started, THEN perform the following to equalize pressure in the discharge line.

NOTE: South Safety Injection Pump Discharge Header pressure can be monitored in the control room at 1-IPI-265, South SI Pump discharge pressure indicator.

a. Slowly open 1-SI-111S, South SI Pump 1-PP-26S Discharge Header Shutoff Valve, to equalize pressure in the discharge line. _____

b. Independently verify 1-SI-111S, South SI Pump 1-PP-26S Discharge Header Shutoff Valve, is – OPEN AND install seal. _____ IV

c. Make a Control Room Log entry declaring the South SI Pump OPERABLE. _____

Unit Supervisor/Shift Manager

4.13 WHEN SI Pump operation is no longer needed, THEN stop the pump:

- 1-PP-26N, Safety Injection North Pump _____

-OR-

- 1-PP-26S, Safety Injection South Pump _____

4.14 Perform the following to depressurize the SI Pump discharge header:

4.14.1 IF the North SI Pump was used, THEN perform the following:

a. Open 1-SI-112N, North SI Pump 1-PP-26N Discharge Drain & Leakby Shutoff Valve. _____

STANDARD (**CS**): Operator directs AEO to OPEN valve 1-SI-111S.
SAT: ☐ UNSAT: ☐
NOTE: When the AEO is directed to OPEN 1-SI-111S, then BOOTH Operator must enter MRF SIR13 to 100)

U1_SIR13

CUE: Independent Verification has been performed and seal Installed

CUE: Unit Supervisor will make entry and Declare South SI Pump Operable.

Operator returns to procedure in effect for raising Accumulator Level at Step 4.6.

Return to ACC Fill Procedure

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

Continuous	1-OHP-4021-008-004	Rev. 28	Page 28 of 60
Adjusting the Level of an Accumulator			
Attachment 3	Raising an Accumulator Level with the RCS Pressure above 1700 psig with the South Safety Injection Pump		Pages: 25 – 35

NOTE: Steps 4.5 through 4.8 may be N/A if ALL of the following conditions are met:

- More than one accumulator will be filled (requiring multiple passes through this attachment).
- This is not the first accumulator being filled
- This attachment was entered as directed by step 4.17 of the previous performance of Attachment 3.

4.5 Start South Safety Injection Pump per 1-OHP-4021-008-007, Operation of the Safety Injection Pumps. _____

CAUTION: In Modes 1 – 3, Four Loop Injection must be maintained, requiring the ability to inject into both the RHR injection lines AND the Safety Injection lines to all four loops. RHR crosstie valve position and SI pump operability must be considered when performing the next step. (refer to T.S. 3.5.2 background). [Ref 7.2.1b.3]

4.6 Close one of the following valves:

- Close 1-IMO-270, Safety Injection Pump Disch Xtie. _____ _____ IV

OR

- Close 1-IMO-275, Safety Injection Pump Disch Xtie. _____ _____ IV

4.7 Open 1-IRV-60, SI Pumps Disch to Accum Fill Line. _____

4.8 Declare the accumulator indicated in Step 4.1 inoperable AND enter Tech Spec 3.5.1 Condition B.

Time entered: _____ Date: _____ _____

Repeated Page

STANDARD: Close IMO-270 OR IMO-275 SI Discharge Xtie
SAT: ☐ UNSAT: ☐

STANDARD: Operator directs AEO to OPEN valve 1-IRV-60.
SAT: ☐ UNSAT: ☐ **U1_SIR12**

CUE: AEO reports 1-IRV-60 is OPEN

CUE: STA will enter time and date of Tech Spec entry.

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

Continuous	1-OHP-4021-008-004	Rev. 28	Page 29 of 60
Adjusting the Level of an Accumulator			
Attachment 3	Raising an Accumulator Level with the RCS Pressure above 1700 psig with the South Safety Injection Pump		Pages: 25 – 35

NOTE: While filling an accumulator, all other accumulator levels should be monitored.

4.9 Open fill valve for accumulator to be filled AND record start time in Control Room Log (N/A valves not used):

- 1-IRV-111, Accum 1 Fill Line _____
- 1-IRV-121, Accum 2 Fill Line _____
- 1-IRV-131, Accum 3 Fill Line _____
- 1-IRV-141, Accum 4 Fill Line _____

4.10 IF regulating accumulator pressure during fill, THEN perform the following:

4.10.1 Open the nitrogen supply to the accumulator being filled (N/A valves not used):

- 1-IRV-112, Accum 1 Nitrogen Supply _____
- 1-IRV-122, Accum 2 Nitrogen Supply _____
- 1-IRV-132, Accum 3 Nitrogen Supply _____
- 1-IRV-142, Accum 4 Nitrogen Supply _____

4.10.2 Throttle 1-GRV-341, N_2 Vent from Accum Tank, as necessary to regulate accumulator pressure. _____

CUE: US directs you to fill the No. 2 Accumulator to 945 ft^3

STANDARD (**CS)**: Operator opens 1-IRV-121
SAT: ☐ UNSAT: ☐

NOTE: Accumulator pressure regulation should NOT be required.)
Operator should mark step 4.10 as N/A with initial and date.

CUE: (If asked) Accumulator pressure control is NOT required at this time.

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

Continuous	1-OHP-4021-008-004	Rev. 28	Page 30 of 60
Adjusting the Level of an Accumulator			
Attachment 3	Raising an Accumulator Level with the RCS Pressure above 1700 psig with the South Safety Injection Pump		Pages: 25 – 35

4.11 **WHEN** the required accumulator level is reached, **THEN** verify the following valves closed:

- 1-IRV-111, Accum 1 Fill Line _____
- 1-IRV-121, Accum 2 Fill Line _____
- 1-IRV-131, Accum 3 Fill Line _____
- 1-IRV-141, Accum 4 Fill Line _____
- 1-IRV-112, Accum 1 Nitrogen Supply _____
- 1-IRV-122, Accum 2 Nitrogen Supply _____
- 1-IRV-132, Accum 3 Nitrogen Supply _____
- 1-IRV-142, Accum 4 Nitrogen Supply _____
- 1-GRV-341, N_2 Vent from Accum Tank _____

4.12 Independently verify the following valves closed:

- 1-IRV-111, Accum 1 Fill Line _____
- 1-IRV-121, Accum 2 Fill Line _____
- 1-IRV-131, Accum 3 Fill Line _____
- 1-IRV-141, Accum 4 Fill Line _____
- 1-IRV-112, Accum 1 Nitrogen Supply _____
- 1-IRV-122, Accum 2 Nitrogen Supply _____
- 1-IRV-132, Accum 3 Nitrogen Supply _____
- 1-IRV-142, Accum 4 Nitrogen Supply _____
- 1-GRV-341, N_2 Vent from Accum Tank _____

STANDARD (**CS**): Operator closes 1-IRV-121
SAT: ☐ UNSAT: ☐

CUE: IV is complete

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

Continuous	1-OHP-4021-008-004	Rev. 28	Page 31 of 60
Adjusting the Level of an Accumulator			
Attachment 3	Raising an Accumulator Level with the RCS Pressure above 1700 psig with the South Safety Injection Pump		Pages: 25 – 35

4.13 Close 1-IRV-60, SI Pumps Disch to Accum Fill Line. _____

IV

4.14 Verify the adjusted accumulator level and pressure is within TS limits. Refer to 1-OHL-4030-SOM-031, Unit 1 Tours – U1 CR M1&2 Shift Cks OR 1-OHL-4030-SOM-029, Unit 1 Tours – U1 CR M3&4 Shift Cks for limits. _____

4.15 Declare the accumulator indicated in Step 4.1 OPERABLE AND exit Tech Spec 3.5.1 Condition B.

Time exited: _____ Date: _____ _____

4.16 Record completion time for raising accumulator level in the Control Room Log. _____

4.17 **IF** another accumulator level is to be raised, **THEN** perform the following:

4.17.1 N/A steps 4.18 through 4.21 of this attachment. _____

4.17.2 Start a new Attachment 3, Raising an Accumulator Level with the RCS Pressure above 1700 psig with the South Safety Injection Pump for the next accumulator level to be raised. _____

4.18 Perform the following to secure the South SI Pump:

4.18.1 Stop and place control switch for 1-PP-26S, South Safety Injection Pump, in - NEUTRAL. _____

IV

Standard **CS**: Operator directs AEO to CLOSE valve 1-IRV-60.
SAT: ☐ UNSAT: ☐

NOTE: When the Aux Tour AEO is directed to CLOSE 1-IRV-60, then BOOTH Operator must enter MRF U1_SIR12 to CLOSE)

U1_SIR12

CUE: AEO reports 1-IRV-60 is CLOSED and verified CLOSED

THIS JPM IS COMPLETE.

Task Briefing

You are the Extra RO in Unit 1.

ANNUNCIATOR #106, DROP 17 ACCUMULATOR 2 LEVEL HIGH OR LOW and DROP 22 ACCUMULATOR 2 PRESSURE HIGH OR LOW are in alarm for low level. There are no known leaks, Chemistry sampling has caused the level to lower.

The Unit Supervisor has directed you to return the accumulator to the normal level (~945 ft^3) in accordance with 1-OHP-4021-008-004, ATTACHMENT 3 Rev. 21, ADJUSTING THE LEVEL OF AN ACCUMULATOR.

The Starting Team is standing by to start the South SI pump in accordance with 01-OHP-4021-008-007 and to assist with Local Operations. The procedure is complete up to the step to start the pump per step 4.6.

AMERICAN ELECTRIC POWER

COOK NUCLEAR PLANT TRAINING CENTER

Bridgman, Michigan

OPERATIONS JPM

TRAINING PROGRAM TITLE	Initial License Training	**TIME:**	15 MINUTES
NUMBER AND TITLE:	2020NRC-SIM03 Pressurizer Heater Capacity Test	**REVISION:**	0

Examinee's Name: _____

Evaluator's Name: _____

Date Performed: _____

Result (Circle One): SAT / UNSAT

Number of Attempts: _____

Time to Complete: _____

Comments: _____
_____
_____

REFERENCES/NRC KA/TASKS

Procedure:	1-OHP-4030-102-040	Pressurizer Heater Capacity Test
K/A Number:	SYS 010 A4.02	Pressurizer Pressure Control System - Ability to manually operate and/or monitor in the control room: PZR heaters.
K/A Imp.:	RO: 3.6 SRO: 3.4	
Task Number:	0021030201	Perform Pressurizer Heater Capacity Test

TRAINING AIDS/TOOLS/EQUIPMENT

None

HANDOUTS

Task Briefing
Copy of 1-OHP-4030-102-040, Pressurizer Heater Capacity Test

ATTACHMENTS

None

EVALUATION SETTINGS

Unit 1 Simulator

EVALUATION METHOD:	PERFORM: ☒	SIMULATE: ☐

SIMULATOR/LAB SETUP

1. Initialize simulator to IC- 872 (MODE 1 IC with power 80%).
2. Place 11PHA cycling heaters in service.
3. Freeze simulator.

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 extra RO on shift. The Unit Supervisor directs you to perform a pressurizer heater capacity test in accordance with 1-OHP-4030-102-040, Pressurizer Heater Capacity Test.

TASK STANDARDS

Completes the pressurizer heater capacity test in accordance with 1-OHP-4030-102-040, Pressurizer Heater Capacity Test

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

CONTINUOUS	1-OHP-4030-102-040	Rev. 0	Page 2 of 7
Pressurizer Heater Capacity Test			

1 PURPOSE AND SCOPE

1.1 To demonstrate the following Pressurizer Heaters are available to satisfy Technical Specification SR 3.4.9.2:

1.1.1 150 kW of Pressurizer Heaters from 11PHC.

1.1.2 150 kW of Pressurizer Heaters from 11PHA.

2 PREREQUISITES INIT

2.1 RCS conditions are such that Pressurizer heaters can be energized for several minutes with actual Pressurizer Level Greater Than 22%. _____

2.2 11PHC is capable of being energized. _____

2.3 11PHA is capable of being energized. _____

CUE: ALL Prerequisites are Met

3 PRECAUTIONS AND LIMITATIONS

3.1 Breaker 11PHA-5, Containment Welding Receptacles, will be without power for a short period of time during this test.

NOTE: If 11PHC6 is closed may use the NOTE in the procedure to test 11PHA6 first. If both trains of heaters are removed from service while switching Ann 108 DROP 50, SCR FAN FAILURE.

4 DETAILS INIT

NOTE: Steps 4.1 and 4.2 may be performed in any order.

4.1 Test 11PHC Heaters as follows:

4.1.1 Verify the following on SCR Power Control Circuit Breaker 11PHC6:

- Green flag - UP _____
- Green lamp - LIT _____

STANDARD: Verifies conditions on 11PHC6 are met.
SAT: ☐ UNSAT: ☐

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

CONTINUOUS	1-OHP-4030-102-040	Rev. 0	Page 3 of 7
Pressurizer Heater Capacity Test			

4.1.2 Verify the following heaters – OFF:

- Heater Group C1 Circuit Breaker 11PHC2 _____
- Heater Group C2 Circuit Breaker 11PHC3 _____
- Heater Group C3 Circuit Breaker 11PHC5 _____

STANDARD: Verify Heaters are off:
- 11PHC2
- 11PHC3
- 11PHC5

SAT: ☐ UNSAT: ☐

4.1.3 Verify Breaker T11D9, 4KV Bus T11D to 480V Pressurizer Heater Bus Supply Transformer TR11PHC Supply Breaker – CLOSED. _____

STANDARD: Verify T11D9 is CLOSED

SAT: ☐ UNSAT: ☐

4.1.4 Verify 0 amps on 11PHC **AND** record 11PHC Current:

_____ amps _____

Standard: Verify 0 AMPS

SAT: ☐ UNSAT: ☐

4.1.5 Close the following heaters:

- Heater Group C1 Circuit Breaker 11PHC2 _____
- Heater Group C2 Circuit Breaker 11PHC3 _____
- Heater Group C3 Circuit Breaker 11PHC5 _____

STANDARD (**CS):** Close the Breakers:
- 11PHC2
- 11PHC3
- 11PHC5

SAT: ☐ UNSAT: ☐

4.1.6 Record 11PHC Current:

_____ amps _____

STANDARD: Record AMP Reading

SAT: ☐ UNSAT: ☐

4.1.7 Return pressurizer heater controls to positions required by current plant conditions. _____

STANDARD (**CS):** Return Controls to Normal.

SAT: ☐ UNSAT: ☐

4.1.8 Check difference in current on 11PHC - Greater Than OR Equal to 25 AMPS. _____

Amps from Step 4.1.6:	_____ Amps
Amps from Step 4.1.4:	_____ Amps
ACCEPTANCE CRITERIA: Difference in current greater than or equal to 25 Amps.	_____ Amps

STANDARD: Verify Difference > 25 Amps

SAT: ☐ UNSAT: ☐

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

CONTINUOUS	1-OHP-4030-102-040	Rev. 0	Page 4 of 7
Pressurizer Heater Capacity Test			

4.2 Test 11PHA Heaters as follows:

4.2.1 Verify Breaker 11PHA-5, Containment Welding Receptacles - OPEN _____

4.2.2 Verify the following on SCR Power Control Circuit Breaker 11PHA6:

- Green flag - UP _____
- Green lamp - LIT _____

4.2.3 Verify the following heaters - OFF:

- Heater Group A1 Circuit Breaker 11PHA2 _____
- Heater Group A2 Circuit Breaker 11PHA3 _____
- Heater Group A3 Circuit Breaker 11PHA4 _____

4.2.4 Verify Breaker T11A6, 4KV Bus T11A to 480V Pressurizer Heater Bus Supply Transformer TR11PHA Supply Breaker – CLOSED. _____

4.2.5 Verify 0 amps on 11PHA AND record 11PHA Current:

_____ amps. _____

4.2.6 Close the following heaters:

- Heater Group A1 Circuit Breaker 11PHA2 _____
- Heater Group A2 Circuit Breaker 11PHA3 _____
- Heater Group A3 Circuit Breaker 11PHA4 _____

4.2.7 Record 11PHA Current:

_____ amps _____

4.2.8 Return pressurizer heater controls to positions required by current plant conditions. _____

4.2.9 Return Breaker 11PHA-5, Containment Welding Supply, to required position. _____

CUE: 11PHA-5 Welding Receptacles Breaker is OPEN as required

STANDARD: Verifies conditions on 11PHA6 are met.
SAT: ☐ UNSAT: ☐

STANDARD: Verify Open Breakers:
- 11PHA2
- 11PHA3
- 11PHA4

SAT: ☐ UNSAT: ☐

STANDARD: Verify T11A6 is CLOSED
SAT: ☐ UNSAT: ☐

STANDARD: Verify 0 amps
SAT: ☐ UNSAT: ☐

STANDARD (**CS**)**:** Close the Breakers:
- 11PHA2
- 11PHA3
- 11PHA4

SAT: ☐ UNSAT: ☐

STANDARD: Record current AMP reading
SAT: ☐ UNSAT: ☐

CUE: 11PHA-5 Welding Receptacles Breaker is as required

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

CONTINUOUS	1-OHP-4030-102-040	Rev. 0	Page 5 of 7
Pressurizer Heater Capacity Test			

4.2.10 Check difference in current on 11PHA - Greater Than OR Equal to 25 AMPS _____

Amps from Step 4.2.7:	_____ Amps
Amps from Step 4.2.5:	_____ Amps
ACCEPTANCE CRITERIA: Difference in current greater than or equal to 25 Amps.	_____ Amps

STANDARD: Verify Difference > 25 Amps
SAT: ☐ UNSAT: ☐

TERMINATION CUE: This JPM is complete.

5 ACCEPTANCE CRITERIA

5.1 Both pressurizer backup heater groups have a capacity of 150 kW.

5.1.1 The pressurizer backup heaters supplied from 11PHC have been energized and demonstrate an increase of greater than 25 amps (150 kW).

5.1.2 The pressurizer backup heaters supplied from 11PHA have been energized and demonstrate an increase of greater than 25 amps (150 kW).

6 CORRECTIVE MEASURES

6.1 **IF** acceptance criteria are not met, **THEN** take action per LCO 3.4.9.

6.2 **IF** any heaters are determined to be inoperable, **THEN** initiate corrective action IAW PMP-7030-CAP-001, Action Initiation.

Task Briefing

You are the extra RO on shift. The Unit Supervisor directs you to perform a pressurizer heater capacity test in accordance with 1-OHP-4030-102-040, Pressurizer Heater Capacity Test.

AMERICAN ELECTRIC POWER

COOK NUCLEAR PLANT TRAINING CENTER

Bridgman, Michigan

OPERATIONS JPM

TRAINING PROGRAM TITLE	Initial License Training	**TIME:**	15 MINUTES
NUMBER AND TITLE:	2020NRC-SIM04 Perform Turbine Driven AFW Pump Run for Maintenance Operation	**REVISION:**	0

Examinee's Name: _____

Evaluator's Name: _____

Date Performed: _____

Result (Circle One): SAT / UNSAT

Number of Attempts: _____

Time to Complete: _____

Comments: _____
_____
_____

REFERENCES/NRC KA/TASKS

Procedure:	1-OHP-4021-056-002	Auxiliary Feed Pump Operation
K/A Number:	SYS 061 2.1.23	Aux FW System - Ability to perform specific system and integrated plant procedures during all modes of plant operation.
K/A Imp.:	RO: 3.9 SRO: 4.0	
Task Number:	0560060101	Operate the Auxiliary Feed Pumps during Plant Start-up and Shutdown

TRAINING AIDS/TOOLS/EQUIPMENT

None

HANDOUTS

Task Briefing
Copy of 1-OHP-4021-056-002, Auxiliary Feed Pump Operation (Body & Attachment 11)

ATTACHMENTS

None

EVALUATION SETTINGS

Unit 1 Simulator

EVALUATION METHOD:	PERFORM: ☒	SIMULATE: ☐

SIMULATOR/LAB SETUP

1. Initialize simulator to IC- 872 (MODE 1-3 IC with power less than 95%).
2. Freeze simulator.

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 Extra RO in Unit 1.

The Unit 1 TDAFP has been declared inoperable and LCO 3.7.5 has been entered.

Maintenance has just completed minor adjustments to the Trip and Throttle valve and is requesting that the pump be started with flow ONLY through the test line to verify it comes up to normal speed. No data collection is required from Operations. Maintenance will monitor speed locally.

The US directs you to run the TDAFP for Maintenance in accordance with 1-OHP-4021-056-002, Auxiliary Feed Pump Operation, Attachment 11, TDAFP Maintenance Operation. No speed adjustments are required.

An AEO has been briefed. The AEO has verified the TDAFP is ready for start and the AEO and Maintenance personnel are standing by.

There is No Identified Primary to Secondary leakage.

TASK STANDARDS

Run the TDAFP for Maintenance Operation in accordance with 1-OHP-4021-056-002, Auxiliary Feed Pump Operation, Attachment 11, TDAFP Maintenance Operation, observing all applicable precautions and limitations, and procedure steps.

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

Continuous	1-OHP-4021-056-002	Rev. 41	Page 62 of 76
Auxiliary Feed Pump Operation			
Attachment 11	TDAFP Maintenance Operation		Pages: 62 - 69

1 PURPOSE AND SCOPE

1.1 This attachment provides instructions for operating the TDAFP on recirc and/or test line flow path to support maintenance or data gathering activities.

2 PREREQUISITES **INIT**

2.1 The Aux Feedwater System is filled and vented. JH

3 PRECAUTIONS AND LIMITATIONS

3.1 As detailed in the procedure body, Section 3.

3.2 Consider reducing power, if starting the TDAFP could result in exceeding 100% power.

3.3 The ELO valve (1-FRV-258) must be open when the flow path is not to the Steam Generators or through the test line.

3.4 The TDAFP turbine oil sump static oil level should be maintained at or just above the minimum level mark on the sightglass. Initially, oil level will drop on pump start, but should recover to approximately the original level after the pump has run for a short time.

- Oil should not be added to the TDAFP turbine oil sump while the TDAFP is operating because excessive oil leakage may result due to aeration.

3.5 The TDAFP Governor oil level should be maintained in any visible area between the bottom of the sight glass and the Governor horizontal split line. If oil addition is required when the TDAFP is in operation, maintain oil level near the bottom of the sight glass. Specific instruction for adding oil to the TDAFP Governor is found in 1-OHL-5030-SOM-004, Unit 1 Tours – Unit 1 Turbine Tour.

NOTE: Provide an annotated copy of 1-OHP-4021-056-002 (Body and Attachment 11).

CUE: If asked, AFW system is filled and vented.

Operator reviews applicable Precautions and Limitations from body of procedure (provided during briefing) and specific items in Attachment 11, Section 3.

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

Continuous	1-OHP-4021-056-002	Rev. 41	Page 63 of 76
Auxiliary Feed Pump Operation			
Attachment 11	TDAFP Maintenance Operation		Pages: 62 - 69

4 DETAILS **INIT**

4.1 Make a Control Room Log entry declaring the TDAFP INOPERABLE.

Unit Supervisor
Shift Manager/Unit Supervisor

4.2 Verify the following TDAFP Room Cooler fans are in – AUTO:

- 1-HV-AFP-T1AC, TDAFP Room T1AC Cooler _____
- 1-HV-AFP-T2AC, TDAFP Room T2AC Cooler _____

4.3 Verify 1-FRV-256, TDAFP 1-PP-4 Test Valve, position indicator control power "ON" light - LIT. (white) _____

4.4 **IF** desired to connect test cart, **THEN** perform the following:

4.4.1 Connect test cart at 1-FFX-253, Turbine Driven Aux Feed Pump Test Line Flow Test Point. NA

4.4.2 Record the following Test Equipment data:

Test Gauge #_____

Calibration Due_____ _____

4.4.3 Verify the following valves - OPEN:

- 1-FFX-253-IH, 1-FFX-253 High Pressure Side Instrument Shutoff Valve _____
- 1-FFX-253-IL, 1-FFX-253 Low Pressure Side Instrument Shutoff Valve _____
- 1-FFX-253-V1, 1-FFX-253 High Pressure Side Root Valve _____
- 1-FFX-253-V2, 1-FFX-253 Low Pressure Side Root Valve _____

4.4.4 Vent 1-FFX-253 instrument lines. _____

4.5 Open 1-CA-5355, 50 PSI Control Air to 1-XSO-256 for TDAFP Test Valve 1-FRV-256 Shutoff Valve. _____

4.6 Open 1-FW-263, TDAFP Test Valve 1-FRV-256 Outlet Shutoff Valve _____

CUE: (If Asked) Both the East & West AFW pumps are operable and the US has Entered LCO 3.7.5 for the TDAFW

STANDARD: Operator has AEO verify room coolers are in AUTO
SAT: ☐ UNSAT: ☐

STANDARD: Operator Verifies FRV-256 White Light is LIT
SAT: ☐ UNSAT: ☐

CUE: (If Asked)*:* No data is being collected.

STANDARD (**CS**)**:** Operator Directs AEO to OPEN 1-CA-5355, 50 PSI Control Air to 1-XSO-256
SAT: ☐ UNSAT: ☐
CUE: AEO reports 1-CA-5355 is OPEN

STANDARD (**CS**)**:** Operator Directs AEO to OPEN 1-FW-263 TDAFP Test Valve Outlet Shutoff
SAT: ☐ UNSAT: ☐
CUE: AEO reports 1-FW-263 TDAFP Test Valve Outlet Shutoff is OPEN

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

Continuous	1-OHP-4021-056-002	Rev. 41	Page 64 of 76
Auxiliary Feed Pump Operation			
Attachment 11	TDAFP Maintenance Operation		Pages: 62 - 69

4.7 Place 1-FRV-256, TDAFP Test Valve in – TEST. _____

4.8 Verify TDAFP discharge valves to Steam Generator – CLOSED:

- 1-FMO-211, SG 1 Feed From TDAFP — Ann 113 Drop 29 _____
- 1-FMO-221, SG 2 Feed From TDAFP — Ann 113 Drop 39 _____
- 1-FMO-231, SG 3 Feed From TDAFP — Ann 114 Drop 19 _____
- 1-FMO-241, SG 4 Feed From TDAFP — Ann 114 Drop 29 _____

4.9 **IF** desired to adjust TDAFP speed, **THEN** perform the following:

4.9.1 Close 1-CA-7165, TDAFP, 1 PP-4 Governor Speed Control Control Air Vent Valve. NA

4.9.2 Verify 1-AT-22, TDAFP Speed Control Transfer in CTRL RM position. NA

4.9.3 Set TDAFP Speed Control (1-AL-15) to desired setting. NA

4.10 Check TDAFP mechanical and electrical trips – RESET. _____

4.11 Open fully 1-FRV-256, TDAFP Test Valve. _____

NOTE: The TDAFP will remain AVAILABLE while the pump discharge valve is closed provided a dedicated qualified Operator is locally assigned nearby to re-open the pump discharge valve in the event system conditions require pump operation. Otherwise, the TDAFP must be considered UNAVAILABLE while the discharge valve is closed.

4.12 **IF** required to support the maintenance activity, **THEN** close 1-FW-136, TDAFP 1-PP-4 Discharge Valve. _____

4.13 Start the TDAFP by placing Trip & Throttle Valve 1-QT-506, to – OPEN. _____

NOTE: Step 3.4 and 3.5 provide information regarding TDAFP Turbine Oil Sump oil level and TDAFP Governor oil level.

4.14 Verify all lubricant levels are in the normal range. _____

STANDARD: Operator Verifies places TDAFP TEST valve to TEST
SAT: ☐ UNSAT: ☐
STANDARD (**CS**)**:** Operator Holds Ctrl Switches in CLOSE and verifies CLOSED for ALL FOUR FMOs (Alarms NOT Critical):
SAT: ☐ UNSAT: ☐

CUE: Speed adjustments are NOT required.

STANDARD: Operator N/A steps in 4.9
SAT: ☐ UNSAT: ☐

STANDARD: Operator verifies that Panel 113 Drop 50 & Panel 114 Drop 10 are NOT LIT
SAT: ☐ UNSAT: ☐

STANDARD (**CS**)**:** Operator directs AEO to locally open 1-FRV-256
CUE: (*Simulator Booth Operator)* **U1_FWR37**
SAT: ☐ UNSAT: ☐

CUE: If Asked, 1-FW-136 may remain OPEN
STANDARD: Operator N/A's step
SAT: ☐ UNSAT: ☐

STANDARD (**CS**)**:** Operator opens QT-506 to start the TDAFP.
SAT: ☐ UNSAT: ☐

CUE: AEO reports that all lubricant levels are in the normal range.

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

Continuous	1-OHP-4021-056-002	Rev. 41	Page 65 of 76
Auxiliary Feed Pump Operation			
Attachment 11	TDAFP Maintenance Operation		Pages: 62 - 69

4.15 Monitor TDAFP bearing temperature during pump operation. _____

4.15.1 **IF** TDAFP bearing temperature exceeds 140°F, **THEN** throttle open TDAFP NESW bearing cooler supply valves, as required, to maintain bearing temperature less than 160°F: [Ref. 7.2.1e]

- 1-NSW-492, NESW to TDAFP 1-PP-4 Inboard Pump Bearing Inlet Valve _____
- 1-NSW-493, NESW to TDAFP 1-PP-4 Outboard Pump Bearing Inlet Valve _____

CUE: AEO reports that all TDAFP bearing temperatures are normal.

STANDARD: Operator marks steps N/A or leaves blank for later use.
SAT: ☐ UNSAT: ☐

CAUTION: With 1-FW-127 closed, the only pump protection will be through the test line via 1-FRV-256. A minimum of 10 psid as read on 1-FFX-253 is required when using the test line for minimum flow.

4.16 **IF** desired, **THEN** Close 1-FW-127, TDAFP 1-PP-4 Emergency Leakoff to CST Shutoff Valve. _____

CUE: Unit Supervisor informs operator that Emergency Leakoff line will NOT be isolated for this pump run.
CUE: Maintenance reports that local speed indications are consistent with previous runs of the TDAFP. No additional data is required and the TDAFP may be shut down.
STANDARD: Operator marks steps N/A.
SAT: ☐ UNSAT: ☐

4.17 Operate the TDAFP as required to support maintenance.

4.17.1 Adjust 1-FRV-256, TDAFP Test Valve as required. _____

4.17.2 Adjust TDAFP Speed Control to desired setting. _____

STANDARD (**CS**): Operator Depresses the TDAFP TRIP PUSHBUTTON
SAT: ☐ UNSAT: ☐

4.18 **WHEN** the TDAFP is no longer required, **THEN** trip the TDAFP. _____

4.18.1 Verify Annunciator 114, Drop 10, TDAFP TRIP & THROT VLV UNLATCHED - LIT. _____

Standard: Operator verifies Ann. 114, Drop 10 is LIT
SAT: ☐ UNSAT: ☐

4.19 Close 1-QT-506, TDAFP Trip and Throttle Valve to relatch TTV. _____

STANDARD (**CS**): Operator runs TDAFP Trip & Throttle Valve CLOSED (Place QT-506 to CLOSED)
SAT: ☐ UNSAT: ☐

4.19.1 Verify Annunciator 114, Drop 10, TDAFP TRIP & THROT VLV UNLATCHED – NOT LIT. _____

STANDARD: Operator verifies Ann. 114, Drop 10 is NOT LIT
SAT: ☐ UNSAT: ☐

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

Continuous	1-OHP-4021-056-002	Rev. 41	Page 66 of 76
Auxiliary Feed Pump Operation			
Attachment 11	TDAFP Maintenance Operation		Pages: 62 - 69

4.20 Restoring TDAFP to Standby:

4.20.1 **IF** the discharge valve was closed in Step 4.12, **THEN** Open 1-FW-136, TDAFP 1-PP-4 Discharge Valve. _____

4.20.2 Place 1-AT-22, TDAFP Speed Control Transfer in HSD position. _____

4.20.3 Open 1-CA-7165, TDAFP 1-PP-4 Governor Speed Control Control Air Vent Valve. _____

4.20.4 Verify Ann 113, Drop 49, TDAFP HSD1 PANEL OVERRIDE - NOT LIT. _____

CUE: Discharge valve was not closed, 1-AT-22 is still in the HSD position and 1-CA-7165 is open.

STANDARD: Operator verifies Ann. 113. Drop 49 is NOT LIT.
SAT: ☐ UNSAT: ☐

NOTE: The required standby position for the TDAFP discharge valves is the marker on the valve stem positioned between the scribed marks on the valve yoke.

4.20.5 Reposition and independently verify the following TDAFP discharge valves to their required standby lineup position: [Ref.7.2.1d]

- 1-FMO-211, SG 1 Feed From TDAFP _____ / _____ IV
- 1-FMO-221, SG 2 Feed From TDAFP _____ / _____ IV
- 1-FMO-231, SG 3 Feed From TDAFP _____ / _____ IV
- 1-FMO-241, SG 4 Feed From TDAFP _____ / _____ IV

4.20.6 Verify 1-FW-127, TDAFP 1-PP-4 Emergency Leakoff to CST Shutoff Valve - OPEN. _____

4.20.7 Verify 1-FRV-258, TDAFP Emer Leakoff – OPEN. _____

TERMINATION CUE: This JPM is complete.

Task Briefing

You are the Extra RO in Unit 1.

The Unit 1 TDAFP has been declared inoperable and LCO 3.7.5 has been entered.

Maintenance has just completed minor adjustments to the Trip and Throttle valve and is requesting that the pump be started with flow ONLY through the test line to verify it comes up to normal speed. No data collection is required from Operations. Maintenance will monitor speed locally.

The US directs you to run the TDAFP for Maintenance in accordance with 1-OHP-4021-056-002, Auxiliary Feed Pump Operation, Attachment 11, TDAFP Maintenance Operation. No speed adjustments are required.

An AEO has been briefed. The AEO has verified the TDAFP is ready for start and the AEO and Maintenance personnel are standing by.

There is No Identified Primary to Secondary leakage.

AEP
AMERICAN ELECTRIC POWER

COOK NUCLEAR PLANT TRAINING CENTER

Bridgman, Michigan

OPERATIONS JPM

TRAINING PROGRAM TITLE	INITIAL LICENSE TRAINING	**TIME:**	15 MINUTES
NUMBER AND TITLE:	2020NRC-SIM05 Verify Containment Isolation Phase A IAW OHP-4023-E-0 Att. A (Alternate Path with OHP-4023-SUP-03)	**REVISION:**	0

Examinee's Name: _____

Evaluator's Name: _____

Date Performed: _____

Result (Circle One): SAT / UNSAT

Number of Attempts: _____

Time to Complete: _____

Comments: _____
_____
_____

REFERENCES/NRC KA/TASKS

Procedure:	01-OHP-4023-E-0	Reactor Trip or Safety Injection
	01_OHP-4023-SUP-003	Phase A Isolation Checklist
K/A Number:	SYS 103 A3.01	Ability to monitor automatic operation of the containment system including Containment isolation
K/A Imp.:	RO: 3.9 SRO: 4.2	
Task Number:	ADM03070302	Verify Limiting Conditions for Operations are met in accordance with Technical Specifications

TRAINING AIDS/TOOLS/EQUIPMENT

None

HANDOUTS

Task Briefing
01-OHP-4023-E-0 Attachment A Verification of Balance of Plant

ATTACHMENTS

None

EVALUATION SETTINGS

Unit 1 Simulator

EVALUATION METHOD:	PERFORM: ☒	SIMULATE: ☐

SIMULATOR/LAB SETUP

Reset simulator to IC – 870 with U1_RC16 @ 100%, Perform Steps of E-0, through Attachment A Check for Containment Isolation.

Reset Phase A and Reopen DCR-301, 302, 303, DCR-611 and NCR-106. Open DCR-610 and Override CS to Open. **ZGI101DCR610_U1**

Set PPC Test Points U1_ED1002_TEST to True and U1_ED1004_TEST to true to Show Phase A Actuated on Both Trains. Override Phase A Actuation Switches to Blank.

ZGIC1AA_U1 **ZGICIAB_U1**

EVALUATOR INSTRUCTIONS

Give copy of Task Briefing and copy of 01-OHP-4023-E-0, Attachment A, Verification of Balance of Plant to examinee.

TASK BRIEFING

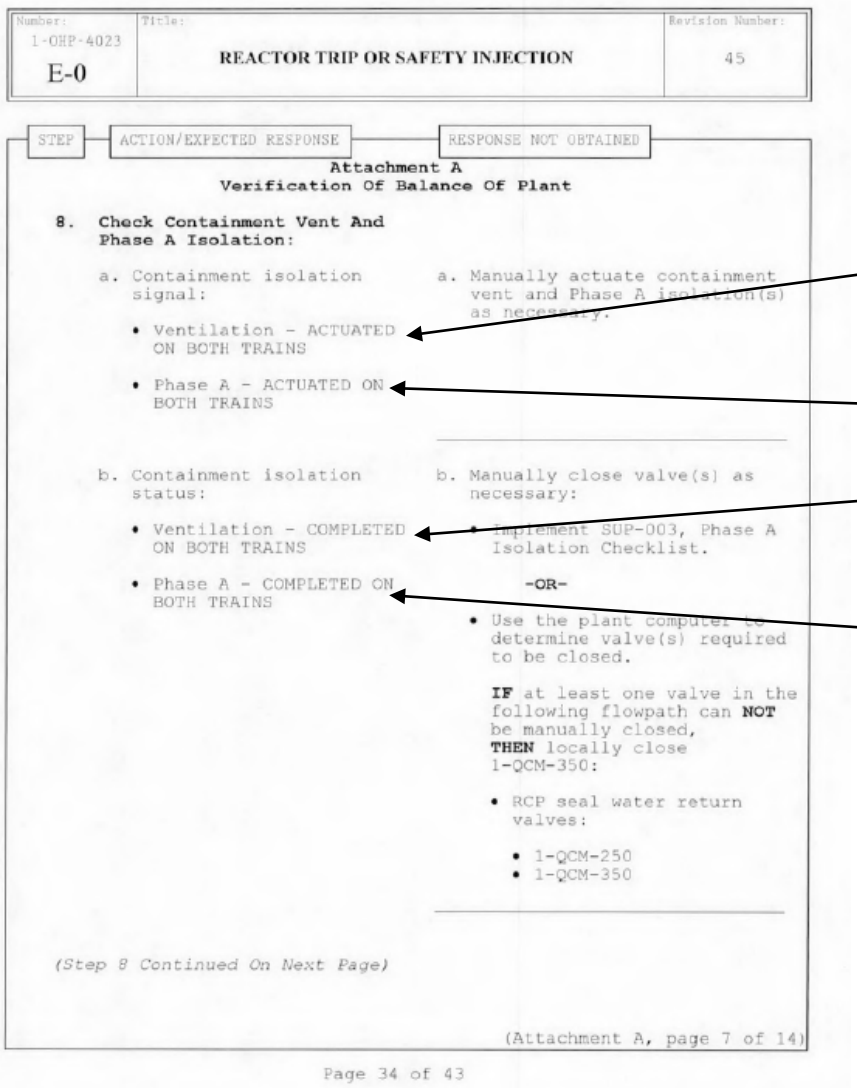
You are the BOP on Unit 1.

The Unit Supervisor has directed you to perform Step 8 of OHP-4023-E-0 Attachment A to verify Containment Isolation Phase A/Containment Vent Isolation.

GENERAL STANDARDS/PRECAUTIONS

Operator has successfully completed steps to verify Containment Isolation Phase A/Containment Vent Isolation.

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



Number: 1-OHP-4023 E-0 | Title: REACTOR TRIP OR SAFETY INJECTION | Revision Number: 45

STEP | ACTION/EXPECTED RESPONSE | RESPONSE NOT OBTAINED

Attachment A
Verification Of Balance Of Plant

8. **Check Containment Vent And Phase A Isolation:**

a. Containment isolation signal:
- Ventilation - ACTUATED ON BOTH TRAINS
- Phase A - ACTUATED ON BOTH TRAINS

a. Manually actuate containment vent and Phase A isolation(s) as necessary.

b. Containment isolation status:
- Ventilation - COMPLETED ON BOTH TRAINS
- Phase A - COMPLETED ON BOTH TRAINS

b. Manually close valve(s) as necessary:
- Implement SUP-003, Phase A Isolation Checklist.

-OR-

- Use the plant computer to determine valve(s) required to be closed.

IF at least one valve in the following flowpath can **NOT** be manually closed, **THEN** locally close 1-QCM-350:
- RCP seal water return valves:
  - 1-QCM-250
  - 1-QCM-350

(Step 8 Continued On Next Page)

(Attachment A, page 7 of 14)

Page 34 of 43

STANDARD: Operator verifies Containment Ventilation actuated on both trains.
SAT: ☐ UNSAT: ☐ (See PPC Screen on Next Page)

STANDARD: Operator verifies Phase A actuated on both trains.
SAT: ☐ UNSAT: ☐

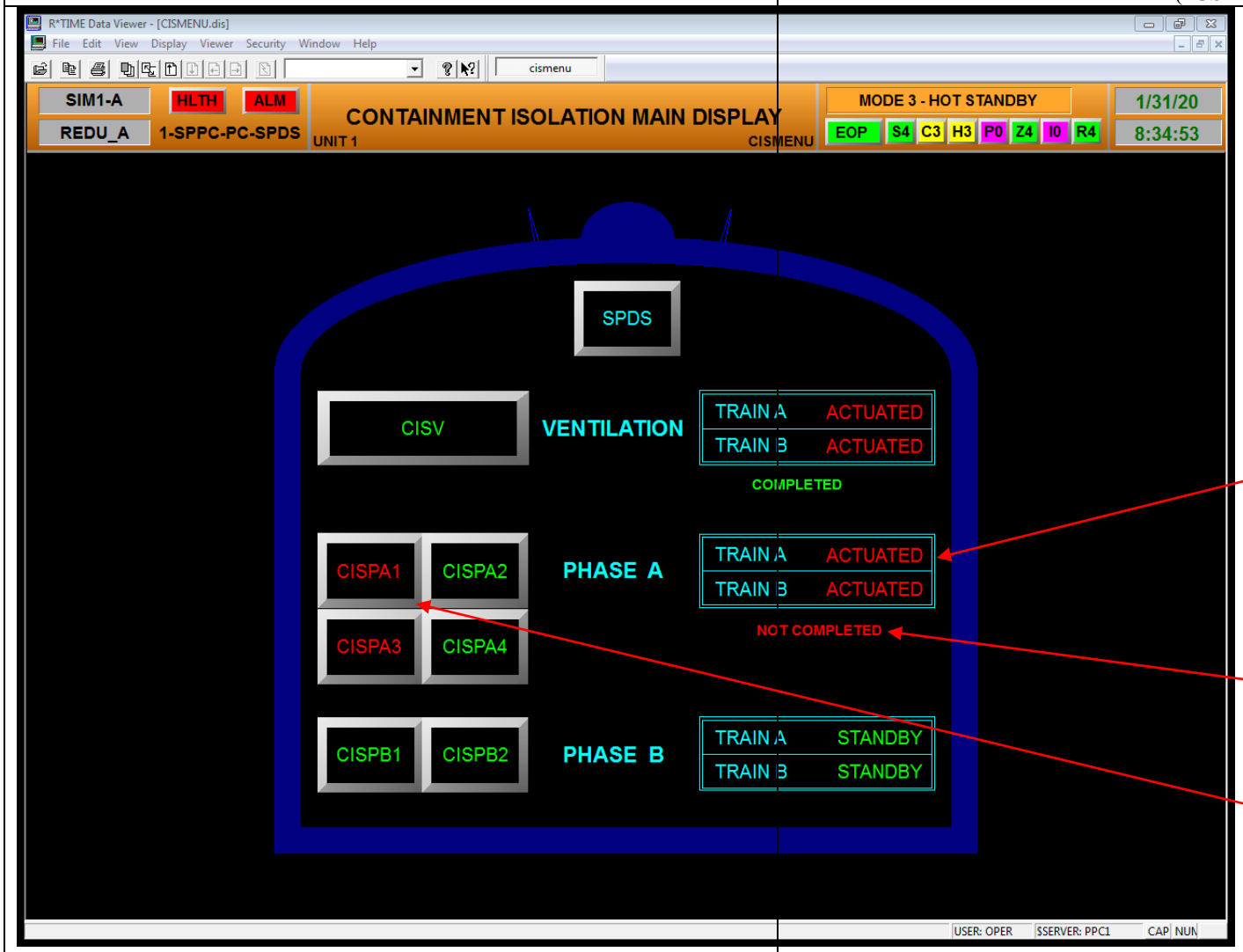
STANDARD: Operator verifies Containment Ventilation complete on both trains.
SAT: ☐ UNSAT: ☐

STANDARD: Operator identifies Phase A **NOT** complete on either train.
SAT: ☐ UNSAT: ☐ (See Previous PPC Page)

NOTE: Candidate may ask for SUP-003. If asked, provide SUP-003 to candidate.

NOTE: Only four valves are Critical Tasks associated with isolating containment due to Train A valves stuck open and Train B failure failing to close. (PPC Screens and SUP 3 pages show valves currently open – See next 4 pages)

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



Phase A Actuated on Both Trains

Phase A NOT COMPLETED

Page 1 and Page 3 Items Missing

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

Number:	Title:	Revision Number:
1-OHP-4023 E-0	REACTOR TRIP OR SAFETY INJECTION	45

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED

Attachment A
Verification Of Balance Of Plant

8. Check Containment Vent And Phase A Isolation:

a. Containment isolation signal:
- Ventilation - ACTUATED ON BOTH TRAINS
- Phase A - ACTUATED ON BOTH TRAINS

a. Manually actuate containment vent and Phase A isolation(s) as necessary.

b. Containment isolation status:
- Ventilation - COMPLETED ON BOTH TRAINS
- Phase A - COMPLETED ON BOTH TRAINS

b. Manually close valve(s) as necessary:
- Implement SUP-003, Phase A Isolation Checklist.

-OR-

- Use the plant computer to determine valve(s) required to be closed.

IF at least one valve in the following flowpath can **NOT** be manually closed, **THEN** locally close 1-QCM-350:
- RCP seal water return valves:
  - 1-QCM-250
  - 1-QCM-350

(Step 8 Continued On Next Page)

(Attachment A, page 7 of 14)

Page 34 of 43

STANDARD: Operator closes NCR-106 By Turning TRN B Nuclear Smplg Isol Valve to ISOL (Not Critical Train A Closed)
SAT: ☐ UNSAT: ☐

STANDARD: Operator attempts to close DCR-610 (Not Critical Stuck Open)
SAT: ☐ UNSAT: ☐

STANDARD **(CS)**: Operator closes DCR-611
SAT: ☐ UNSAT: ☐

STANDARD **(CS)**: Operator closes DCR-301, 302, and 303 By Turning TRN A Nuclear Smplg Isol Valve to ISOL
SAT: ☐ UNSAT: ☐

TERMINATION CUE: JPM is complete

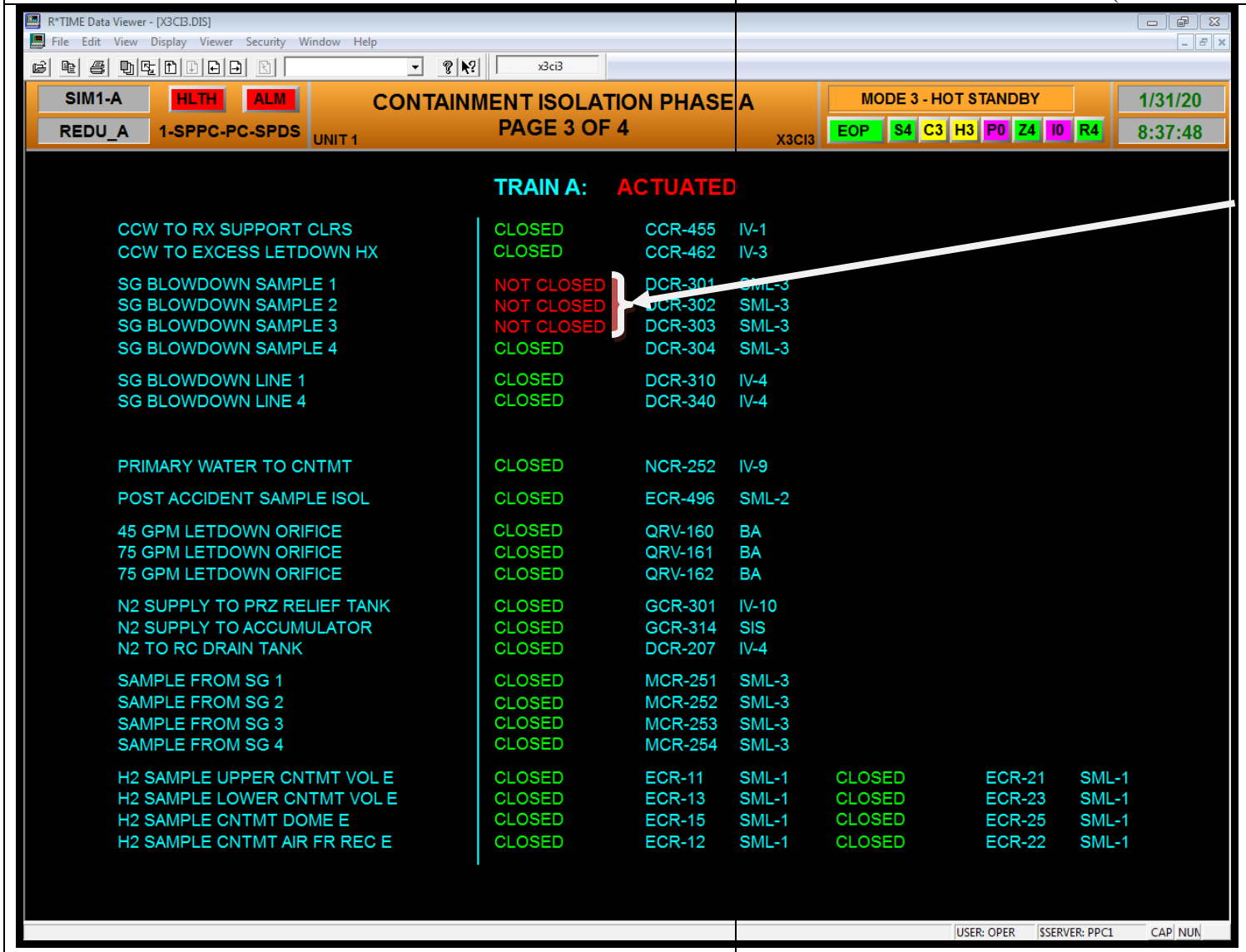
EXPECTED ACTIONS	CUES/STANDARDS (“**CS**” Indicates Critical Standard)

DCR 610 Stuck Open

DCR 611 NOT Closed

NCR-106 NOT Closed

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



DCR 301, 302, 303 NOT Closed

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

Number:	Title:	Revision Number:
1-OHP-4023 SUP-003	**PHASE A ISOLATION CHECKLIST**	2

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED

NOTE

- Some penetrations may be open in accordance with EOP directions and are **NOT** required to be closed.
- Valves denoted by asterisks (*) may **NOT** remain fully closed due to pressure binding. Containment isolation is satisfied if at least one valve in each penetration is closed.

1. **Check Containment Isolation Phase A Valves - CLOSED** — Manually close valves **NOT** in required position.

Train A	Train B	Flowpath Description
	IV Panel	
__ 1-VCR-103	__ 1-VCR-203	Lower CNTMT Purge Supply Air
__ 1-VCR-10	__ 1-VCR-11	Glycol to Air HDLG Units
__ 1-XCR-100	__ 1-XCR-101	CTRL Air Supply Header No. 2
__ *1-DCR-600	__ 1-DCR-601	CNTMT Sumps to Dirty WST HLD TK
__ 1-DCR-201	__ 1-DCR-203	RC Drain Tank to Vent Header
__ 1-CCR-455		CCW to RX Support CLRS
__ 1-VCR-104	__ 1-VCR-204	Lower CNTMT Purge Exhaust Air
__ 1-VCR-20	__ 1-VCR-21	Glycol from Air HDLG Units
__ 1-XCR-102	__ 1-XCR-103	Ctrl Air Supply Header No. 1
__ 1-DCR-610	__ 1-DCR-611	ICR Fan CLR Units Drain to WDS
__ 1-DCR-202	__ 1-DCR-204	RC Drain Tank to Gas Analyzer
__ 1-CCR-456	__ 1-CCR-457	CCW from RX Support CLRS

(Step 1 Continued On Next Page)

Page 2 of 5

DCR 610 Stuck Open

DCR 611 NOT Closed

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

Number: 1-OHP-4023 SUP-003	Title: PHASE A ISOLATION CHECKLIST	Revision Number: 2

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED

(Step 1 Continued From Previous Page)

IV Panel Status Light Panels		
Indicating Lights	**Status Lights**	**Panel Description**
SML-1	SML-4	H_2 Sampling Isol Valves
__ 1-ECR-11 and 21		H_2 SMPL FM E UP CNTMT
__ 1-ECR-12 and 22		CNTMT Air (E RECOMB)
__ 1-ECR-13 and 23		H_2 SMPL FM E LWR CNTMT
	__ 1-ECR-14 and 24	H_2 SMPL FM W LWR CNTMT
__ 1-ECR-15 and 25		H_2 SMPL FM E CNTMT DOME
	__ 1-ECR-16 and 26	H_2 SMPL FM W CNTMT DOME
	__ 1-ECR-17 and 27	H_2 SMPL FM W UP CNTMT
	__ 1-ECR-18 and 28	CNTMT Air (W RECOMB)
	__ 1-ECR-19 and 29	H_2 SMPL FM Dome Top
__ 1-ECR-10	__ 1-ECR-20	H_2 SMPL RET To CNTMT
SML-2	SML-5	Nuclear SMPLG Isol Vlvs
__ 1-ECR-416	__ 1-ECR-417	Lwr CNTMT Sump To PASS
__ 1-ECR-535	__ 1-ECR-536	Lwr CNTMT Air To PASS
__ 1-ECR-496	__ 1-ECR-497	Waste TK RET To CNTMT
SML-3	SML-6	Nuclear SMPLG CIVs
__ 1-DCR-301		SG1 BLDN Sample
__ 1-DCR-302		SG2 BLDN Sample
__ 1-DCR-303		SG3 BLDN Sample
__ 1-DCR-304		SG4 BLDN Sample
__ 1-MCR-251		SG1 Steam Lead Sample
__ 1-MCR-252		SG2 Steam Lead Sample
__ 1-MCR-253		SG3 Steam Lead Sample
__ 1-MCR-254		SG4 Steam Lead Sample
__ 1-NCR-109	__ 1-NCR-110	PZR Steam Space Sample
__ 1-NCR-107	__ 1-NCR-108	PZR Liquid Space SMPL
__ 1-NCR-105	__ 1-NCR-106	Loop 1 & 3 Hot Leg SMPL
__ 1-ICR-5	__ 1-ICR-6	Accumulator Sample

(Step 1 Continued On Next Page)

Page 4 of 5

DCR 301, 302, 303 NOT Closed

NCR-106 NOT Closed

TASK BRIEFING

You are the BOP on Unit 1.

The Unit Supervisor has directed you to perform Step 8 of OHP-4023-E-0 Attachment A to verify Containment Isolation Phase A/Containment Vent 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:	2020NRC-SIM06 (U2) Restoration of 4kV T21A Power from SDG (Alternate Path)	**REVISION:**	0

Examinee's Name: _____

Evaluator's Name: _____

Date Performed: _____

Result (Circle One): SAT / UNSAT

Number of Attempts: _____

Time to Complete: _____

Comments: _____
_____
_____

REFERENCES/NRC KA/TASKS

Procedure:	2-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 2-OHP- 4023.SUP.009 procedure

ATTACHMENTS

None

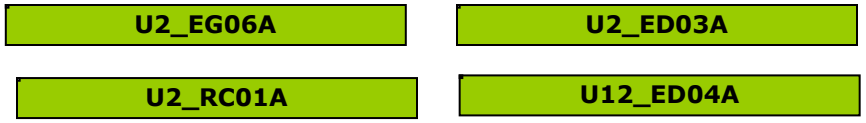
EVALUATION SETTINGS

Unit 2 Simulator

EVALUATION METHOD:	PERFORM: ☒	SIMULATE: ☐

SIMULATOR/LAB SETUP

Reset to IC 821 (Setup complete, Small LOCA ES-1.2 with Loss of T21A11 and EP)
Setup SDG controls SDG1 & 2 Engine Controls to OFF/RESET
Master Mode Selector Switch to MANUAL



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

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.

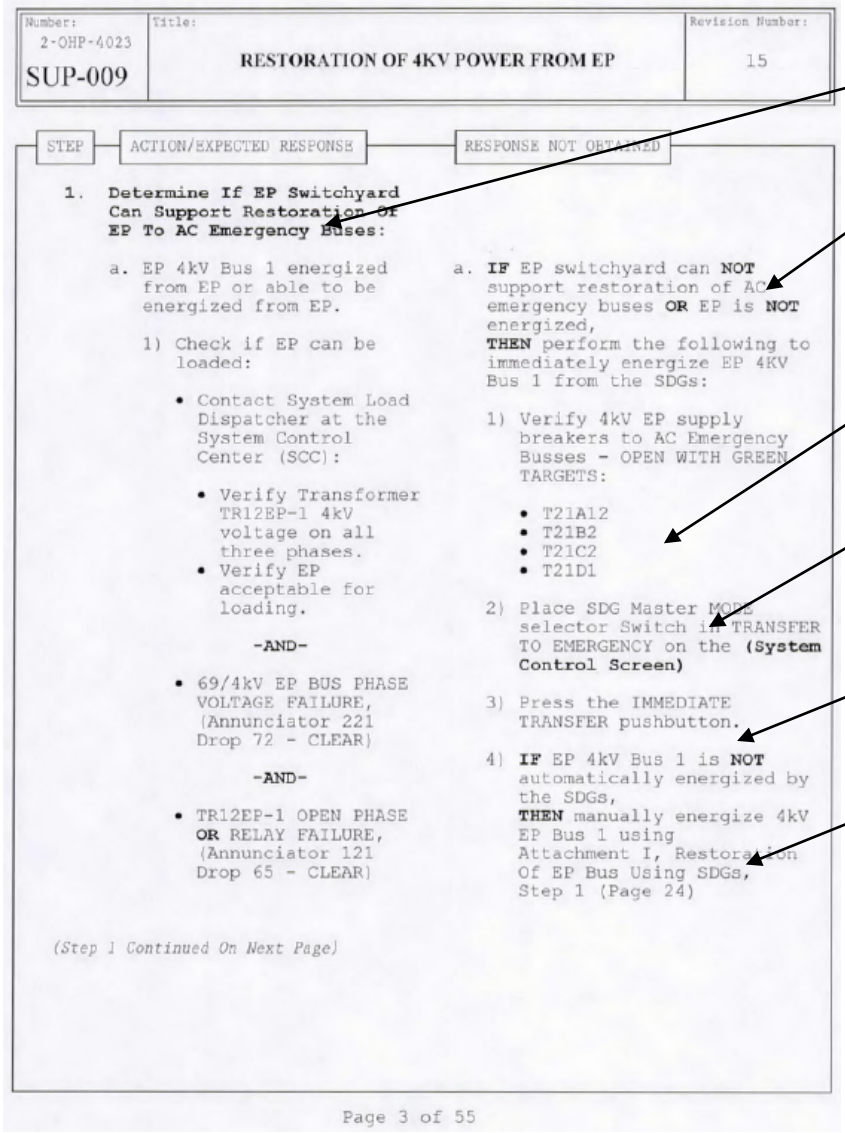
TASK BRIEFING

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 T21A has NOT been Re-Energized.

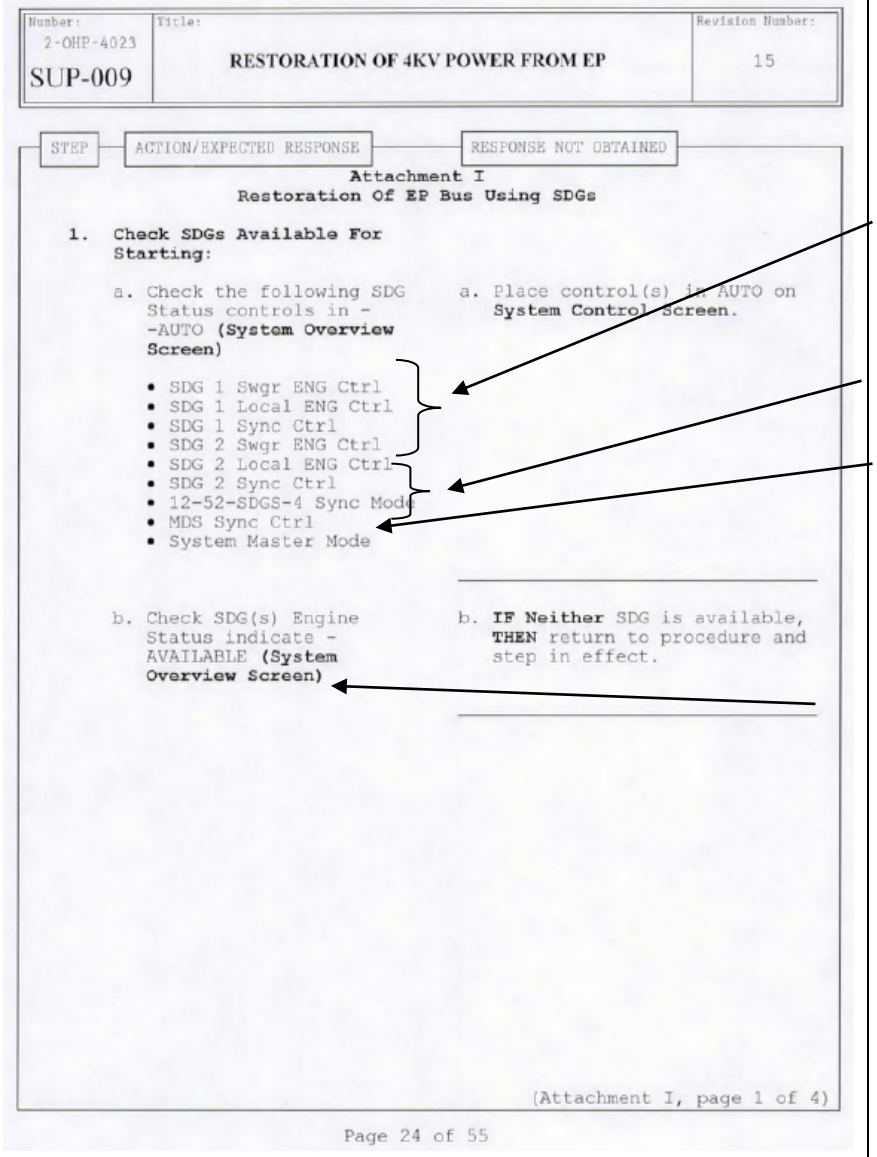
The Unit Supervisor directs you to, "Restore Bus T21A power from the EP per 02-OHP-4023.SUP.009."

GENERAL STANDARDS/PRECAUTIONS

Operator has performed actions IAW 02-OHP-4023.SUP.009, and power has been restored to T21A from EP.

EXPECTED ACTIONS	CUES/STANDARDS ("**CS**" Indicates Critical Standard)
	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: 2-OHP-4023 SUP-009 | Title: RESTORATION OF 4KV POWER FROM EP | Revision Number: 15

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 Status controls in --AUTO **(System Overview Screen)**
      - SDG 1 Swgr ENG Ctrl
      - SDG 1 Local ENG Ctrl
      - SDG 1 Sync Ctrl
      - SDG 2 Swgr ENG Ctrl
      - SDG 2 Local ENG Ctrl
      - SDG 2 Sync Ctrl
      - 12-52-SDGS-4 Sync Mode
      - 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)**

   b. **IF Neither** SDG is available, **THEN** return to procedure and step in effect.

(Attachment I, page 1 of 4)

Page 24 of 55

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

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

STANDARD: **(CS)** 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

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

Number:	Title:	Revision Number:
2-OHP-4023 SUP-009	RESTORATION OF 4KV POWER FROM EP	15

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED

Attachment I
Restoration Of EP Bus Using SDGs

2. **Check EP Motorized Disconnect Switch (MDS) - OPEN**

OPEN EP Motorized Disconnect Switch (MDS) as follows:

a. Perform the following from the **MDS Control Screen**:

1) Place MDS Mode Switch in MANUAL.

2) Press MDS MANUAL OPEN pushbutton.

b. Check EP Motorized Disconnect Switch (MDS) OPEN on the **MDS Control Screen**

c. **IF** the EP Motorized Disconnect Switch (MDS) is **NOT OPEN**, **THEN** dispatch an operator to locally open the MDS using Attachment M (Page 51)

d. **WHEN** the EP Motorized Disconnect Switch (MDS) is **OPEN**, **THEN** continue with step 3.

---

3. **Check SDGs - BOTH RUNNING**

Start all non-running SDGs from the **System Control Screen** by placing associated SDG Engine Control switch(s) in START.

IF NEITHER SDG can be started, **THEN** return to procedure and step in effect.

(Attachment I, page 2 of 4)

Page 25 of 55

STANDARD: Check MDS Open
SAT: ☐ UNSAT: ☐

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

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

Number:	Title:	Revision Number:
2-OHP-4023 SUP-009	RESTORATION OF 4KV POWER FROM EP	15

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED

Attachment I
Restoration Of EP Bus Using SDGs

4. **Check Output Breakers For Running SDGs - CLOSED**

   - 12-52-SDGS-3
   - 12-52-SDGS-2

IF BOTH SDGs output breakers are open,
THEN CLOSE the first running SDG output breaker:

a. Select a running SDG.

b. Place its Sync Mode Switch in MANUAL on the associated **SDG CONT screen**.

c. Press the associated SDG BKR MANUAL CLOSE PARALLEL pushbutton.

IF BOTH SDGs are running **AND** only one SDG output breaker is open,
THEN perform the following on the **SDG CONT 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.

(Attachment I, page 3 of 4)

Page 26 of 55

STANDARD: Check Output Breakers 12-52-SDGS-G3 & G2 Closed
SAT: ☐ UNSAT: ☐

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

Number: 2-OHP-4023 SUP-009	Title: RESTORATION OF 4KV POWER FROM EP	Revision Number: 15

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
	Attachment I **Restoration Of EP Bus Using SDGs**	
5.	**Check SDG Crosstie Breaker - CLOSED** • 12-52-SDGS-4	Perform the following on the **12-52-SDGS-4 CONT Screen** to close the SDG crosstie breaker: a. Place Sync Mode switch in MANUAL. b. Press the 12-52-SDGS-4 MANUAL CLOSE PARALLEL pushbutton.
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** the EP Bus 1 is energized by one SDG, **THEN** limit load to 2250 kw.
8.	**Return to Supplement Body, Step 2 (Page 4)**	

-END OF ATTACHMENT-

(Attachment I, page 4 of 4)

Page 27 of 55

STANDARD: Checks 12-52-SDGS-4 Closed
SAT: ☐ UNSAT: ☐

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)

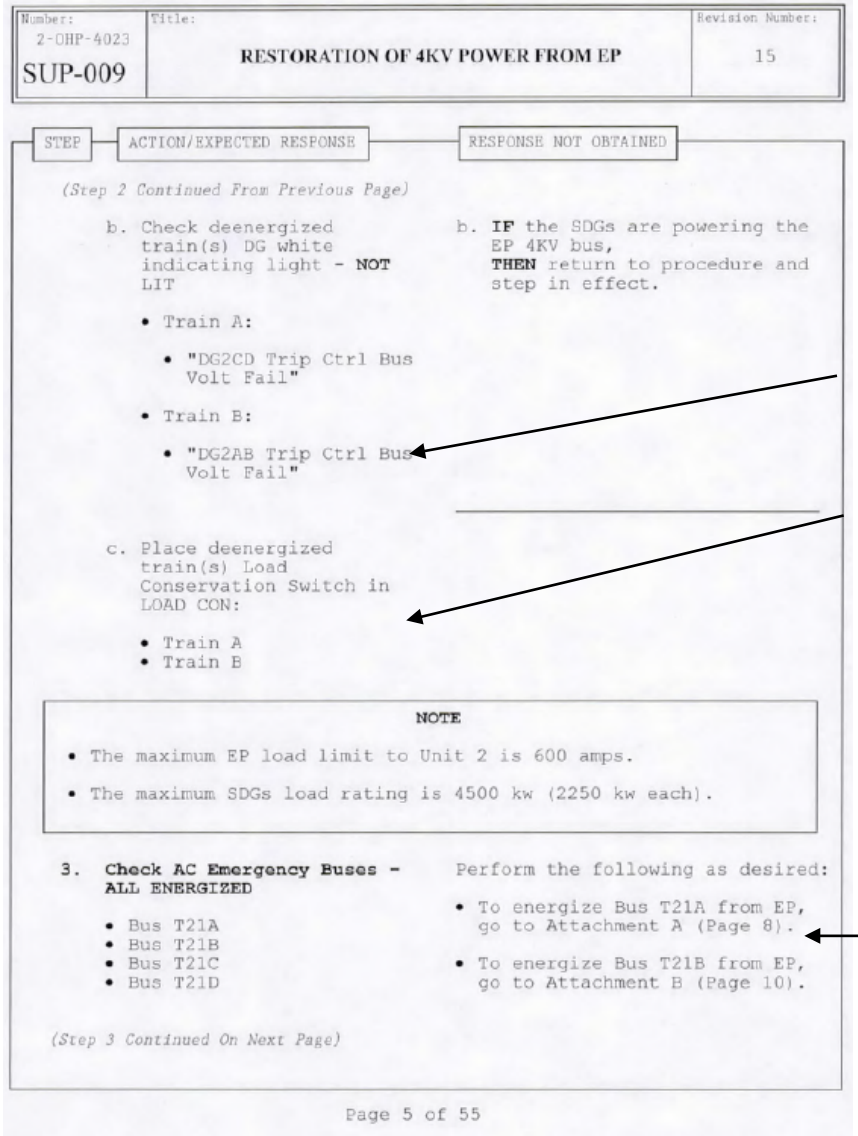
Number:	Title:	Revision Number:
2-OHP-4023 SUP-009	RESTORATION OF 4KV POWER FROM EP	15

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
	(Step 1 Continued From Previous Page) -OR- • Check if returning from Attachment L, Local Operation of 4kV EP Bus Voltage Regulators (Page 44) • EP voltage regulators - in NEUTRAL or BYPASSED position.	5) Continue with Step 2
	b. Check Motorized Disconnect Switch **(MDS)** - CLOSED	b. Perform the following from the **(MDS Control Screen)** to CLOSE the Motorized Disconnect Switch. 1) Place MDS MODE Switch in MANUAL. 2) Press MDS MANUAL CLOSE pushbutton.
	2. Check If Load Conservation Circuit Is Energized: a. Check EP 4KV Bus 1 - ENERGIZED BY SDG(s)	a. Go to Step 3 (Next Page).
	(Step 2 Continued On Next Page)	

Page 4 of 55

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

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



Number: 2-OHP-4023 SUP-009

Title: RESTORATION OF 4KV POWER FROM EP

Revision Number: 15

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED

(Step 2 Continued From Previous Page)

b. Check deenergized train(s) DG white indicating light - **NOT** LIT

- Train A:
  - "DG2CD Trip Ctrl Bus Volt Fail"
- Train B:
  - "DG2AB 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

NOTE

- The maximum EP load limit to Unit 2 is 600 amps.
- The maximum SDGs load rating is 4500 kw (2250 kw each).

3. **Check AC Emergency Buses - ALL ENERGIZED**

- Bus T21A
- Bus T21B
- Bus T21C
- Bus T21D

Perform the following as desired:

- To energize Bus T21A from EP, go to Attachment A (Page 8).
- To energize Bus T21B from EP, go to Attachment B (Page 10).

(Step 3 Continued On Next Page)

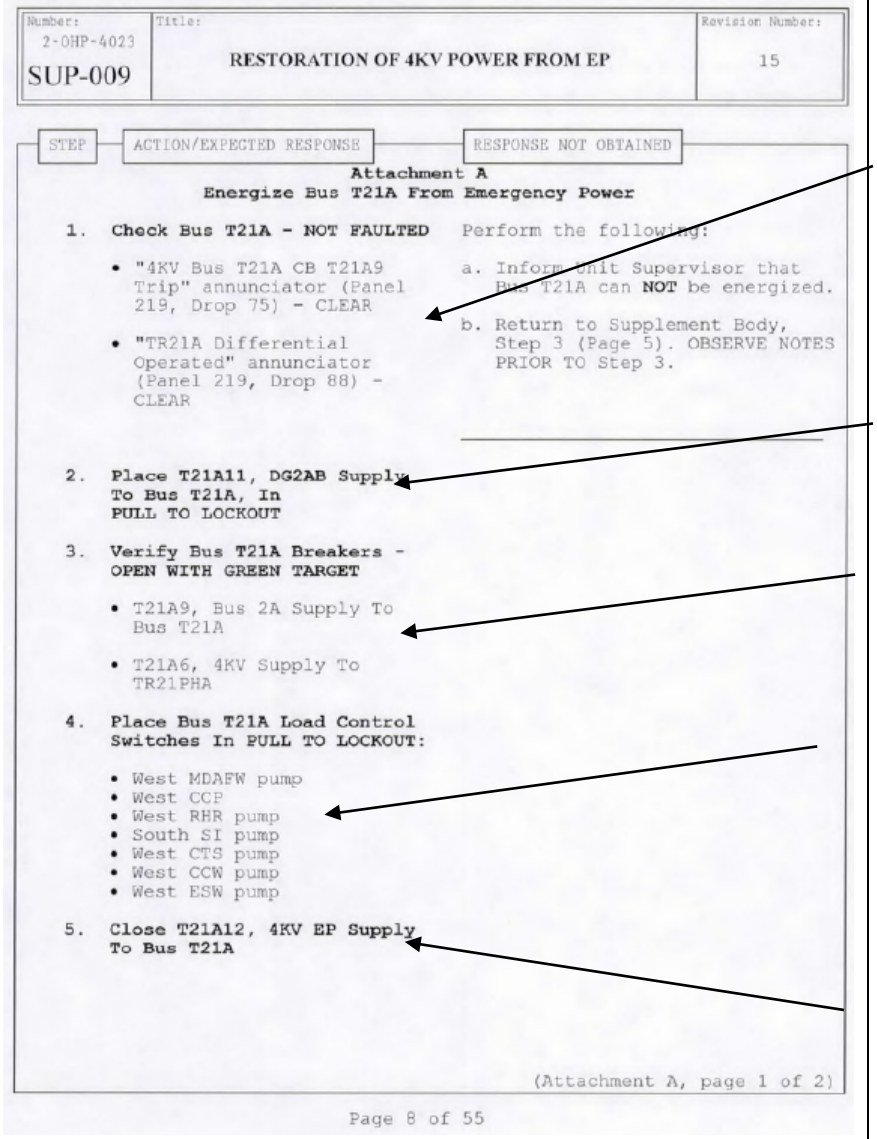
Page 5 of 55

STANDARD: Checks Train B DG2AB Trip Ctrl Bus Volt Fail – Not Lit
SAT: ☐ UNSAT: ☐

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

STANDARD: Go to Attachment A to Restore T21A
SAT: ☐ UNSAT: ☐

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



Number: 2-OHP-4023 SUP-009 | Title: RESTORATION OF 4KV POWER FROM EP | Revision Number: 15

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED

Attachment A
Energize Bus T21A From Emergency Power

1. **Check Bus T21A - NOT FAULTED** — Perform the following:
   - "4KV Bus T21A CB T21A9 Trip" annunciator (Panel 219, Drop 75) - CLEAR
   - "TR21A Differential Operated" annunciator (Panel 219, Drop 88) - CLEAR

   a. Inform Unit Supervisor that Bus T21A can **NOT** be energized.
   b. Return to Supplement Body, Step 3 (Page 5). OBSERVE NOTES PRIOR TO Step 3.

2. **Place T21A11, DG2AB Supply To Bus T21A, In PULL TO LOCKOUT**

3. **Verify Bus T21A Breakers - OPEN WITH GREEN TARGET**
   - T21A9, Bus 2A Supply To Bus T21A
   - T21A6, 4KV Supply To TR21PHA

4. **Place Bus T21A 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 T21A12, 4KV EP Supply To Bus T21A**

(Attachment A, page 1 of 2)

Page 8 of 55

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

STANDARD: Place T21A11 in PULL TO LOCKOUT
SAT: ☐ UNSAT: ☐

STANDARD: Verify T21A9 & T21A6 Open with Green Targets
SAT: ☐ UNSAT: ☐

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

CUE: All pumps are in PTL

STANDARD: **(CS)** Close T21A12
SAT: ☐ UNSAT: ☐

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

Number: 2-OHP-4023 SUP-009	Title: RESTORATION OF 4KV POWER FROM EP	Revision Number: 15

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED

Attachment A
Energize Bus T21A From Emergency Power

NOTE

- Nominal bus phase voltage difference is 1 to 2 volts (indicated).
- Equipment operation with bus phase voltage differences up to 4 volts (indicated) can be tolerated for up to 1 hour.

6. Check Bus T21A - ENERGIZED

a. Check all (three) T21A bus phase voltages:

- Maximum difference between bus phase voltage readings is 4 volts (indicated)
- Limit operation of equipment with bus phase voltage differences between 2 and 4 volts (indicated) to one hour or less.

a. Open T21A12, 4kV EP Supply to Bus T21A.

1) Dispatch an Operator to perform SUP-009, Restoration of 4KV Power from EP, Attachment L, Local Operation of 4kV EP Bus Voltage Regulators.

2) Return to procedure and step in effect.

7. Return To Supplement Body, Step 3 (Page 5). OBSERVE NOTES PRIOR TO Step 3

-END OF ATTACHMENT-

(Attachment A, page 2 of 2)

Page 9 of 55

STANDARD: Verifies T21A energized
SAT: ☐ UNSAT: ☐

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 Cool down and Depressurization. Bus T21A has NOT been Re-Energized.

The Unit Supervisor directs you to, "Restore Bus T21A power from the EP per 02-OHP-4023.SUP.009."

AMERICAN ELECTRIC POWER

COOK NUCLEAR PLANT TRAINING CENTER

Bridgman, Michigan

OPERATIONS JPM

TRAINING PROGRAM TITLE	INITIAL LICENSE TRAINING	**TIME:**	20 MINUTES
NUMBER AND TITLE:	2020NRC-Sim07 Restore Scaler Timer Post Maintenance	**REVISION:**	0

Examinee's Name: _____

Evaluator's Name: _____

Date Performed: _____

Result (Circle One): SAT / UNSAT

Number of Attempts: _____

Time to Complete: _____

Comments: _____
_____
_____

REFERENCES/NRC KA/TASKS

Procedure: 2-OHP-4021-013-005 Visual Audio Count Rate Channel (NIS)

K/A Number: SYS 015 A4.02 Ability to manually operate and/or monitor in the control room: 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

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

ATTACHMENTS

None

EVALUATION SETTINGS

Unit 2 Simulator

EVALUATION METHOD:	PERFORM: ☒	SIMULATE: ☐

SIMULATOR/LAB SETUP

1. Initialize to IC 820 (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 2 RO.
The Unit is currently in Mode 3.

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 2-OHP-4021-013-005, VISUAL AUDIO COUNT RATE CHANNEL (NIS) using NIS Channel N32.

GENERAL STANDARDS/PRECAUTIONS

Operator has set up the Audio Count Rate Channel

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

Reference	2-OHP-4021-013-005	Rev. 17	Page 5 of 20
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.

3.2 MTI should be contacted to make the necessary level adjustment on the scaler timer if source range readings are inconsistent.

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 **IF** desired to allow the audio count rate signal from 2-NRI-21 to be used as an input to audio count rate drawer, **THEN** perform Attachment 4 to install Temporary Modification 2-TM-16-46-R0. _____

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

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

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

CUE: The Temporary Modification is NOT required.

STANDARD: **(CS)** Operator verifies Channel Selector switch in "SRN32" position.
SAT: ☐ UNSAT: ☐

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

Reference	2-OHP-4021-013-005	Rev. 17	Page 6 of 20
Visual Audio Count Rate Channel (NIS)			
Attachment 1	Setup of Audio Count Rate Channel		Pages: 5 - 7

4.5 Verify Scaler Timer Polarity Toggle Switch is in the desired position:

NOTE: Depending on which Gamma-Metrics isolator card is installed, the Scaler Timer Polarity Toggle Switch may be placed in (+) or (-) to obtain the necessary audio counts from N21.

- **IF** desired to allow the audio count rate signal from 2-NRI-21 per Temporary Modification 2-TM-16-46-R0, **THEN** select Scaler Timer Polarity Toggle Switch position to obtain the necessary audio counts from N21. ____

- OR -

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

4.6 Place SAMPLING MODE selector switch in the following positions:

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

4.7 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.

4.8 Position thumbwheels to 00600 or other value as desired. ____

4.9 Place SAMPLING MODE toggle switch in AUTO. ____

4.10 Press the following pushbuttons:

4.10.1 STOP ____

4.10.2 RESET ____

4.10.3 START ____

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

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: ☐

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

Reference	2-OHP-4021-013-005	Rev. 17	Page 7 of 20
Visual Audio Count Rate Channel (NIS)			
Attachment 1	Setup of Audio Count Rate Channel		Pages: 5 - 7

4.11 Check GATE light is lit. _____

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

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

NOTE: **IF** Audio Count Rate Channel is being placed in Standby, **THEN** Steps 4.12 and 4.13 are N/A.

4.12 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). _____

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

4.13 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) _____

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

- Containment (Mode 6 only) _____

STANDARD: Operator determines Step 4.13.1 is N/A
SAT: ☐ UNSAT: ☐

4.13.1 **IF** count rate indication is NOT audible in either Control Room or Containment, **THEN** go to 2-OHP-4022-013-002, Audio Count Rate Malfunction. _____

TERMINATION CUE: This JPM is complete.

Comments:
_____
_____
_____

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

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

TASK BRIEFING

You are the Unit 2 RO.
The Unit is currently in Mode 3.

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 2-OHP-4021-013-005, VISUAL AUDIO COUNT RATE CHANNEL (NIS) using NIS Channel N32.

AMERICAN ELECTRIC POWER

COOK NUCLEAR PLANT TRAINING CENTER

Bridgman, Michigan

OPERATIONS JPM

TRAINING PROGRAM TITLE	INITIAL LICENSE TRAINING	**TIME:**	20 MINUTES
NUMBER AND TITLE:	2020NRC-Sim08 Perform Control Room actions for Fuel Handling Accident in Spent Fuel Storage Area	**REVISION:**	0

Examinee's Name: _____

Evaluator's Name: _____

Date Performed: _____

Result (Circle One): SAT / UNSAT

Number of Attempts: _____

Time to Complete: _____

Comments: _____
_____
_____

REFERENCES/NRC KA/TASKS

Procedure:	12-OHP-4022.018-006	Irradiated Fuel Handling Accident in Spent Fuel Storage Area – Control Room Actions
K/A Number:	SYS 034 A2.01	Ability to (a) predict the impacts of the following malfunctions or operations on the Fuel Handling System: and (b) based on these predictions, use procedures to correct, control, or mitigate the consequences of those malfunctions or operations: Dropped fuel element. Ability to operate and / or monitor the following as they apply to Fuel Handling Incidents: Reactor building containment purge ventilation system.
K/A Imp.:	RO: 3.6 SRO: 3.3	

Task Number:
AOP0630412 Respond to a fuel handling accident.

TRAINING AIDS/TOOLS/EQUIPMENT

None

HANDOUTS

Task Briefing
Copy of 12-OHP-4022.018-006, Irradiated Fuel Handling Accident in Spent Fuel Storage Area – Control Room Actions

ATTACHMENTS

None

EVALUATION SETTINGS

Unit 1 Simulator
Copy of 01-OHP-4030-127-041 Data Sheet 8 & 9, Containment Penetration Breach List

EVALUATION METHOD:	PERFORM: ☒	SIMULATE: ☐

SIMULATOR/LAB SETUP

Reset Simulator to IC: **871** or any Mode 4 IC

U1_VRS1505A

U12_RM05J

U12_RM05K

U12_RRC330A

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 and have just received a call from the refueling team at the Spent Fuel Storage Area that a fuel assembly has been dropped and bubbles can be seen rising from the fuel cell. He has requested you perform actions IAW 12-OHP-4022.018-006, Irradiated Fuel Handling Accident in Spent Fuel Storage Area – Control Room Actions.

GENERAL STANDARDS/PRECAUTIONS

Operator has performed actions IAW 12-OHP-4022.018-006, Irradiated Fuel Handling Accident in Spent Fuel Storage Area – Control Room Actions.

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

Number:	Title:	Revision Number:
12-OHP-4022 018-006	**IRRADIATED FUEL HANDLING ACCIDENT IN SPENT FUEL STORAGE AREA - CONTROL ROOM ACTIONS**	8

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED

NOTE

Accident Analysis for Control Room habitability assumes that the Control Room Pressurization/Cleanup Filter System is placed in operation within 20 minutes in order to prevent exceeding the limits specified by NUREG0737.

1. Alert Plant Personnel:

- Actuate Nuclear Emergency alarm
- Notify plant personnel to evacuate Auxiliary Building
- Assemble personnel at control point in Auxiliary Building

2. Check 1(2)-VRS-1505(2505)[Primary] OR 1(2)-VRS-1525(2525) [Backup], Aux Bldg Vent Effluent RAD Monitor VRS-1500(2500) Noble Gas Chamber Gamma (Beta) Radiation Status:

a. High alarm - STANDING — a. Go to Step 6 (Page 6).

b. Locally verify 12-RRV-306, GDT Release Header To Aux Bldg Vent Stack Shutoff Valve at the waste gas system panel - CLOSED

Page 2 of 8

STANDARD (**CS**): Operator actuates the Nuclear Emergency alarm.
SAT: ☐ UNSAT: ☐

STANDARD: Operator makes a PA announcement for Non-essential people to evacuate containment.
SAT: ☐ UNSAT: ☐

Cue: RP is assembling personnel

STANDARD: Operator verifies 1-VRS-1505 is alarming in HIGH Alarm.
SAT: ☐ UNSAT: ☐

STANDARD: Operator calls AEO to verify 12-RRV-306 is closed.
SAT: ☐ UNSAT: ☐

Cue: 12-RRV-306 is closed.

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

Number:	Title:	Revision Number:
12-OHP-4022 018-006	**IRRADIATED FUEL HANDLING ACCIDENT IN SPENT FUEL STORAGE AREA - CONTROL ROOM ACTIONS**	8

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
	NOTE Operation with more than one HV-AFX fan in service will exceed the 30,000 CFM + 10% (27,000-33,000) flow limit.	
3.	**Check 12-RRC-330, Spent Fuel Pit Area Radiation Monitor Status:**	
	a. High alarm - STANDING	a. Go to Step 6 (Page 6).
	b. Fuel Hdlg Area Exh Unit Dmpr-1(2) amber Charcoal Filter light - LIT	b. Place the applicable control switch in the CHAR FLTR position: • 12-101-AFXD-1, AFX-1 Exhaust Fan damper • 12-101-AFXD-2, AFX-2 Exhaust Fan damper
	c. 12-HV-AFS-1, 2, 3, 4, Fuel Handling Area Supply Fans - TRIPPED	c. Stop 12-HV-AFS-1, 2, 3, and 4.
	d. Verify ONE Fuel Handling Area Exhaust Fan, 12-HV-AFX-1 OR 2 is in service.	
4.	**Review PMP-2080-EPP-101, Emergency Classification, ECC R-1 and R-2 for applicability while continuing with this procedure.**	

Page 3 of 8

STANDARD: Operator verifies 12-RRC-330 is in HIGH Alarm.
SAT: ☐ UNSAT: ☐

STANDARD: Operator verifies Charcoal Filter light is LIT.
SAT: ☐ UNSAT: ☐

STANDARD (**CS**): Operator recognizes AFS fans are not tripped and trips them.
SAT: ☐ UNSAT: ☐

STANDARD (**CS**): Operator verifies one AFX fan is in service.
SAT: ☐ UNSAT: ☐

Cue: SM will review EPP-101

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

Number:	Title:	Revision Number:
12-OHP-4022 018-006	**IRRADIATED FUEL HANDLING ACCIDENT IN SPENT FUEL STORAGE AREA - CONTROL ROOM ACTIONS**	8

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
5.	**Isolate Control Room Ventilation to Both Units:**	
	a. Unit 1:	
	1) System dampers - ALIGNED • Close 1-HV-ACR-DA-1, Control Room Vent Intake Damper • Close 1-HV-ACR-DA-1A, Control Room Vent Intake Damper	1) Manually align damper(s) as necessary per 1-OHP-4021-028-014, Operation of the Control Room Air Conditioning and Pressurization/Cleanup Filter System, Attachment 13, Verifying Control Room Ventilation System Aligned For Unit 2 Safety Injection Signal.
	• Align the following Intake Dampers one Partial Open **AND** one Closed: • 1-HV-ACR-DA-2, Control Room Pressurization Intake Damper • 1-HV-ACR-DA-2A, Control Room Pressurization Intake Damper	
	• Open 1-HV-ACR-DA-3, Control Room Pressurization Clean-up Recirc Damper	
	2) Start Control Room Pressurization/Cleanup Filter Unit Ventilation Fan 1-HV-ACRF-1 **OR** 1-HV-ACRF-2	
	(Step 5 Continued On Next Page)	

Page 4 of 8

STANDARD (**CS**): Operator verifies both valves are closed.
SAT: ☐ UNSAT: ☐

STANDARD (**CS**): Operator verifies one valve is Partial Open and one is Closed.
SAT: ☐ UNSAT: ☐

STANDARD: Operator verifies 1-HV-ACR-DA-3 is open.
SAT: ☐ UNSAT: ☐

STANDARD(**CS**): Operator starts ONE Control Room Pressurization fan.
SAT: ☐ UNSAT: ☐

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

Number:	Title:	Revision Number:
12-OHP-4022 018-006	**IRRADIATED FUEL HANDLING ACCIDENT IN SPENT FUEL STORAGE AREA - CONTROL ROOM ACTIONS**	8

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
	(Step 5 Continued From Previous Page)	
	b. Unit 2:	
	1) System dampers - ALIGNED • Close 2-HV-ACR-DA-1, Control Room Vent Intake Damper • Close 2-HV-ACR-DA-1A, Control Room Vent Intake Damper • Align the following Intake Dampers one Partial Open **AND** one Closed: • 2-HV-ACR-DA-2, Control Room Pressurization Intake Damper • 2-HV-ACR-DA-2A, Control Room Pressurization Intake Damper • Open 2-HV-ACR-DA-3, Control Room Pressurization Clean-up Recirc Damper	1) Manually align damper(s) as necessary per 2-OHP-4021-028-014, Operation of the Control Room Air Conditioning and Pressurization/Cleanup Filter System, Attachment 14, Verifying Control Room Ventilation System Aligned For Unit 1 Safety Injection Signal.
	2) Start Control Room Pressurization/Cleanup Filter Unit Ventilation Fan 2-HV-ACRF-1 **OR** 2-HV-ACRF-2	

Page 5 of 8

NO ACTIONS ON THIS PAGE

CUE: If asked Unit Two has completed actions to align Control Room Ventilation

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

Number:	Title:	Revision Number:
12-OHP-4022 018-006	**IRRADIATED FUEL HANDLING ACCIDENT IN SPENT FUEL STORAGE AREA - CONTROL ROOM ACTIONS**	8

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
6.	**If Locally Stationed Personnel Report Other Indications Of a Fuel Handling Accident Such As:** Portable Area Radiation Monitor Alarm -OR- Visual verification of fuel assembly dropping or heavy equipment dropping on fuel assemblies Then manually perform the actions that automatically occur from Steps 3-4	Go to Step 8 (Next Page).
7.	**Check Auxiliary Building Ventilation:**	
	a. Check additional Auxiliary Building Supply Fan in service with containment airlock doors open and Containment Purge in service	a. Go to Step 8 (Next Page).
	b. Remove Auxiliary Building Supply Fan from service using 12-OHP-4021-028-011, Auxiliary Building Ventilation	

Page 6 of 8

CUE: If asked no other indications from original notification exist.

CUE: If asked only one Aux Building Supply fan is running in Unit Two.

STANDARD: Operator checks Aux building Supply Fan alignment. Goes to step 8 per RNO.
SAT: ☐ UNSAT: ☐

TERMINATION CUE: JPM is complete.

TASK BRIEFING

You are the RO and have just received a call from the refueling team at the Spent Fuel Storage Area that a fuel assembly has been dropped and bubbles can be seen rising from the fuel cell. He has requested you perform actions IAW 12-OHP-4022.018-006, Irradiated Fuel Handling Accident in Spent Fuel Storage Area – Control Room Actions.

AMERICAN ELECTRIC POWER

COOK NUCLEAR PLANT TRAINING CENTER

Bridgman, Michigan

OPERATIONS JPM

TRAINING PROGRAM TITLE	INITIAL LICENSE TRAINING	**TIME:**	20 MINUTES
NUMBER AND TITLE:	2020NRC-IP02 Trip and Isolation of Spuriously Actuated Pumps using 01-OHP-4025-LTI-6 (South SI Pump)	**REVISION:**	0

Examinee's Name: _____

Evaluator's Name: _____

Date Performed: _____

Result (Circle One): SAT / UNSAT

Number of Attempts: _____

Time to Complete: _____

Comments: _____
_____
_____

REFERENCES/NRC KA/TASKS

Procedure:	01-OHP-4025-LTI-6	TRIP/ISOLATION OF SPURIOUSLY ACTUATED PUMPS
K/A Number:	2.4.34	Knowledge of RO tasks performed outside the main control room during an emergency and the resultant operational effects
K/A Imp.:	RO: 4.2	SRO: 4.1
Task Number: APR0160612		

TRAINING AIDS/TOOLS/EQUIPMENT

None

HANDOUTS

Task Briefing
01-OHP-4025-LTI-6-5 Trip and Isolation of Spuriously Actuated Pumps

ATTACHMENTS

None

EVALUATION SETTINGS

Unit 1 4KV room
Unit 1 Aux Building

EVALUATION METHOD:	PERFORM: ☐	SIMULATE: ☒

SIMULATOR/LAB SETUP

N/A

EVALUATOR INSTRUCTIONS

Give copy of Task Briefing and copy of 01-OHP-4025-LTI-6, Trip/Isolation of Spuriously Actuated Pumps to examinee.

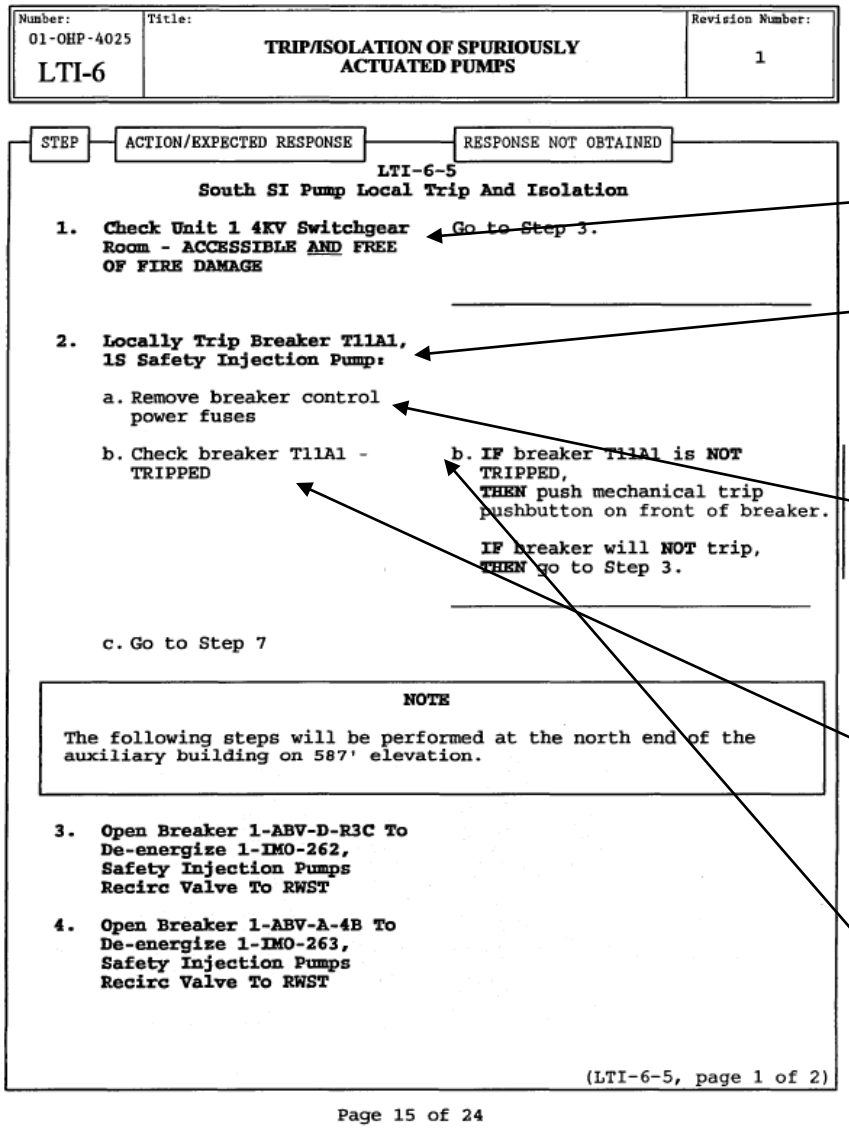
TASK BRIEFING

You are the extra Operator on shift.
The Unit has experienced a Cable Vault fire that has caused the Control Room team to evacuate the control room.
The Unit Supervisor has directed you to perform 01-OHP-4025-LTI-6-5 to trip and isolate the U1 South Safety Injection pump.

GENERAL STANDARDS/PRECAUTIONS

Operator has successfully completed steps in LTI-6-5 to trip isolate the U1 South Safety Injection pump.

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



Number: 01-OHP-4025 LTI-6

Title: **TRIP/ISOLATION OF SPURIOUSLY ACTUATED PUMPS**

Revision Number: 1

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED

LTI-6-5

South SI Pump Local Trip And Isolation

1. **Check Unit 1 4KV Switchgear Room - ACCESSIBLE AND FREE OF FIRE DAMAGE** — Go to Step 3.

2. **Locally Trip Breaker T11A1, 1S Safety Injection Pump:**

   a. Remove breaker control power fuses

   b. Check breaker T11A1 - TRIPPED — b. **IF** breaker T11A1 is **NOT** TRIPPED, **THEN** push mechanical trip pushbutton on front of breaker.

   IF breaker will **NOT** trip, **THEN** go to Step 3.

   c. Go to Step 7

NOTE

The following steps will be performed at the north end of the auxiliary building on 587' elevation.

3. **Open Breaker 1-ABV-D-R3C To De-energize 1-IMO-262, Safety Injection Pumps Recirc Valve To RWST**

4. **Open Breaker 1-ABV-A-4B To De-energize 1-IMO-263, Safety Injection Pumps Recirc Valve To RWST**

(LTI-6-5, page 1 of 2)

Page 15 of 24

Pictures of Upper and Lower cubicles are provided as part of JPM package. Evaluator should show picture to candidate when they identify the cubicle they would enter to complete task.
(Upper cubicle has Control power fuses)
(Lower cubicle has Trip Indication)

STANDARD: Operator verifies 4KV Switchgear Room is Accessible.
SAT: ☐ UNSAT: ☐

STANDARD: Operator locates breaker T11A1.
SAT: ☐ UNSAT: ☐

CUE: Show candidate picture of cubicle when they simulate opening upper cubicle door.

STANDARD: Operator opens the upper cubicle door and simulates removing control power fuses by pulling on ring for fuse cartridge.
SAT: ☐ UNSAT: ☐

CUE: Show candidate picture of cubicle if / when they simulate opening lower cubicle door to check breaker position.

STANDARD: Operator checks for green flag on breaker face.
SAT: ☐ UNSAT: ☐

CUE: Red flag is showing on breaker

STANDARD: Operator performs RNO for breaker not being TRIPPED by simulating to push the breaker trip pushbutton.
SAT: ☐ UNSAT: ☐

CUE: Show inform candidate no change in breaker position after trip pushbutton is pressed.

(Continued on next page)

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

Number:	Title:	Revision Number:
01-OHP-4025 LTI-6	**TRIP/ISOLATION OF SPURIOUSLY ACTUATED PUMPS**	1

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED

LTI-6-5
South SI Pump Local Trip And Isolation

1. **Check Unit 1 4KV Switchgear Room - ACCESSIBLE AND FREE OF FIRE DAMAGE**
   Go to Step 3.

2. **Locally Trip Breaker T11A1, 1S Safety Injection Pump:**

   a. Remove breaker control power fuses

   b. Check breaker T11A1 - TRIPPED
   b. **IF** breaker T11A1 is **NOT** TRIPPED, **THEN** push mechanical trip pushbutton on front of breaker.

   IF breaker will **NOT** trip, **THEN** go to Step 3.

   c. Go to Step 7

NOTE

The following steps will be performed at the north end of the auxiliary building on 587' elevation.

3. **Open Breaker 1-ABV-D-R3C To De-energize 1-IMO-262, Safety Injection Pumps Recirc Valve To RWST**

4. **Open Breaker 1-ABV-A-4B To De-energize 1-IMO-263, Safety Injection Pumps Recirc Valve To RWST**

(LTI-6-5, page 1 of 2)

Page 15 of 24

This page included to allow completion of steps not completed on previous page

STANDARD: Operator reads the note and proceeds to auxiliary building.
SAT: ☐ UNSAT: : ☐

STANDARD: Operator locates MCC 1-ABV-D in the auxiliary building.
SAT: ☐ UNSAT:

STANDARD (**CS**): Operator simulates opening breaker 1-ABV-D-R3C.
SAT: ☐ UNSAT:

STANDARD: Operator locates MCC 1-ABV-A in the auxiliary building.
SAT: ☐ UNSAT:

STANDARD (**CS**): Operator simulates opening breaker 1-ABV-A-4B.
SAT: ☐ UNSAT:

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

Number:	Title:	Revision Number:
01-OHP-4025 LTI-6	**TRIP/ISOLATION OF SPURIOUSLY ACTUATED PUMPS**	1

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED

LTI-6-5
South SI Pump Local Trip And Isolation

NOTE

The following steps will be performed in the auxiliary building on 587' elevation, in the 1S safety injection pump room.

5. **Open Safety Injection Pump Recirc Valves To RWST Using Manual Handwheels:**
   - 1-IMO-262
   - 1-IMO-263
6. **Close 1-SI-111S, 1S Safety Injection Pump Discharge Isolation Valve**
7. **Report 01-OHP 4025.LTI-6, Trip/Isolation Of Spuriously Actuated Pumps, LTI-6-5, South SI Pump Local Trip And Isolation, Complete**
8. **Stand By For Further Instructions**

-END OF ATTACHMENT-

(LTI-6-5, page 2 of 2)

Page 16 of 24

STANDARD: Operator enters the U1 South safety Injection Pump Room
SAT: ☐ UNSAT: ☐

NOTE: Both valves below must be opened to meet the **CS**

CUE: BOTH valves indicate CLOSED on local positioner.

STANDARD (**CS**): Operator simulates opening the designated valves (Valve must be declutched by pushing the clutch handle down before / while turning the hand wheel. The clutch lever should be released as valve is operated)
1-IMO-262 SAT: ☐ UNSAT: ☐
1-IMO-263 SAT: ☐ UNSAT:

STANDARD (**CS**): Operator simulates closing 1-SI-111S (simulates turning hand wheel in clockwise direction, observes stem lowering into valve)
SAT: ☐ UNSAT: ☐

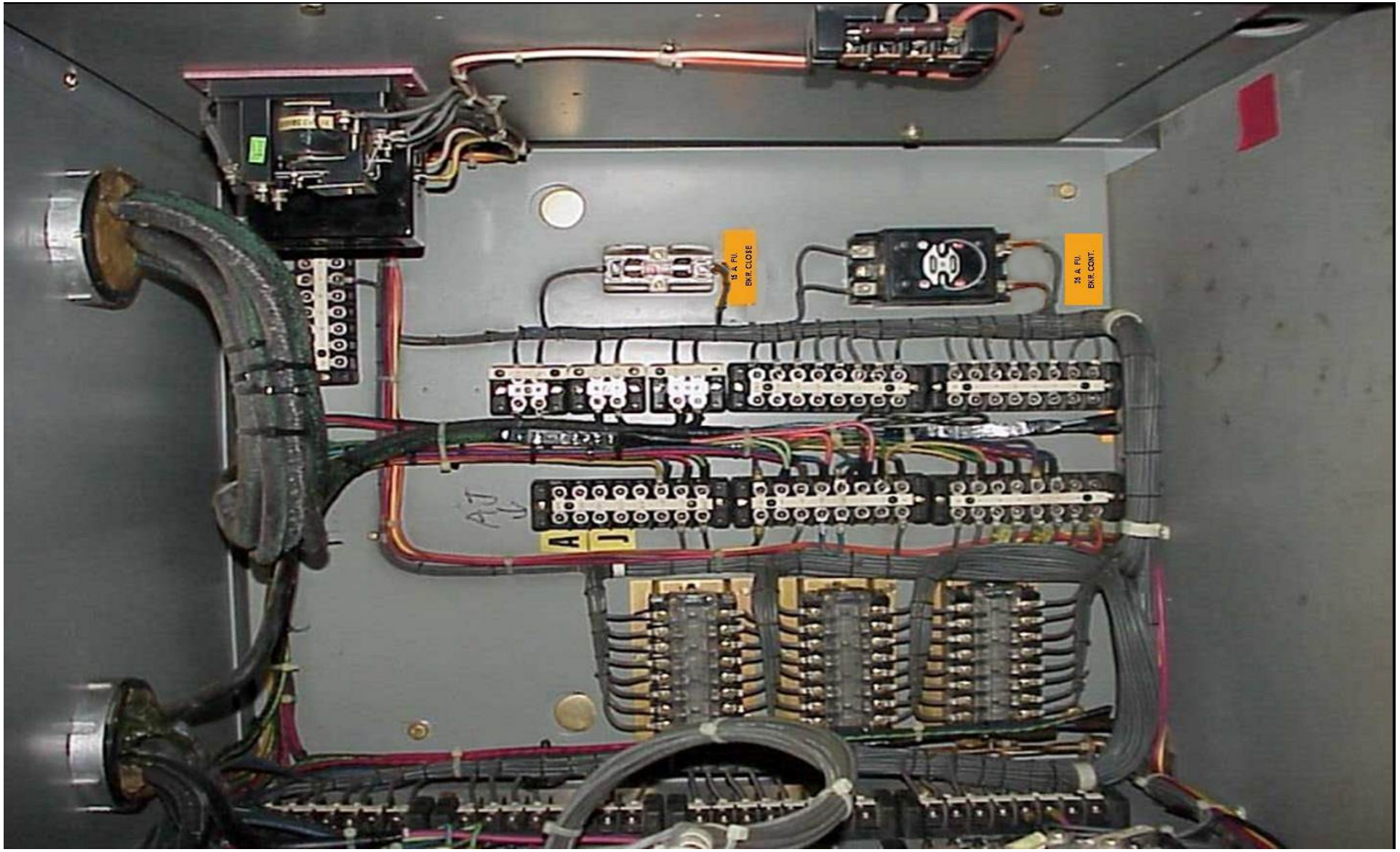
STANDARD: Operator reports LTI-6-5 has been completed by performing steps 3 thru 7
SAT: ☐ UNSAT: ☐

TERMINATION CUE: JPM is complete

TASK BRIEFING

You are the extra Operator on shift.

The Unit Supervisor has directed you to perform 01-OHP-4025-LTI-6-5 to trip and isolate the U1 South Safety Injection pump.


15 A. FU.
BKR. CLOSE
30 A. FU.
BKR. CONT.
A J


Breaker
Operations
Counter
00857
Main
Contact
Status
Open
Cutler-Hammer
Vacuum
Circuit Breaker
VCP-WR
CLOSING
SPRING
Manual
Charge
Socket
Status
Discharged
Push
To
Push
To
Open

AMERICAN ELECTRIC POWER

COOK NUCLEAR PLANT TRAINING CENTER

Bridgman, Michigan

OPERATIONS JPM

TRAINING PROGRAM TITLE	INITIAL LICENSE TRAINING	**TIME:**	20 MINUTES
NUMBER AND TITLE:	2020NRC-IP06 Restore 'N' Train Battery Charger – U1 (Alt. Path)	**REVISION:**	0

Examinee's Name: _____

Evaluator's Name: _____

Date Performed: _____

Result (Circle One): SAT / UNSAT

Number of Attempts: _____

Time to Complete: _____

Comments: _____
_____
_____

REFERENCES/NRC KA/TASKS

Procedure:	1-OHP-4024-115, Drop 57	Trains A & B N Battery CHG De-energized
	1-OHP-4021-082-015	Operation of the N Train Battery System

K/A Number: APE 058 AA1.01

K/A Imp.: RO: 3.4 SRO: 3.5

Task Number:	0820080504	Reset the N-train Battery Charger
	0820160104	Switch N-Train Battery Chargers.

TRAINING AIDS/TOOLS/EQUIPMENT

None

HANDOUTS

Task Briefing sheet
1-OHP-4024-115, Drop 57, Trains A & B N Battery CHG De-energized
1-OHP-4021-082-015, Operation of the N Train Battery System

ATTACHMENTS

None

EVALUATION SETTINGS

In-Plant (U1)

EVALUATION METHOD:	PERFORM: ☐	SIMULATE: ☒

SIMULATOR/LAB SETUP

N/A

EVALUATOR INSTRUCTIONS

Give copy of Task Briefing and copy of 1-OHP-4024-115, Drop 57, Trains A & B N Battery CHG De-energized to examinee.

HOLD 1-OHP-4021-082-015, Operation of the N Train Battery System until required to place standby charger in service.

TASK BRIEFING

Unit 1 is in Mode 3 following a Reactor Trip with a Safety Injection.

You are an Extra Operator.

The Unit Supervisor directs to locally restore the Unit 1 N-Train Battery Charger to service in accordance with Annunciator Panel #115, Drop 57, Step 3.2.

You are to review the subsequent actions of this Annunciator Response Procedure and restore an N-Train battery charger to service.

The Train 'A' Charger is currently aligned for service on the Unit 1 N-Train Battery system.

GENERAL STANDARDS/PRECAUTIONS

Demonstrate the ability to place an N-Train Battery Charger in service following the loss of the N-Train battery on a Safety Injection and/or load shed condition.

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

1-OHP-4024-115

Level of Use: REFERENCE Drop 57

ANNUNCIATOR #115 RESPONSE: FEED PUMP TURBINE

INITIATING DEVICE(S) AEP	Alias	NOMINAL SETPOINT
(30BC-A and 30BC-B) or (88XBC-A and [88XBC-B or K1-1 TR B]) or (88XBC-B and [88XBC-A or K1-1 TR A]) or (K1-1 TR A and K1-1TR B) or (49 device -thermal overload open on both feeds)		N/A

57
TRAINS A & B
N BATTERY CHG
DE-ENERGIZED

1.0 PROBABLE CAUSE(S):

1.1 Both N Train A and B battery charger de-energized simultaneously.

1.2 Safety Injection signal actuated.

1.3 Load shedding on bus T-11B or T-11D.

1.4 Thermal overload trip on both battery charger feeds.

2.0 AUTOMATIC ACTION(S):

2.1 None

3.0 OPERATOR ACTION(S):

3.1 **IF** switching battery chargers in progress, **THEN** ensure one battery charger left in service.

3.2 **IF** safety injection signal actuated, **OR** load shed occurred, **THEN** manually reset the in service battery charger by placing the charger's control switch to OFF and then returning it to AUTO.

3.3 Reset thermal overloads.

Page 84 of 145
Rev. 26

NOTE: Candidate understands that the N-Train battery charger must be manually reset following a Safety Injection and Load Shed on bus T11B or T11D.

CUE: If asked, (at Train A Control Box) WHITE light is LIT and the GREEN / RED lights are NOT lit.

STANDARD (**CS**): Simulates resetting the in-service battery charger by placing the control switch to **OFF** and then back to the **AUTO** position.
SAT: ☐ UNSAT: ☐
CUE: If asked, no change in control box light indication.

CUE: The control room reports that Annunciator Panel 115 Drop 57 alarm has NOT cleared [NOTE: Operator must open Breaker Cabinet to access the thermal overload reset.]

CUE: If asked, breaker switch is in the TRIPPED position. Provide a copy of Breaker Cabinet drawing during attempt to reset thermal overload. Ask candidate about PPE requirements to open breaker cabinet door – Full flash is required to break the plane

STANDARD (**CS**): Simulates opening breaker 1-AM-D-4A cabinet door, then attempts to reset thermal overload.
SAT: ☐ UNSAT: ☐

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

1-OHP-4024-115

Level of Use: REFERENCE **Drop 57**

3.4 **IF** the alarm is still standing upon completing the applicable checks from Steps 3.1, 3.2, or 3.3, **THEN** the Operator should reference 1-OHP-4021-082-015, Operation of the N Train Battery System, to restore the N Train Battery Charger to service.

4.0 REFERENCE INDEX:

4.1 Source Documents:

4.1.1 AEP Elementary Diagram:

a. OP-1-98210

4.1.2 Unit 1 Technical Specification:

a. 3.8.4.b, D.C. Sources – Operating

b. 3.8.9.d, D.C. Distribution Systems – Operating

4.2 Reference Documents:

4.2.1 Normal Operating Procedure:

a. 1-OHP-4021-082-015, Operation of the N Train Battery System

4.3 Commitment Documents:

4.3.1 None

Page 85 of 145
Rev. 26

NOTE: May inform control room thermal overload is reset.

CUE: Control room informs you the alarm will NOT reset.

STANDARD: May simulate re-closing the breaker.
SAT: ☐ UNSAT: ☐

CUE: Breaker fails to the TRIPPED position.

STANDARD: May inform control room of breaker failure.
SAT: ☐ UNSAT: ☐

CUE: Control room acknowledges breaker failure and directs you to place Train B charger in service.

STANDARD: Enters 1-OHP-4021-082-015 to restore Train 'B' N-Train Battery Charger to service.
SAT: ☐ UNSAT: ☐

CUE: Provide a copy of 1-OHP-4021-082-015 upon recognition that the procedure will be entered.

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

Reference	1-OHP-4021-082-015	Rev. 18	Page 14 of 29
Operation Of The N Train Battery System			
Attachment 1	Placing a Battery Charger in Service		Pages: 11 - 15

4.1.11 **IF** the chargers were switched **AND** it is desired to remove 1-BC-B Battery Charger in service, **THEN** perform the applicable steps of Attachment 2, Removing a Battery Charger from Service, for 1-BC-B Battery Charger. _____

4.2 **IF** placing the 1-BC-B Battery Charger in service, **THEN** perform the following:

4.2.1 **IF** placing the battery charger in service after an extended battery outage, **THEN** request Maintenance to be present to adjust charger voltage to prevent exceeding current limitations. _____

4.2.2 Verify the AC Input breaker in OFF:

- 1-BC-B-CB1, Battery Charger AC Input From 1-ABD-B-2A _____

4.2.3 **IF** the N Battery Charger will be powered from an EDG, **THEN** verify adequate diesel generator capacity is available. _____

4.2.4 Close the Incoming Feed breaker:

- 1-DCN Ckt 4, Incoming Feed From Battery Charger 1-BC-B (Train B) _____

CAUTION: Float charge should be 260 to 265 VDC.

Battery charger must NOT exceed 25 amps when placing in service under normal conditions. [Ref. 7.2.1l]

4.2.5 Close the DC Output breaker on selected charger:

- 1-BC-B-CB2, Battery Charger DC Output To Xfer Cab 1-DCN CKT 4 _____

4.2.6 Close the AC Input breaker on selected charger:

- 1-BC-B-CB1, Battery Charger AC Input From 1-ABD-B-2A _____

CUE: Per procedure prerequisites, MCC 1-AM-D & 1-ABD-B are energized and one battery exhaust fan is operating.

CUE: When asked, "the Train B charger was in service yesterday with operating parameters within normal limits."

STANDARD: Operator enters N/A
SAT: ☐ UNSAT: ☐

STANDARD: Verifies the 1-BC-B-CB1 is OFF.
SAT: ☐ UNSAT:
CUE: 1-BC-B-CB1 is OFF.

STANDARD: Operator enters N/A
SAT: ☐ UNSAT: ☐
CUE: "There was no Loss of Offsite Power."

STANDARD (**CS**): Simulates closing 1-DCN CKT 4 breaker.
SAT: ☐ UNSAT: ☐

STANDARD (**CS**): Simulates closing 1-BC-B-CB2 breaker.
SAT: ☐ UNSAT: ☐

STANDARD (**CS**): Simulates closing 1-BC-B-CB1 breaker.
SAT: ☐ UNSAT: ☐

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

Reference	1-OHP-4021-082-015	Rev. 18	Page 15 of 29
Operation Of The N Train Battery System			
Attachment 1	Placing a Battery Charger in Service		Pages: 11 - 15

NOTE: If switching battery chargers, Annunciator #115, Drop 56 TRAINS A & B N TRAIN BATTERY CHG ENERGIZED, will actuate.

4.2.7 Place the control switch in AUTO position:

- 1-101-BC-B, N Train Battery Train B Charger 1-BC-B Control Switch _____

STANDARD (**CS**): Simulates placing 1-BC-B control switch in AUTO.
SAT: ☐ UNSAT: ☐

CUE: Control switch is in the AUTO position – GREEN light OFF and RED light ON.

TERMINATION CUE: JPM is complete

NOTE: If switching battery chargers, Annunciator #115, Drop 56 TRAINS A & B N TRAIN BATTERY CHG ENERGIZED, will clear.

4.2.8 **IF** the chargers are being switched, **THEN**:

a. Place 1-101-BC-A, N Train Battery Train A Charger 1-BC-A Control Switch, to OFF. _____

b. Verify red AC POWER FAILURE light – LIT for the 1-BC-A charger. _____

4.2.9 Verify red AC POWER FAILURE light – **NOT** LIT for the 1-BC-B charger. _____

NOTE: If following deep battery discharge or testing, refer to Step 3.1.

4.2.10 **IF** the chargers were switched **AND** the 1-BC-B Battery Charger exceeds 25 amps, **THEN**:

a. Place 1-101-BC-A, N Train Battery Train A Charger 1-BC-A Control Switch, in AUTO. _____

b. Place 1-101-BC-B, N Train Battery Train B Charger 1-BC-B Control Switch, in OFF. _____

c. Verify red AC POWER FAILURE light – **NOT** LIT for the 1-BC-A charger. _____

TASK BRIEFING

Unit 1 is in Mode 3 following a Reactor Trip with a Safety Injection.

You are an Extra Operator.

The Unit Supervisor directs to locally restore the Unit 1 N-Train Battery Charger to service in accordance with Annunciator Panel #115, Drop 57, Step 3.2.

You are to review the subsequent actions of this Annunciator Response Procedure and restore an N-Train battery charger to service.

The Train ‘A’ Charger is currently aligned for service on the Unit 1 N-Train Battery system.

AMERICAN ELECTRIC POWER

COOK NUCLEAR PLANT TRAINING CENTER

Bridgman, Michigan

OPERATIONS JPM

TRAINING PROGRAM TITLE	INITIAL LICENSE TRAINING	**TIME:**	20 MINUTES
NUMBER AND TITLE:	2020NRC-IP07 Aligning Control Room Pressurization/Cleanup Filter System for Standby Readiness	**REVISION:**	0

Examinee's Name: _____

Evaluator's Name: _____

Date Performed: _____

Result (Circle One): SAT / UNSAT

Number of Attempts: _____

Time to Complete: _____

Comments: _____
_____
_____

REFERENCES/NRC KA/TASKS

Procedure:	01-OHP-4021-028-014 Att. 1	Aligning Control Room Pressurization/Cleanup Filter System for Standby Readiness
K/A Number:	2.1.30	Ability to locate and operate components including local controls
K/A Imp.:	RO: 4.4 SRO: 4.0	
Task Number:	0280210101	

TRAINING AIDS/TOOLS/EQUIPMENT

None

HANDOUTS

Task Briefing

01-OHP-4021-028-014 Att. 1, Aligning Control Room Pressurization/Cleanup Filter System for Standby Readiness

ATTACHMENTS

None

EVALUATION SETTINGS

Unit 1 Control Room air Conditioning Room

EVALUATION METHOD:	PERFORM: ☐	SIMULATE: ☒

SIMULATOR/LAB SETUP

N/A

EVALUATOR INSTRUCTIONS

Give copy of Task Briefing and copy of 01-OHP-4021-028-014 Att. 1, Aligning Control Room Pressurization/Cleanup Filter System for Standby Readiness to examinee.

TASK BRIEFING

You are the extra Operator on shift.

The Unit Supervisor has directed you to complete 01-OHP-4021-028-014 Att. 1 from step 4.3 to place the Control Room Pressurization system in Standby alignment following maintenance on the system.

GENERAL STANDARDS/PRECAUTIONS

Operator has successfully completed steps in 01-OHP-4021-028-014 Att. 1 to place the Control Room Pressurization system in Standby alignment.

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

Reference	1-OHP-4021-028-014	Rev. 53	Page 12 of 115
Operation of the Control Room Air Conditioning and Pressurization/Cleanup Filter Systems			
Attachment 1	Aligning Control Room Pressurization/Cleanup Filter System for Standby Readiness		Pages: 11 - 14

4 DETAILS **INIT**

CAUTION: Placing both Control Room pressurization fans in STOP at the same time makes both trains inoperable.

4.1 Place both Control Room Pressurization Fan control switches in – AUTO as follows:

4.1.1 **IF** either Control Room Pressurization Fan control switch is in STOP, **THEN** return control switch to AUTO:

- ❑ 1-HV-ACRF-1, East Ctrl Room Pzrn System
- ❑ 1-HV-ACRF-2, West Ctrl Room Pzrn System ~~MD~~

4.1.2 **IF** either Control Room Pressurization Fan is RUNNING, **THEN** STOP the fan by placing its control switch to STOP:

- ❑ 1-HV-ACRF-1, East Ctrl Room Pzrn System
- ❑ 1-HV-ACRF-2, West Ctrl Room Pzrn System N

4.1.3 Verify both Control Room Pressurization Fan switches are in AUTO:

- ❑ 1-HV-ACRF-1, East Ctrl Room Pzrn System MD
- ❑ 1-HV-ACRF-2, West Ctrl Room Pzrn System MD

4.2 Perform the following in the Control Room; MD

4.2.1 Verify 1-HV-ACR-DA-1, Control Rm Vent Intake Damper local/ isolate switch in – LOCAL.

CUE: Steps 4.1 and 4.2 for Control Room actions have been completed by the CR team.

STANDARD: Operator recognizes steps are complete and continues to next page.
SAT: ☐ UNSAT: ☐

(Continued on next page)

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

Reference	1-OHP-4021-028-014	Rev. 53	Page 13 of 115
Operation of the Control Room Air Conditioning and Pressurization/Cleanup Filter Systems			
Attachment 1	Aligning Control Room Pressurization/Cleanup Filter System for Standby Readiness		Pages: 11 - 14

4.2.2 Verify 1-HV-ACR-DA-1A, Control Rm Vent Intake Damper local/ isolate switch in – LOCAL. MD

4.2.3 Verify the following Control Room switches in – AUTO:

- 1-HV-ACR-DA-2, CR Pzrn Cln-Up Intake Damper MD
- 1-HV-ACR-DA-2A, CR Pzrn Cln -Up Intake Damper MD
- 1-HV-ACR-DA-3, CR Pzrn Cln -Up Recirc Damper MD

4.3 Perform the following at the local subpanels:

4.3.1 At subpanel 1-ACRA-1, Close and place in AUTO the outside air supply to the Pressurization/Cleanup System as follows:

a. Verify 1-HV-ACR-DA-2A, Control Room Pressurization/Cleanup Intake Damper No. 2A CLOSED ____

b. Verify 1-HV-ACR-DA-2A, Control Room Pressurization/Cleanup Intake Damper No.2A in AUTO ____

4.3.2 At subpanel 1-ACRA-2, Close and place in AUTO the outside air supply to the Pressurization/Cleanup System as follows:

a. Verify 1-HV-ACR-DA-2, Control Room Pressurization/Cleanup Intake Damper No. 2 CLOSED ____

b. Verify 1-HV-ACR-DA-2, Control Room Pressurization/Cleanup Intake Damper No.2 in AUTO ____

4.3.3 At subpanel 1-ACRA-2, Verify Open 1-HV-ACR-DA-3, Control Room Pressurization/Cleanup Recirc Damper No. 3. [NRC Cmmt 1905] ____

4.3.4 At subpanel 1-ACRA-2, verify open 1-HV-ACR-DA-1A, Control Rm Vent Intake Damper. ____

4.3.5 At subpanel 1-ACRA-1, Verify open 1-HV-ACR-DA-1, Control Rm Vent Intake Damper at 1-ACRA-1. ____

STANDARD: Operator locates 1-ACRA-1 subpanel in the CRAC room.
SAT: ☐ UNSAT: ☐
Cue: *1-HV-ACR-DA-2A red light lit.*

STANDARD (**CS**): Operator places Control Switch for 1-HV-ACR-DA-2A to CLOSE and (*Green Light Lit*) Verifies 1-HV-ACR-DA-2A is closed.
SAT: ☐ UNSAT: ☐

STANDARD (**CS**): Operator verifies 1-HV-ACR-DA-2A switch is in AUTO.
SAT: ☐ UNSAT: ☐

STANDARD: Operator locates 1-ACRA-2 subpanel in the CRAC room.
SAT: ☐ UNSAT: ☐
Cue: *1-HV-ACR-DA-2 red light lit.*

STANDARD (**CS**): Operator places Control Switch for 1-HV-ACR-DA-2 to CLOSE and (*Green Light Lit*) Verifies 1-HV-ACR-DA-2 is closed.
SAT: ☐ UNSAT: ☐

STANDARD (**CS**): Operator verifies 1-HV-ACR-DA-2 switch is in AUTO.
SAT: ☐ UNSAT: ☐

STANDARD: Operator verifies 1-HV-ACR-DA-3 is open. (*red light lit)*
SAT: ☐ UNSAT: ☐

STANDARD: Operator verifies 1-HV-ACR-DA-1A is open. (*red light lit)*
SAT: ☐ UNSAT: ☐

STANDARD: Operator moves to 1-ACRA-1 subpanel.
SAT: ☐ UNSAT: ☐

STANDARD: Operator verifies 1-HV-ACR-DA-1 is open. (*red light lit)*
SAT: ☐ UNSAT: ☐

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

Reference	1-OHP-4021-028-014	Rev. 53	Page 14 of 115
Operation of the Control Room Air Conditioning and Pressurization/Cleanup Filter Systems			
Attachment 1	Aligning Control Room Pressurization/Cleanup Filter System for Standby Readiness		Pages: 11 - 14

5 CORRECTIVE MEASURES

5.1 None

6 FINAL CONDITIONS

Record any comments below (include document numbers for corrective actions):

_____

_____

_____

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

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

Operator looks to verify all steps are complete.

TERMINATION CUE: JPM is complete

TASK BRIEFING

You are the extra Operator on shift.

The Unit Supervisor has directed you to complete 01-OHP-4021-028-014 Att. 1 from step 4.3 to place the Control Room Pressurization system in Standby alignment following maintenance on the system.