

**FINAL AS-ADMINISTERED WALKTHROUGH JPMS**

**FOR THE D. C. COOK EXAMINATION - NOV/DEC 2002**

N02-01

TITLE  
PROGRAM

RCCA Operability Checks  
NRC License Exam

REVISION  
TIME

0  
15 Minutes

DATE:

10/22/02

DEVELOPING  
INSTRUCTOR(S):

Name:

S. Pettinger

Signature:

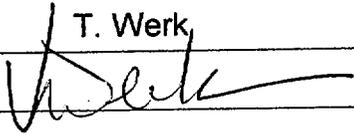


OPERATIONS  
REVIEW:

Name:

T. Werk

Signature:



10/22/02

**COURSE NUMBER  
AND TITLE:**

**N02-01 RCCA OPERABILITY CHECKS**

**REVISION: 0**

References

02-OHP-4030-STP-015 Rev 10 Full Length Control Rod Operability Test

Task: 0120130201 Perform Full Length Control Rod Operability Test

K/A CROSS REFERENCE: 014 A4.02

K/A IMPORTANCE: RO 3.4 SRO 3.2

Evaluation Setting

Simulator

Handouts

N02-01-HO-1 Task Briefing

Copy of 02-OHP-4030-STP-015 annotated to perform selected Control Rod Bank

Copy of PMP-4010-job-001, Pre Job Brief Checklist (with predicted reactor response)

Attachments

None

Simulator Setup

Initialize the Simulator to an at power IC (IC 996) 100% power MOL

Reset Control Rods, check Step Counters and verify Rod Bank Update is complete

<b>COURSE NUMBER AND TITLE:</b>	<b>N02-01 RCCA OPERABILITY CHECKS</b>	<b>REVISION: 0</b>
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**Task Objectives/Standards**

Performs a Full Length Operability Test on Control Rod Bank 'A' IAW 02-OHP-4030-STP-015, observing all applicable precautions and limitations and procedural steps.

**Task Briefing**

MTI has completed maintenance on the step counters for Control Bank A.

The Unit Supervisor directs you to perform a Full Length Operability test on Control Bank A in accordance with procedure 02-OHP-4030-STP-015 step 4.8.

All procedure prerequisites, precautions and limitations have been met.

Continuous	02-OHP-4030-STP-015	Rev. 10	Page 15 of 44
Full Length Control Rod Operability Test			
Attachment 1	Control Rod Testing in Modes 1 and 2		Pages: 6 - 22

4.8 Test Control Bank A positions as follows:

4.8.1 Record initial position of rods:

Group 1 Demand		Group 2 Demand	
H6	H10	F8	K8

4.8.2 Place Full-Length Bank Selector Switch in the CONTROL BANK A position.

4.8.3 Monitor reactor power and RCS temperature during rod movement.

4.8.4 Insert Control Bank A while performing the following:

a. Verify the "Rods Inserting" lamp - LIT.

b. Verify rod movement.

c. WHEN rod demand has moved at least 8 steps, THEN stop rod movement AND record position:

Group 1 Demand		Group 2 Demand	
H6	H10	F8	K8

4.8.5 Return rods to original position.

4.8.6 IF rods are inadvertently withdrawn past 231 steps, THEN perform Step 4.12 AND take appropriate actions specified in T/S 3.1.3.2.b.

General CUES:

1. Provide candidate annotated copies of:  
02-OHP-4030-STP-015  
Pre-Job Briefing Checklist.

2. All procedure prerequisites, precautions and limitations have been met.

← Correctly records position using step counters on Flux panel

CT: Places selector switch in correct position

CUE: Another RO will monitor reactor power and RCS temperature

CT: Inserts all rods in the group at least 8 steps  
Monitors indications to verify expected results

NOTE: Drop 31 "Rod Bank A low" on Panel 210 will alarm as Bank A rods are inserted, Drop 29 "Rod Sequence Violation" may alarm depending on the amount of steps rods are inserted.

← Ensures each rod in group has moved a minimum of 8 steps

← Correctly records position using step counters on Flux panel

CT: Withdraws all rods in the group at least to original position  
NOTE: Drop 31 "Rod Bank A low" on panel 210 should clear

← Does not exceed 231 steps for any rod in group

Continuous	02-OHP-4030-STP-015	Rev. 10	Page 16 of 44
Full Length Control Rod Operability Test			
Attachment 1	Control Rod Testing in Modes 1 and 2		Pages: 6 - 22

4.8.7 Record final position of rods:

Group 1 Demand		Group 2 Demand	
H6	H10	F8	K8

← Correctly records position using step counters on the Flux Panel

4.8.8 Verify all rod positions are within the ARM of group demand.

← Uses the Tech Data Book 2 Figure 13.1 or Operator Aid on Flux Panel to verify Allowed Rod Misalignment (ARM)

4.8.9 Verify Annunciator 210, Drop 29, ROD SEQUENCE VIOLATION, is clear.

← Verifies alarm clear

4.8.10 Acceptance Criteria:

Verify Control Bank A demand moved greater than or equal to 8 steps in any one direction AND all individual rod position indicators show rod motion (see Precaution 3.4 for an inoperable IRP).

← Verifies test results are met

4.9 Test Control Bank B positions as follows:

4.9.1 Record initial position of rods:

Group 1 Demand		Group 2 Demand	
F2	K14	B6	P10
B10	P6	F14	K2

Candidate reports Control Rod Bank A test is complete

Evaluator: "JPM IS COMPLETE"

4.9.2 Place Full-Length Bank Selector Switch in the CONTROL BANK B position.

4.9.3 Monitor reactor power and RCS temperature during rod movement.

## **Task Briefing**

MTI has completed maintenance on the step counters for Control Bank A.

The Unit Supervisor directs you to perform a Full Length Operability test on Control Bank A in accordance with procedure 02-OHP-4030-STP-015 step 4.8.

All procedure Prerequisites, Precautions and Limitations have been met.

# Alternate Path JPM

N02-02

**TITLE**  
**PROGRAM**

Raise SI Accumulator Level (with Faulted  
Pressure Relief Valve)  
NRC License Exam

**REVISION**  
**TIME**

0

15 Minutes

Note: JPM modified from RO-O-NO66 rev 4

**DEVELOPING  
INSTRUCTOR(S):**

Name: S. Pettinger

Signature:



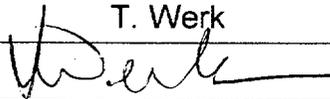
**DATE:**

10/29/02

**OPERATIONS  
REVIEW:**

Name: T. Werk

Signature:



10/29/02

<b>COURSE NUMBER AND TITLE:</b>	<b>N02-02 Raise SI Accumulator Level (with Faulted Pressure Relief Valve)</b>	<b>REVISION: 0</b>
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**REFERENCES**

02-OHP-4021-008-004 Rev 10 Adjusting level of an Accumulator  
02-OHP-4021-008-007, Operation of the Safety Injection Pump  
02-OHP-4030-STP-030, Daily and Shift Surveillance Checks

JPM: RO-O-NO66 Rev 4

Task: 0080240101: Increase an Accumulator level in Modes 1, 2, or 3

K/A CROSS REFERENCE: 006 A4.07

K/A IMPORTANCE: RO: 4.4 SRO: 4.4

**EVALUATION SETTING**

Simulator

**HANDOUTS**

N02-02-HO-1 Task Briefing  
Copy of 02-OHP-4021-008-004 Attachment 3 annotated for #1 Accumulator fill w/ Lineup Sheet 2  
Copy of 02-OHP-4021-008-004 Attachment 5 (if candidate elects to lower accumulator level)

**ATTACHMENTS**

Caution Tag for West RHR Pump per 02-OHP-4021-008-004 Attachment 3, step 4.5.3

**SIMULATOR SETUP**

Initialize to at power IC (IC 996) 100% power, MOL  
Drain #1 Accumulator until Panel 206 Drop 16 alarm is IN and NR level is 925 FT<sup>3</sup>  
Restore drain lineup to normal, adjust Accumulator pressure to 625 PSIG  
Fail #1 Accumulator Vent valve (2-IRV-112) closed with Override **ZDI 101 IRV112**

**Note:** Booth operator should be prepared to open 2-IRV-60 (MRF **SIR 12**) when requested.

**COURSE NUMBER  
AND TITLE:**

**N02-02 Raise SI Accumulator Level (with  
Faulted Pressure Relief Valve)**

**REVISION: 0**

**TASK OBJECTIVES/STANDARDS**

Performs a fill on #1 Accumulator, observing all applicable precautions and limitations and procedure steps.

In addition, due a faulted condition with the selected Accumulator Vent valve, the operator should recognize the inability to vent accumulator during fill evolution, determine the operational implications and mitigate system conditions by terminating fill or lowering level to restore accumulator pressure and level within Tech Spec LCO limits.

**TASK BRIEFING**

Given the following:

- You are the "extra" RO brought in to perform this task.
- Chemistry inadvertently drained #1 accumulator below the T.S. level limit.
- The ACCUMULATOR 1 LEVEL HIGH OR LOW alarm is lit.

The US directs you to raise #1 accumulator level to 950 cu. Ft IAW 02-OHP-4021-008-004 Attachment 3. The RO has completed steps 4.1 through 4.4. The South SI pump is running and the Starting Team reports all parameters are normal per 02-OHP-4021-008-004, Operation of the Safety Injection Pump. You are to begin at step 4.5 of 02-OHP-4021-008-004 Attachment 3.

All procedure prerequisites, precautions and limitations have been met.

Continuous	02-OHP 4021.008.004	Rev. 10	Page 15 of 39
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: 15 - 22

**1 PURPOSE AND SCOPE**

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

**2 PREREQUISITES**

2.1 Nitrogen is available to regulate the Accumulator pressure per 12-OHP 4021.030.001, Operation of the Reactor Nitrogen Gas System.

**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 one hour per Technical Specification (TS) 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 02-OHP 4030.STP.030, Daily and Shift Surveillance Checks, to ensure compliance with TS including instrument uncertainties.

3.5 If an Accumulator level is raised by 10 ft<sup>3</sup> or more in MODE 1, 2, or 3, it must be sampled within 6 hours to verify boron concentration. [Ref. 7.2.1b.1 and 7.1.1]

3.6 A dedicated operator should be assigned to perform the Accumulator level adjustment to ensure the Reactor Operator assigned to the Control Boards is free to perform Immediate Actions of E-0 if required.

Notes To Evaluator

This Alt Path JPM evaluates candidate's operational control during a routine evaluation. During refill of the accumulator, a failure of the vent valve to open prevents venting of the accumulator as level rises.

The candidate is successful if the task is performed IAW the procedure AND final accumulator level and pressure is within Tech Spec LCO limits.

Operator should review limits in STP

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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: 15 - 22

**4 DETAILS**

**INIT**

**NOTE:** 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 Record Accumulator number that level is being raised:  
Accumulator No. \_\_\_\_\_
- 4.2 Verify RCS pressure is greater than 1700 psig. \_\_\_\_\_
- 4.3 Verify the following valves - OPEN:
  - 2-IMO-261, SI Pumps Suction from RWST \_\_\_\_\_
  - 2-IMO-262, SI Pumps Recirc to RWST \_\_\_\_\_
  - 2-IMO-263, SI Pumps Recirc to RWST \_\_\_\_\_
  - 2-ICM-265, Safety Injection Discharge to Cold Legs 2 & 3 \_\_\_\_\_
- 4.4 Start South Safety Injection Pump per 02-OHP 4021.008.007, Operation of the Safety Injection Pump. \_\_\_\_\_

**NOTES:**

- If candidate stops procedure prior to completion, line-up sheet #2 provides method to secure evolution.

Operator reviews steps 4.1 through 4.4 are complete

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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: 15 - 22

4.5 Perform the following to align the SI pump discharge flowpath:

4.5.1 Declare West RHR Pump INOPERABLE.

4.5.2 Place control switch for West RHR Pump in LOCKOUT.

4.5.3 Place a Caution Tag on the West RHR Pump control switch with the following wording:

**"Do NOT start W RHR pump in the event of SI initiation until the SI pump Cross-tie valves are open and RHR pump cross-tie valves are closed or RHR pump flows will prevent deadheading."**

4.5.4 Open the following valves:

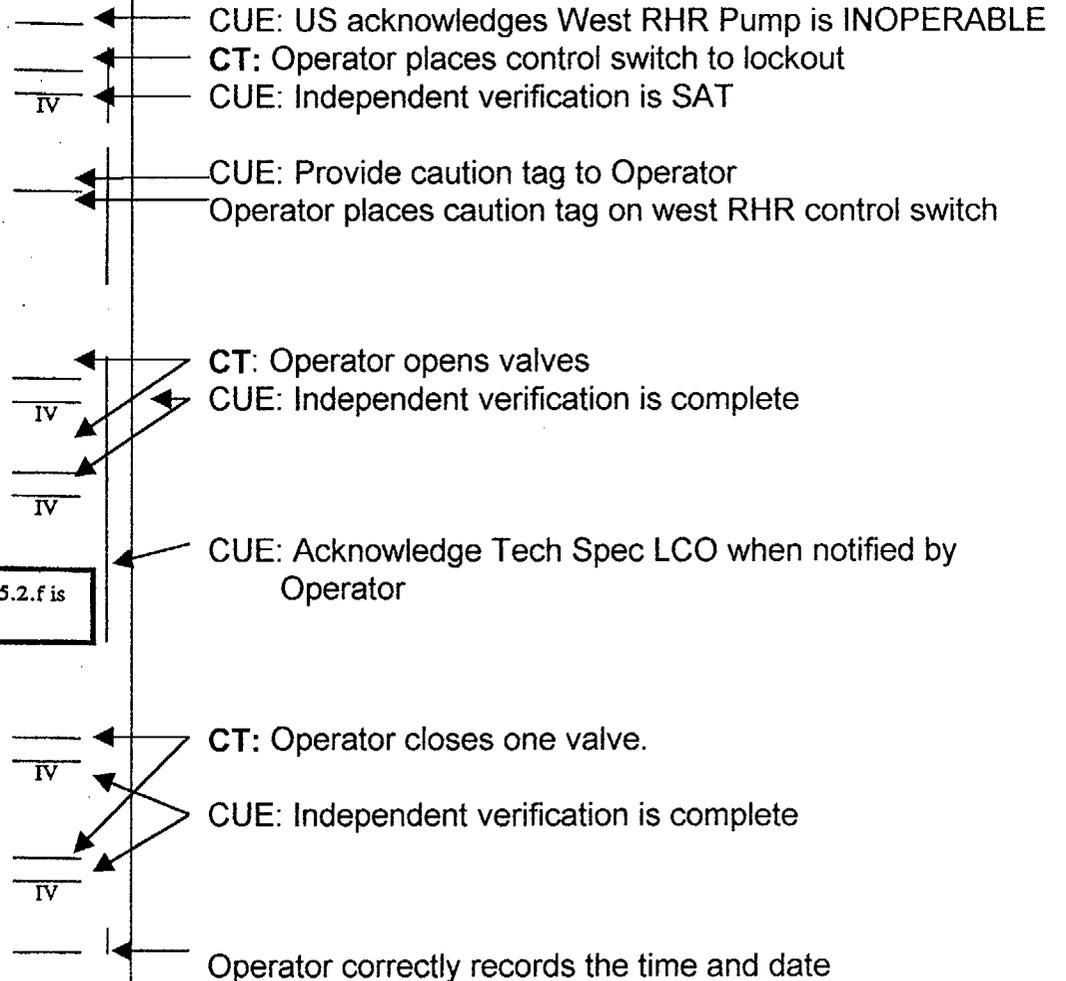
- 2-IMO-314, East RHR Pump Disch Xtie
- 2-IMO-324, West RHR Pump Disch Xtie

**CAUTION:** When a Safety Injection Pump Crosstie valve is closed, Tech Spec 3.5.2.f is entered and Action b is applicable.

4.5.5 Close one of the following valves:

- 2-IMO-270, Safety Injection Pump Disch Xtie
- OR-
- 2-IMO-275, Safety Injection Pump Disch Xtie

a. TS 3.5.2.f (Action b): Time \_\_\_\_\_ Date: \_\_\_\_\_



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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: 15 - 22

- 4.6 Open 2-IRV-60, SI Pumps Disch to Accum Fill Line.
- 4.7 Declare the Accumulator, indicated in Step 4.1, INOPERABLE and enter Tech Spec 3.5.1 Action Item b.  
 Time entered: \_\_\_\_\_ Date: \_\_\_\_\_
- 4.8 Open fill valve for Accumulator to be filled AND record start time in Control Room Log:
- |                              |          |
|------------------------------|----------|
|                              | Position |
| • 2-IRV-111, Accum Fill Line | _____    |
| • 2-IRV-121, Accum Fill Line | _____    |
| • 2-IRV-131, Accum Fill Line | _____    |
| • 2-IRV-141, Accum Fill Line | _____    |
- 4.9 IF regulating Accumulator pressure during fill, THEN perform the following:
- 4.9.1 Open the nitrogen supply to the Accumulator being filled
- |                                    |          |
|------------------------------------|----------|
|                                    | Position |
| • 2-IRV-112, Accum Nitrogen Supply | _____    |
| • 2-IRV-122, Accum Nitrogen Supply | _____    |
| • 2-IRV-132, Accum Nitrogen Supply | _____    |
| • 2-IRV-142, Accum Nitrogen Supply | _____    |
- 4.9.2 Throttle 2-GRV-341, N<sub>2</sub> Vent from Accumulator Tank, as necessary to regulate Accumulator pressure.
- 4.10 WHEN the required Accumulator level is reached, THEN perform Lineup Sheet 2.
- 4.11 Declare the Accumulator, indicated in Step 4.1, OPERABLE and exit Tech Spec 3.5.1 Action Item b.  
 Time exited: \_\_\_\_\_ Date \_\_\_\_\_

CT: Directs Aux Tour AEO to open 2-IRV-60  
 SIM Booth CUE: OPEN 2-IRV-60 (MRF SIR 12) and report to Operator it has been opened.

CUE: Acknowledge Tech Spec LCO when notified by Operator

Operator correctly records the time and date

CT: Opens 2-IRV-111 for #1 Accumulator  
 CUE: Acknowledge start time to be entered into the CR log by the RO

Operator observes selected Accumulator level rise and level alarm clears on panel 206 Drop 16

Operators determines step is required during fill and attempts to open 2-IRV-112 N<sup>2</sup> supply valve.  
 Operator determines 2-IRV-112 has failed Close, notifies US  
 CUE: Acknowledge 2-IRV-112 has failed closed.

CT: Operator closes 2-IRV-111 (on lineup sheet 2) when Accumulator level is within TS limits.  
 CUE: Provide Lineup Sheet 2 to Operator

**Evaluator Note: Operator may stop fill prior to exceeding high pressure limit. If limit is exceeded the operator should identify that the accumulator is INOPERABLE due to high pressure. If desired, or operator elects, provide Attachment 5 (Lowering Level) and see pages 6-8 of JPM for operator actions.**

Operator correctly records the time and date.  
**TERMINATION CUE: JPM is complete**

Reference	02-OHP 4021.008.004	Rev. 10	Page 39 of 39
Adjusting the Level of an Accumulator			
Lineup Sheet 2	Accumulator Restoration Lineup		Pages: 39 - 39

<u>NUMBER</u>	<u>DESCRIPTION</u>	<u>POSITION</u>	<u>INT</u>	<u>IV</u>
2-IRV-111	Accum Fill Line	CLOSED	—	—
2-IRV-121	Accum Fill Line	CLOSED	—	—
2-IRV-131	Accum Fill Line	CLOSED	—	—
2-IRV-141	Accum Fill Line	CLOSED	—	—
2-IRV-112	Accum Nitrogen Supply	CLOSED	—	—
2-IRV-122	Accum Nitrogen Supply	CLOSED	—	—
2-IRV-132	Accum Nitrogen Supply	CLOSED	—	—
2-IRV-142	Accum Nitrogen Supply	CLOSED	—	—
2-GRV-341	N2 Vent from Accumulator Tank	CLOSED	—	—
2-IRV-60	SI Pumps Disch to Accum Fill Line	CLOSED	—	—

Operator correctly annotates the #1 Accumulator Fill Line and N<sup>2</sup> Supply valves, 2-GRV-341 and 2-IRV-60 isolation valves CLOSED

CUE: Independent verification is complete

Record any comments during procedure use:

\_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

Verified Complete By: \_\_\_\_\_ Date: \_\_\_/\_\_\_/\_\_\_

Reviewed By: \_\_\_\_\_ Date: \_\_\_/\_\_\_/\_\_\_

Supervisor/Manager Signature

Continuous	02-OHP 4021.008.004	Rev. 10	Page 25 of 39
Adjusting the Level of an Accumulator			
Attachment 5	Lowering Level in an Accumulator in MODEs 1-3	Pages:	25 - 29

**1 PURPOSE AND SCOPE**

1.1 This attachment provides instructions to lower an Accumulator level.

**2 PREREQUISITES**

2.1 Unit is in MODEs 1, 2, or 3.

**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 one hour per Technical Specification (TS) 3.5.1.

3.2 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 in the event that a SI signal is received during the evolution.

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

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 02-OHP 4030.STP.030, Daily and Shift Surveillance Checks, to ensure compliance with TS including instrument uncertainties.

**4 DETAILS**

4.1 Record Accumulator number(s) that level is being lowered.

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4.2 Record in the Control Room Log that the Accumulator(s) indicated above is/are INOPERABLE.

4.3 Verify the Reactor Coolant Drain Tank (RCDT) and at least one RCDT Pump is available.

INIT

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**Evaluator Note: If required, use the following operator actions to restore accumulator pressure within Tech Spec limits (595 - 650 psig) by draining the accumulator.**

**CUE: The Unit Supervisor directs you to adjust Accumulator #1 to within Tech Spec limits per 02-OHP-4030-STP-030 page 19.**

Operator records accumulator number.

Operator indicates that a log entry must be made for the inoperable accumulator.

**CUE: Entry has been made in the control room log.**

Operator checks RCDT and RCDT pump status.

**CUE: The RCDT and both RCDT pumps are available.**

Continuous	02-OHP 4021.008.004	Rev. 10	Page 26 of 39
Adjusting the Level of an Accumulator			
Attachment 5	Lowering Level in an Accumulator in MODEs 1-3	Pages: 25 - 29	

4.4 IF nitrogen will need to be added to the Accumulator as it is drained.  
THEN perform the following:

4.4.1 Place the High Pressure Nitrogen Header in service per  
12-OHP 4021.050.001, Operation of the Reactor Nitrogen Gas  
System.

4.4.2 Open the nitrogen supply valve for the Accumulator to be drained

- |                                    |          |  |
|------------------------------------|----------|--|
|                                    | Position |  |
| • 2-IRV-112, Accum Nitrogen Supply | _____    |  |
| • 2-IRV-122, Accum Nitrogen Supply | _____    |  |
| • 2-IRV-132, Accum Nitrogen Supply | _____    |  |
| • 2-IRV-142, Accum Nitrogen Supply | _____    |  |

4.4.3 Open 2-GCR-314, Nitrogen Supply to Accumulators.

4.4.4 Regulate pressure as required with one of the following:

- |  |       |
|--|-------|
| • 2-GRV-313, Nitrogen Supply to Accumulator Tanks Pressure<br>Regulating Valve | _____ |
| -OR-   |       |
| • 2-N-289, 2-GRV-313 Bypass Valve  | _____ |

4.5 Open the drain valve for the Accumulator to the RCDT:

- |                                     |          |  |
|-------------------------------------|----------|--|
|                                     | Position |  |
| • 2-IRV-110, Accum to RC Drain Tank | _____    |  |
| • 2-IRV-120, Accum to RC Drain Tank | _____    |  |
| • 2-IRV-130, Accum to RC Drain Tank | _____    |  |
| • 2-IRV-140, Accum to RC Drain Tank | _____    |  |

4.6 Maintain RCDT Level and Pressure per 02-OHP 4021.021.003, Reactor  
Coolant Drain Tank (RCDT) Operation.

← Evaluator Note: N/A (lowering level to lower pressure)

← CT: Operator opens 2-IRV-110 for #1 Accumulator.

← Operator ensures that RCDT level and pressure are  
maintained per operating procedures.  
CUE: WDS operator reports RCDT level and pressure are  
within normal limits.

Continuous	02-OHP-4021.008.004	Rev. 10	Page 27 of 39
Adjusting the Level of an Accumulator			
Attachment 5	Lowering Level in an Accumulator in MODEs 1-3		Pages: 28 - 29

4.7 WHEN the required level is reached, THEN close the valve opened in Step 4.5 (N/A valves not used):

- 2-IRV-110. Accum to RC Drain Tank
- 2-IRV-120. Accum to RC Drain Tank
- 2-IRV-130. Accum to RC Drain Tank
- 2-IRV-140. Accum to RC Drain Tank

\_\_\_\_\_  
IV  
\_\_\_\_\_  
IV  
\_\_\_\_\_  
IV  
\_\_\_\_\_  
IV

**Evaluator Note:** The following accumulator pressure and temperature limits include instrument uncertainties. These limits are listed in the Control Room Tech Spec Surveillance procedure 02-OHP-4030-STP-030.

**CT:** Operator closes 2-IRV-110 when #1 accumulator pressure is 595-650 psig and level is 930-962.5 cubic feet.

**TERMINATION CUE: JPM is complete**

## Task Briefing

Given the following:

- You are the "extra" RO brought in to perform this task.
- Chemistry inadvertently drained #1 accumulator below the T.S. level limit.
- The ACCUMULATOR 1 LEVEL HIGH OR LOW alarm is lit.

The US directs you to raise #1 accumulator level to 950 cu. Ft IAW 02-OHP-4021-008-004 Attachment 3. The RO has completed steps 4.1 through 4.4. The South SI pump is running and the Starting Team reports all parameters are normal per 02-OHP-4021-008-004, Operation of the Safety Injection Pump. You are to begin at step 4.5 of 02-OHP-4021-008-004 Attachment 3.

All procedure prerequisites, precautions and limitations have been met.

N02-03

TITLE  
PROGRAM

Swap In-Service CCW Pump  
NRC License Exam

REVISION  
TIME

0  
15 Minutes

DEVELOPING  
INSTRUCTOR:

Name: R. Niedzielski

Signature:

*R. Niedzielski*

DATE:

9/7/02

OPERATIONS  
REVIEW:

Name: T. Werk

Signature:

*T. Werk*

9/9/02

COURSE NUMBER AND TITLE:	N02-03 Swap In-Service CCW Pump	REVISION: 0
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References

02-OHP-4021-016-003, Operation of the CCW System during System Startup and Power Operation

Task: 0160140101: Switch operating CCW pumps

K/A CROSS REFERENCE: 008 A4.01

K/A IMPORTANCE: RO 3.3 SRO 3.1

Evaluation Setting

Simulator

Handouts

N02-03-HO-1 Task Briefing  
Copy of 02-OHP-4021-016-003 Attachment 2

Attachments

None

Simulator Setup

Initialize at power IC (IC 996) 100% power, MOL  
(East CCW Pump – In Service / West CCW Pump – In Standby)  
Verify prerequisites of controlling procedure are met

COURSE NUMBER AND TITLE:	N02-03 Swap In-Service CCW Pump	REVISION: 0
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Task Objectives/Standards

Performs switching of the CCW pumps, observing all applicable precautions and limitations and procedure steps.

Task Briefing

The US directs you to swap the CCW pumps per 02-OHP-4021-16-003, Operation of the CCW System Startup and Power Operation.

Reference	02-OHP-4021-016-003	Rev. 13	Page 17 of 48
<b>OPERATION OF THE COMPONENT COOLING WATER SYSTEM DURING SYSTEM STARTUP AND POWER OPERATION</b>			
Attachment 2	Switching CCW Pumps		Pages: 14 - 19

- 4.1.10 Stop 2-PP-10W, West CCW Pump. \_\_\_\_\_
- 4.1.11 IF desired, THEN place 2-PP-10W, West CCW Pump control switch to - AUTO. \_\_\_\_\_
- 4.1.12 Verify the following valves - OPEN:
  - 2-CMO-412, CCW Pumps Discharge Crosstie Train A Shutoff Valve. \_\_\_\_\_
  - 2-CMO-414, CCW Pumps Discharge Crosstie Train B Shutoff Valve. \_\_\_\_\_
- 4.1.13 IF desired THEN CCW may be transferred to the West Hx by performing the following:
  - a. Open 2-CMO-420, West CCW Hx 2-HE-15W Outlet Valve. \_\_\_\_\_
  - b. Close 2-CMO-410, East CCW Hx 2-HE-15E Outlet Valve. \_\_\_\_\_
- 4.1.14 Verify CCW Pump flow requirements are met. \_\_\_\_\_

- 4.2 To transfer from East to West CCW Pump. \_\_\_\_\_
- 4.2.1 Align ESW flow to the West CCW Hx as necessary. \_\_\_\_\_
  - 2-WMO-736, West CCW Hx 2-HE-15W ESW Inlet Valve - OPEN. \_\_\_\_\_
  - 2-WMO-738, West CCW Hx 2-HE-15W ESW Outlet Valve - THROTTLED as necessary. \_\_\_\_\_

General CUES:

1. Provide an annotated copy of 02-OHP-4021-016-003 Attachment 2 to perform switch of CCW pumps.
2. Inform candidate the West CCW pump is operable

← Operator determines this is the correct step to begin

← Operator determines this step is necessary

← Verifies 2-WMO-736 is open (red light lit)

← CT: Throttles valve open (no specific initial intermediate position)

Evaluator Note: Initial (throttled) position of 2-WMO-738 is not critical however, this valve should be positioned in response to the high/low CCW temperature alarm (Annunciator #204, Drop 95).

Reference	02-OHP-4021-016-003	Rev. 13	Page 18 of 48
<b>OPERATION OF THE COMPONENT COOLING WATER SYSTEM DURING SYSTEM STARTUP AND POWER OPERATION</b>			
Attachment 2	Switching CCW Pumps		Pages: 14 - 19

4.2.2 Verify the following valves - OPEN:

- 2-CMO-415, CCW to Misc Service Train A Shutoff Valve. \_\_\_\_\_
- 2-CMO-416, CCW to Misc Service Train B Shutoff Valve. \_\_\_\_\_
- 2-CMO-411, CCW Pumps Suction Crosstie Train A Shutoff Valve. \_\_\_\_\_
- 2-CMO-413, CCW Pumps Suction Crosstie Train B Shutoff Valve. \_\_\_\_\_

4.2.3 Verify 2-CMO-420, West CCW Hx 2-HE-15W CCW Outlet Valve - CLOSED. \_\_\_\_\_

4.2.4 Start 2-PP-10W, West CCW Pump. \_\_\_\_\_

4.2.5 Open 2-CMO-420, West CCW Hx 2-HE-15W CCW Outlet Valve. \_\_\_\_\_

4.2.6 Verify proper operation of 2-PP-10W, West CCW Pump. \_\_\_\_\_

4.2.7 IF the West CCW Pump is Operable, THEN verify at least one of the following valves - CLOSED:

- 2-CMO-412, CCW Pumps Discharge Crosstie Train A Shutoff Valve. \_\_\_\_\_
- OR-
- 2-CMO-414, CCW Pumps Discharge Crosstie Train B Shutoff Valve. \_\_\_\_\_

4.2.8 IF the West CCW Pump is Inoperable, THEN verify the following valves - OPEN:

- 2-CMO-412, CCW Pumps Discharge Crosstie Train A Shutoff Valve. \_\_\_\_\_
- 2-CMO-414, CCW Pumps Discharge Crosstie Train B Shutoff Valve. \_\_\_\_\_

Operator verifies each valve is OPEN in any order

Operator verifies valve is CLOSED

CUE: "Starting Team has verified West CCW pump is ready for start"

CT: Operator starts West CCW pump

CT: Operator opens 2-CMO-420  
Operator verifies pump flow and amps have stabilized.

CUE: "Starting Team reports normal pump running parameters"

CT: Operator closes one valve.

Operator determines step - N/A (West CCW Pump is OPERABLE)

Reference	02-OHP-4021-016-003	Rev. 13	Page 19 of 48
<b>OPERATION OF THE COMPONENT COOLING WATER SYSTEM DURING SYSTEM STARTUP AND POWER OPERATION</b>			
Attachment 2	Switching CCW Pumps		Pages: 14 - 19

4.2.9 Close 2-CMO-410, East CCW Hx 2-HE-15E Outlet Valve \_\_\_\_\_

4.2.10 Stop 2-PP-10E, East CCW Pump. \_\_\_\_\_

4.2.11 IF desired, THEN place 2-PP-10E, East CCW Pump control switch to - AUTO. \_\_\_\_\_

4.2.12 Verify the following valves - OPEN: \_\_\_\_\_

- 2-CMO-412, CCW Pumps Discharge Crosstie Train A Shutoff Valve. \_\_\_\_\_
- 2-CMO-414, CCW Pumps Discharge Crosstie Train B Shutoff Valve. \_\_\_\_\_

4.2.13 IF desired THEN CCW may be transferred to the East Hx by performing the following: \_\_\_\_\_

- a. Open 2-CMO-410, East CCW Hx 2-HE-15E Outlet Valve. \_\_\_\_\_
- b. Close 2-CMO-420, West CCW Hx 2-HE-15W Outlet Valve. \_\_\_\_\_

4.2.14 Verify CCW Pump flow requirements are met. \_\_\_\_\_

**5 FINAL CONDITIONS**

5.1 CCW Pumps have been switched to desired alignment.

Record any comments during procedure use:

\_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

← CT: Operator closes valve 2-CMO-410

← CT: Operator stops East CCW pump

← CT: Operator places control switch to AUTO

← CT: Operator verifies valves OPEN  
 Note: whichever valve was closed in step 4.2.7, must be manually reopened

← CUE: US determines step is NOT desired

← Operator verifies flow meets Precaution 3.2

Reports task completed.

**JPM IS COMPLETE.**

## Task Briefing

The US directs you to swap the CCW pumps per 02-OHP-4021-16-003, Operation of the CCW System Startup and Power Operation.

N02-04

TITLE  
PROGRAM

Feed and Bleed of PRT to Lower Temperature  
NRC License Exam

REVISION  
TIME

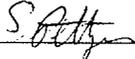
0  
25 Minutes

DEVELOPING  
INSTRUCTOR:

Name:

S. Pettinger

Signature:



DATE:

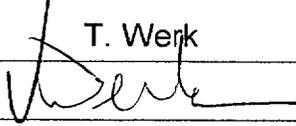
10/22/02

OPERATIONS  
REVIEW:

Name:

T. Werk

Signature:



10/22/02

**COURSE NUMBER  
AND TITLE:**

**N02-04 Feed and Bleed of PRT to Lower  
Temperature**

**REVISION: 0**

References

02-OHP-4021-002-006, Pressurizer Relief Valve Tank Operation

Task: 0020340101 Feed and Bleed PRT to reduce pressure or temperature

K/A CROSS REFERENCE: 007 A2.01

K/A IMPORTANCE: RO 3.9 SRO 4.2

Evaluation Setting

Simulator

Handouts

N02-04 Task Briefing

Copy of 02-OHP-4021-002-006 Attachments 3 and 4 annotated to perform Feed and Bleed operation

Attachments

Caution Tag for Leaking PORV

Simulator Setup

Initialize the Simulator to at-power IC (IC 997) 100% power, MOL

Insert remote function for leaking PORV 2-NRV-151 (MRF RCR 18) at 10 severity, control leakage (using 2-NMO-151 as necessary) to raise PRT level to ~87%, PRT pressure to ~11 psig and PRT temperature to ~130 °F.

Verify PRT level (Drop 26), PRT pressure (Drop 31) and PRT temperature (Drop 36) (Panel 210) alarms

Shut 2-NMO-151 and allow RCS pressure to restore > 2200 psig and hang a caution tag.  
Verify RCDT Alarm (Drop 67 Panel 222) is Not lit (Override AN22(067) to Alarm Off if required)  
Ensure 2-DCR-205 is initially closed (MRF WDR 14).

Note: Booth Operator should be prepared to MRF (Waste Disposal) when requested.

**COURSE NUMBER  
AND TITLE:**

**N02-04 Feed and Bleed of PRT to Lower  
Temperature**

**REVISION: 0**

**Task Objectives/Standards**

Perform Bleed and Feed on the PRT to reduce temperature from Pressurizer PORV leakage IAW 02-OHP-4021-002-006, Pressurizer Relief Valve Tank Operation, observing all applicable precautions and limitations and procedure steps.

**Task Briefing**

2-NRV-151 has just been identified as the leaking PORV and block valve 2-NMO-151 has been closed per 02-OHP-4022-002-009, Leaking Pressurizer Power Operated Relief Valve.

The US directs you to restore normal operating conditions in the PRT per 02-OHP-4021-002-006, Pressurizer Relief Tank Operation.

Using Attachment 3, drain the PRT to a level of 80 to 84% and using Attachment 4, perform a Feed and Bleed on the PRT to lower temperature to < 120 °F and pressure between 2 to 3 psig.

LATEST REV. CHECKED \_\_\_\_\_

Initial/Date

02-OHP 4021.002.006

ATTACHMENT NO. 3

NO. OF CS: \_\_\_\_\_

General CUES:

**DRAINING THE PRESSURIZER RELIEF TANK**

**1.0 PRECAUTIONS & LIMITATIONS**

- 1.1 The hydrogen concentration must be maintained at less than 4% by volume or the oxygen concentration at less than 3% by volume to prevent occurrence of explosive mixtures in the PRT.
- 1.2 PRT pressure should not exceed 50 psig. The PRT rupture disc will burst at 100 psig.

**2.0 INITIAL CONDITIONS**

- 2.1 The Nitrogen System is available.
- 2.2 If the PRT oxygen Concentration is not within specification, the reactor coolant drain tank pumps are aligned to discharge to the 'M' CVCS holdup tanks or to the clean waste holdup tank.
- 2.3 PRT level and pressure instrumentation are available.

INITIALS

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

**3.0 INSTRUCTIONS**

- 3.1 Complete Data Sheet No. 1 if the PRT is being drained due to RCS leakage to the PRT. (Otherwise, N/A this step.)

\_\_\_\_\_

**CAUTION**

Positive pressure must be maintained on the PRT during draining.

- 3.2 Open 2-GCR-301, Nitrogen to PZR Relief TK, as necessary to maintain PRT pressure during draining.
- 3.3 Place Control Room switch for 2-DCR-205, RC Drain TK Outlet Train A Cntrmt Isolation, to NORMAL position.
- 3.4 Open 2-DRV-1, Drain to RCDT.
- 3.5 Open 2-DCR-206, RC Drain Tank Pump Suction.
- 3.6 Open 2-DCR-205 to drain PRT.
- 3.7 If required to aid in RCDT level control, start RCDT pump(s).

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

CUE: Chemistry reports PRT oxygen concentration within limits.

CUE: All initial conditions are met

CUE: Data Sheet No. 1 has been completed.

Operator opens as needed

Operator verifies switch in Normal

CT: Operator opens 2-DRV-1

Operator verifies 2-DCR-206 open

CT: Operator directs AEO to open 2-DCR-205

Booth Operator Cue: Open 2-DCR-205 (MRF WDR 14)

Operator directs AEO to start RCDT pumps as necessary

Booth Operator Cue: Start pumps (MFR WDR 01 and 02)

02-OHP 4021.002.006  
ATTACHMENT NO. 3

INSTRUCTIONS

INITIALS

3.8 When PRT is drained to desired level, close the following valves:

3.8.1 2-DCR-205.

3.8.2 2-DRV-1.

Operator stops draining PRT before reaching 78%

Operator directs AEO to close 2-DCR-205

Booth Operator Cue: place 2-DCR-205 in auto (MRF WDR 14)

CT: Operator closes 2-DRV-1

Remarks Section: \_\_\_\_\_

Verified Complete By: \_\_\_\_\_ Time: \_\_\_\_\_ Date: \_\_/\_\_/\_\_

Reviewed By: \_\_\_\_\_ Date: \_\_/\_\_/\_\_

U.S./A.S.S./S.S.

LATEST REV. CHECKED \_\_\_\_\_  
Initial/Date  
NO. OF CS: \_\_\_\_\_

02-OHP 4021.002.006  
ATTACHMENT NO. 4

**FEED AND BLEED OF PRT TO REDUCE PRESSURE OR TEMPERATURE**

**1.0 PRECAUTIONS & LIMITATIONS**

- 1.1 PRT temperature should be maintained less than or equal to 120°F.
- 1.2 The hydrogen concentration must be maintained at less than 4% by volume or the oxygen concentration at less than 3% by volume to prevent occurrence of explosive mixtures in the PRT.
- 1.3 PRT pressure should not exceed 50 psig. The PRT rupture disc will burst at 100 psig.
- 1.4 PRT pressure should not exceed 10 psig when 2-RRV-103 is open.
- 1.5 When performing feed and bleed of PRT, nitrogen to the PRT should be available to compensate for decreases in PRT pressure due to level changes.

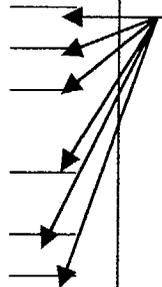
**2.0 INITIAL CONDITIONS**

- 2.1 The Nitrogen System is available.
- 2.2 The Primary Water System is available.
- 2.3 Waste Gas Compressor is available.
- 2.4 If the PRT oxygen Concentration is not within specification, the reactor coolant drain tank pumps are aligned to discharge to the 'M' CVCS holdup tanks or to the clean waste holdup tank.
- 2.5 The Auto Gas Analyzer is in service or required actions of PMP-4030.EIS.001 are being performed.
- 2.6 PRT level and pressure instrumentation are available.

**3.0 INSTRUCTIONS**

- 3.1 If necessary, drain PRT per Attachment No. 3 . (Otherwise, N/A this step.)
- 3.2 Verify running Primary Water Pump(s).
- 3.3 Open 2-NRV-251, Primary Water to PRT.
- 3.4 Place Control Room switch for 2-DCR-205, RC Drain TK Outlet Train A Cntrmt Isolation, to NORMAL position.
- 3.5 Verify open 2-DCR-206, RC Drain Tank Pump Suction .
- 3.6 Open 2-DCR-205.

INITIALS



CUE: All initial conditions are met

Operator starts one or both PW pumps

CT: Operator opens 2-NRV-251

Operator verifies 2-DCR-205 switch in normal

Operator verifies 2-DCR-206 open

CT: Operator directs AEO to open 2-DCR-205

Booth Operator Cue: Open 2-DCR-205 (MRF WDR 14)

02-OHP 4021.002.006  
ATTACHMENT NO. 4

INSTRUCTIONS

INITIALS

3.7 Maintain PRT level during feed and bleed by performing the following:

- Cycle 2-DRV-1, Drain to RCDT, as necessary to decrease PRT level.
- If required to aid in RCDT level control, start RCDT pump(s).
- Cycle 2-NRV-251 as necessary to increase PRT level.

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Operator cycles valves and pumps as necessary to lower PRT temperature to less than 120<sup>0</sup>F. The final PRT level should be between 80 to 84 %

Booth Operator Cue: MRF (WDRs) as requested

NOTE

2-RRV-103 is interlocked to close when tank pressure reaches 10 psig.

3.8 Cycle 2-RRV-103, Relief Tank Vent to WDS Vent HDR, as necessary to maintain PRT pressure in normal operating range of 2 - 3 psig.

\_\_\_\_\_

Operator vents the PRT to maintain 2 to 3 psig

Evaluator Note: After feed and bleed has been in affect for a few minutes, provide the following cue. It will take a long time for PRT temperature to lower from 130°F to <120°F.  
CUE: PRT temperature is < 120°F.

3.9 When PRT temperature or pressure has returned to desired value, close 2-NRV-251.

\_\_\_\_\_

CT: Operator closes 2-NRV-251

3.10 If running, stop RCDT pump(s) . (Otherwise, N/A this step.)

\_\_\_\_\_

3.11 Close the following valves:

- 2-DRV-1.
- 2-DCR-205.

\_\_\_\_\_

Operator directs AEO to stop pumps

Booth Operator Cue: return pumps to auto (MRF WDR 01 and 02)

CT: Operator closes 2-DRV-1

CT: Operator directs AEO to close 2-DCR-205

Booth Operator Cue: Place 2-DCR-205 in auto (MRF WDR14)

3.12 Return Primary Water Pump(s) to original status.

\_\_\_\_\_

Operator returns 1 PW to standby and other PW pump to auto

Remarks Section: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Verified Complete By: \_\_\_\_\_ Time: \_\_\_\_\_ Date: \_\_\_/\_\_\_/\_\_\_

Reviewed By: \_\_\_\_\_ Date: \_\_\_/\_\_\_/\_\_\_

U.S./A.S.S./S.S.

Operator reports task complete

**JPM IS COMPLETE**

## Task Briefing

2-NRV-151 has just been identified as the leaking PORV and block valve 2-NMO-151 has been closed per 02-OHP-4022-002-009, Leaking Pressurizer Power Operated Relief Valve.

The US directs you to restore normal operating conditions in the PRT per 02-OHP-4021-002-006, Pressurizer Relief Tank Operation.

Using Attachment 3, drain the PRT to a level of 80 to 84% and using Attachment 4, perform a Feed and Bleed on the PRT to lower temperature to  $< 120$  °F and pressure between 2 to 3 psig.

# Alternate Path JPM

N02-05

**TITLE** Synchronize and Load 2AB DG  
**PROGRAM** NRC License Exam

**REVISION** 0  
**TIME** 20 Minutes

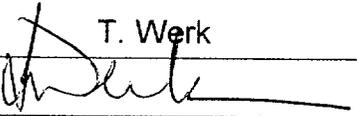
**DEVELOPING  
INSTRUCTOR:**

Name: S. Pettinger  
Signature: 

**DATE:**

10/22/02

**OPERATIONS  
REVIEW:**

Name: T. Werk  
Signature: 

10/22/02

<b>COURSE NUMBER AND TITLE:</b>	<b>N02-05 Synchronize and Load 2AB DG</b>	<b>REVISION: 0</b>
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**REFERENCES**

02-OHP 4030-STP-027AB, Rev 18 AB Diesel Generator Operability Test (Train B) Attachment 1

Task: 0320180201: Perform EDG Operability Test (STP-027 AB/CD)

K/A CROSS REFERENCE: 064 A4.06

K/A IMPORTANCE: RO 3.9 SRO 3.9

**EVALUATION SETTINGS**

Simulator

**HANDOUTS**

NS02-05-HO-1 Task Brief

Copy of Attachment 1 to 02-OHP-4030-STP-027AB with actions completed up to Step 4.18.

**ATTACHMENTS**

1. NONE

**SIMULATOR SETUP**

1. Initialize to at-Power IC (IC 997) 100% power, MOL
2. Establish Trigger 1: linked to file "TA11 POSITION" {EG:CBTA11(3) == -1}
3. Assign MALF EG07A @ 0.5 severity to Trigger 1
4. Start 2AB DG using the RUN control switch
5. Adjust the DG speed to slightly less than 60 Hz

<b>COURSE NUMBER AND TITLE:</b>	<b>N02-05 Synchronize and Load 2AB DG</b>	<b>REVISION: 0</b>
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**TASK OBJECTIVES/STANDARDS**

Synchronize and load the DG2AB to Bus T21A per 02-OHP-4030-STP-027AB.

Determine that a loss of Speed Control capability has occurred on the DG2AB, mitigate the condition by tripping or unloading and shutting down of the DG.

**TASK BRIEFING**

You are an extra operator. The crew is performing the slow start surveillance test on the 2AB Diesel Generator. Attachment 1 of 02-OHP-4030-STP-027AB has been completed through Step 4.17. A dedicated operator is stationed locally at the 2AB Diesel Generator and is in direct communication.

The US directs you to synchronize and load the 2AB Diesel Generator, starting at Step 4.18 of Attachment 1.

Continuous	02-OHP-4030-STP-027AB	Rev. 18	Page 25 of 144
<b>AB DIESEL GENERATOR OPERABILITY TEST (TRAIN B)</b>			
Attachment 1	DG2AB Slow Speed Start	Pages: 10 - 35	

**GENERAL CUE:**

The 2 AB DG has been slow speed started and all actions through step 4.17 have been completed. A dedicated operator has been stationed in the 2AB DG room.

- 4.15 Align one Jacket Water Pump for standby service as follows:
- 4.15.1 Place control switch for desired Jacket Water Pump in STOP. \_\_\_\_\_
  - 4.15.2 Return control switch for desired Jacket Water Pump to AUTO. \_\_\_\_\_
- 4.16 Adjust DG Speed using DG2AB SPEED ADJUST to obtain 60 hertz - AND- record the following data.
- 2-DGAB-SPD-IND-RB indication. \_\_\_\_\_ rpm
  - 2-DGAB-SPD-IND-FB indication \_\_\_\_\_ rpm
  - Speed setting \_\_\_\_\_
- 4.16.1 IF Front and Rear bank speed are NOT between 500 to 530 rpm, THEN generate a Deficiency Tag to investigate. . (can be written anytime during procedure performance) \_\_\_\_\_
- 4.17 Record governor oil level. \_\_\_\_\_ % \_\_\_\_\_

**CAUTION:** Maximum phase current imbalance should not exceed 80 amps.  
Maximum Current through any generator phase is 600 amps.

**NOTE:** The local portions of steps 4.20 through 4.25 may be performed concurrently with step 4.18.

- 4.18 Load AB Diesel Generator to T21A bus, to 3500 kW as follows:
- 4.18.1 Place the following voltmeter selector switches in OFF position:
    - DG2AB Start Gen & 69/4KV Voltmeter Sel \_\_\_\_\_
    - Potential DG2AB Run & Bus T21A & T21B Selector \_\_\_\_\_

Operator places both VOLTmeters to OFF position

Continuous	02-OHP-4030-STP-027AB	Rev. 18	Page 26 of 144
<b>AB DIESEL GENERATOR OPERABILITY TEST (TRAIN B)</b>			
Attachment 1	DG2AB Slow Speed Start	Pages: 10 - 35	

4.18.2 Parallel to bus T21A as follows:

- a. Place DG2AB 4KV CB T21A11 Synch Selector in MAN position.
- b. Adjust speed using DG2AB SPEED ADJUST so DG2AB synchroscope is rotating slowly in the FAST direction.
- c. Adjust DG2AB Auto Volt Adjust so that diesel output, Start Gen & 69/4KV voltmeter, is 2 to 3 volts greater than Bus T21A, Run Bus T21A & T21B Volt, voltage.
- d. WHEN DG2AB synchroscope is between 5 minutes till 12 o'clock and 12 o'clock, THEN place DG2AB 4KV CB T21A11 Control switch in CLOSE position.
- e. Check white light, Synch Permissives Met, illuminated for T21A11.
- f. WHEN DG2AB synchroscope is between 5 minutes till 12 o'clock and 12 o'clock, THEN place DG2AB Synchronize Master Close switch to CLOSE position.
- g. WHEN T21A11 closes, THEN without delay raise load with DG2AB SPEED ADJUST to 900-1100 kW load.
- h. Place DG2AB 4KV CB T21A11 Synch Selector to OFF position.
- i. IF running DG2AB for 1 hour load run surveillance, THEN minimize circulating current by slowly adjusting Auto Volt Adjust until minimum amperage is obtained at the following:
  - DG2AB PH1 AMPS
  - DG2AB PH2 AMPS
  - DG2AB PH3 AMPS

CT: Operator places DG2AB 4KV CB T21A11 Synch Selector switch in MANUAL

CT: Operator adjusts speed so the Synchroscope is rotating SLOWLY in the FAST direction.

CT: Operator adjusts DG2AB run voltage is 2-3 volts higher than Bus T21A voltage.

CT: Operator closes DG2AB 4KV CB T21A11 control switch

Operator verifies WHITE light permissive is LIT

CT: Operator closes DG2AB Synchronize Master Close switch at 5 min to 12 o'clock position.

CT: Operator raises load to 900 -1100 kW

DG2AB 4KV CB T21A11 synch selector switch in OFF

CUE: The DG2AB will not be running greater than 30 minutes.

This step is N/A

Continuous	02-OHP-4030-STP-027AB	Rev. 18	Page 27 of 144
<b>AB DIESEL GENERATOR OPERABILITY TEST (TRAIN B)</b>			
Attachment 1	DG2AB Slow Speed Start	Pages: 10 - 35	

- j. Maintain 900-1100 kW load for approximately 10 minutes \_\_\_\_\_
- k. Using DG2AB SPEED ADJUST, raise load to approximately 1750 kW \_\_\_\_\_
- l. Maintain 1750 kW load for approximately 10 minutes \_\_\_\_\_
- m. Using DG2AB SPEED ADJUST, raise load to approximately 2750 kW \_\_\_\_\_
- n. Maintain 2750 kW load for approximately 10 minutes \_\_\_\_\_

**NOTE:** Maintain a continuous load of 3500kW on DG2AB throughout Diesel Load testing. Momentary load transients do not invalidate the diesel load test.

- 4.18.3 Using DG2AB SPEED ADJUST raise DG2AB load to 3500 kW. \_\_\_\_\_
- 4.18.4 Place the following voltmeter selector switches in the desired position:
  - DG2AB Start Gen & 69/4KV Voltmeter Sel \_\_\_\_\_
  - Potential DG2AB Run & Bus T21A & T21B Selector \_\_\_\_\_
- 4.18.5 Record DG2AB maximum phase current imbalance:
  - Phase 1 \_\_\_\_\_ Amps
  - Phase 2 \_\_\_\_\_ Amps
  - Phase 3 \_\_\_\_\_ Amps
  - Current imbalance \_\_\_\_\_ Amps

Operator monitors kW loading and reports uncontrolled load swing.

CUE: If asked, MTI is NOT available.

CUE: US acknowledges tripping open the T21A11 breaker and stopping the DG OR tripping of the 2CD DG with the Emergency Trip Pushbutton.

CT: DG2AB is unloaded/tripped by either:

- Emergency trip pushbutton
- Opening T21A11 Breaker and shutdown using normal control switch or emergency trip pushbutton

**TERMINATION CUE:** DG2AB is unloaded/tripped

**JPM IS COMPLETE**

## TASK BRIEFING

You are an extra operator. The crew is performing the slow start surveillance test on the 2AB Diesel Generator. Attachment 1 of 02-OHP-4030-STP-027AB has been completed through Step 4.17. A dedicated operator is stationed locally at the 2AB Diesel Generator and is in direct communication.

The US directs you to synchronize and load the 2AB Diesel Generator, starting at Step 4.18 of Attachment 1.

# Alternate Path JPM

N02-06

**TITLE** Unit 2 CR Ventilation aligned for Unit 1 SI  
**PROGRAM** NRC License Exam

**REVISION** 0  
**TIME** 15 Minutes

**DEVELOPING  
INSTRUCTOR:**

Name: S. Pettinger

Signature:



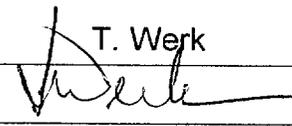
**DATE:**

10/22/02

**OPERATIONS  
REVIEW:**

Name: T. Werk

Signature:



10/22/02

COURSE NUMBER  
AND TITLE:

N02-06 Unit 2 CR Ventilation aligned for Unit 1  
Safety Injection

REVISION: 0

References

02-OHP-4021-028-014, Operation of Control Room AC and Pressurization/Cleanup/Filter System

Task: 0280210101: Align the Control Room Pressurization/Clean-up Filter system for standby.

K/A CROSS REFERENCE: 072 A3.01

K/A IMPORTANCE: RO 2.9\* SRO 3.1

Evaluation Setting

Simulator

Handouts

N02-06-HO-1 Task Briefing  
Copy of 02-OHP-4021-028-014

Attachments

None

Simulator Setup

Initialize at power IC (IC 997) 100% power, MOL

Note: all Unit 2 controls will be left as-is, to require manipulation of controls during procedure implementation

NOTE: Booth Operator should be prepared to initiate override for annunciator panel 201 drop 59, **IAN AN01(059)**, after the operator partially opens a CR Pressurization Cleanup Intake damper (either 2-HV-ACR-DA-2 or 2A).

<b>COURSE NUMBER AND TITLE:</b>	<b>N02-06 Unit 2 CR Ventilation aligned for Unit 1 Safety Injection</b>	<b>REVISION: 0</b>
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**Task Objectives/Standards**

Align the Unit 2 CR AC and Pressurization system for a Unit 1 SI signal, observing procedure steps and precautions and limitations of 02-OHP-4021-028-014.

In addition, due to a subsequent fire condition in the charcoal bed, the operator should respond and mitigate the conditions by implementing the actions of the Alarm Response Procedure, 02-OHP-4024-201, Drop 59.

**Task Briefing**

A Safety Injection (SI) has occurred on Unit 1.

The US directs you to verify that the Unit 2 Control Room Ventilation system is aligned for the Unit 1 SI signal by performing 02-OHP-4021-028-014 Attachment 13.

REFERENCE	02-OHP-4021-028-014	Rev. 14	Page 55 of 68
Operation of the Control Room Air Conditioning and Pressurization/Cleanup Filter Systems			
Attachment 13	Verifying Control Room Ventilation System Aligned For Unit 1 Safety Injection Signal	Pages:	55 - 58

**1 PURPOSE AND SCOPE**

1.1 Verify the Control Room ventilation/pressurization system is properly aligned following a safety injection signal from Unit 1.

**2 PREREQUISITES**

- None

**3 PRECAUTIONS AND LIMITATIONS**

3.1 This procedure attachment is referenced for use in the Emergency Operating Procedures. Use of this procedure as directed by the EOP series is subject to rules of usage found in OHI-4023, Abnormal/Emergency Operating Procedure User's Guide. [Ref. 7.1.2]

**4 DETAILS**

INT

4.1 Verify only one pressurization fan running (circle running fan):

- 2-HV-ACRF-1, West CTRL Room PRZN System

OR

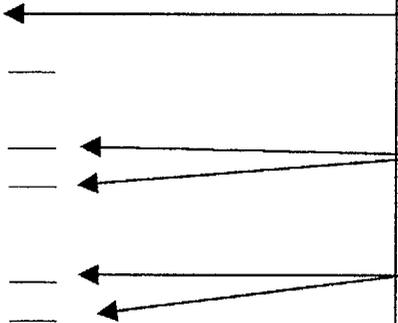
- 2-HV-ACRF-2, East CTRL Room PRZN System

4.2 Verify Control Room vent intake dampers - ISOLATED:

- 2-HV-ACR-DA-1, Control Room Vent Intake Damper
- 2-HV-ACR-DA-1A, Control Room Vent Intake Damper

4.3 Verify Control Room pressurization intake dampers - ONE PARTIAL OPEN AND ONE CLOSED:

- 2-HV-ACR-DA-2, CR PRZN CLN-UP Intake Damper
- 2-HV-ACR-DA-2A, CR PRZN CLN-UP Intake Damper



Evaulator Information

**NOTE:** the Unit 1 SI signal did not result in the expected realignment of the Unit 2 CR AC and Pressurization system.

The Operator will place all Unit 2 equipment in the required condition.

Shortly after the intake dampers are manually opened, a fire occurs in the control room pressurization charcoal filter bed.

**CT:** Operator starts only 1 pressurization fan

**CT:** Operator closes both intake dampers.

**CT:** Operator selects 1 damper to partial open (other damper remains closed)

**NOTE:** Booth Operator initiates override for annunciator panel 201 drop 59, IAN AN01(059).

REFERENCE	02-OHP-4021-028-014	Rev. 14	Page 56 of 68
Operation of the Control Room Air Conditioning and Pressurization/Cleanup Filter Systems			
Attachment 13	Verifying Control Room Ventilation System Aligned For Unit 1 Safety Injection Signal		Pages: 55 - 58

4.4 Verify Control Room pressurization clean-up recirc damper - OPEN:

- 2-HV-ACR-DA-3, CR PRZN CLN-UP Recirc Damper

← Operator verifies damper open

4.5 Verify Unit 2 Control Room cable vault hatch - CLOSED:

- 2-HATCH-A624-1, Aux Building El 633 U-2 Control Rm Cable Vault Hatch

← Operator verifies hatch closed by Panel 201 Drop 69 alarm clear OR simulates verifying hatch closed in back of Control Room

02-OHP 4024.201

Level of Use: REFERENCE

Drop 59

**ANNUNCIATOR #201 RESPONSE: PLANT FIRE SYSTEM**

INITIATING DEVICE(S) AEP	Alias	NOMINAL SETPOINT
Fire detection 2-TMS-CF-ACRF,  LOCAL/CTRL CAB START Push Button,  Selector switch 2-29-CPRF in ISOLATE	2-ZTA-24	170 °F alarm 400 °F operating

CTRL RM PRZN  
CHAR FILTER  
FIRE OR ABN

**1.0 PROBABLE CAUSE(S):**

- 1.1 Fire or overheating in Control Room pressurization charcoal filter.
- 1.2 Detection circuit trouble.
- 1.3 Pilot solenoid valve isolation switch in isolate position.

← Operator reviews probable causes

**2.0 AUTOMATIC ACTION(S):**

- 2.1 Actuation of the water deluge will:
  - Open isolation valve 12-ZMO-10, Yard Fire Hdr to Aux Bldg
  - Open isolation valve 12-ZMO-20, Turb Bldg Fire Hdr to Aux Bldg
  - Open water valve 2-ZRV-24, Fire Protection water to Control Room Ventilation Unit HV-ACRF Charcoal Filters control valve
  - Actuate Annunciator 101, Drop 41
  - Actuate Annunciator 201, Drop 41

← Operator reviews automatic actions

02-OHP 4024.201

Level of Use: REFERENCE

Drop 59

**3.0 OPERATOR ACTION(S):**

- 3.1 Check Alison cabinet on 650 elevation of Auxiliary Building for cause of alarm.
- 3.2 Check filter housing in the Control Room ventilation equipment room.
- 3.3 IF amber PREALARM lamp is LIT, THEN:
  - 3.3.1 Open 2-FP-283, Fire Protection water to Ventilation Unit 2-HV-ACRF Charcoal Filter manual shutoff valve.
  - 3.3.2 Open 2-DR-174 and 2-DR-198, Control Room Ventilation Unit 2-HV-ACRF Drains to Turbine Room Sump shutoff valves.
- 3.4 IF red System Operating lamp is lit, THEN:

**CAUTION**  
IF a radiological emergency (LOCA, fuel handling accident) is in progress, then the Control Room pressurization fans shall not be stopped, unless fire or smoke is confirmed.

- 3.4.1 Place control switches for Control Room Pressurization Fans 2-HV-ACRF1 and 2-HV-ACRF2 in OFF.
- 3.4.2 Verify 12-ZMO-10, Yard Fire Hdr to Aux Bldg - OPEN.
- 3.4.3 Verify 12-ZMO-20, Turb Bldg. Fire Hdr to Aux Bldg - OPEN.
- 3.4.4 Verify 2-ZRV-24, deluge valve to Control Room Pressurization Fan Filter - OPEN.
  - a. Monitor the ventilation unit to ensure the filter housing is draining as expected, to prevent overfilling and flooding of the ductwork to the Control Room.
- 3.4.5 Notify fire brigade:
  - a. Sound fire siren
  - b. Page fire brigade at pager #9999
- 3.4.6 Announce the location of the fire on PA and establish fire information line on extension 1801.

Operator directs AEO to 650' of Aux Building

Operator directs another AEO to CR Ventilation Equipment Room

CUE: AEO reports that the amber PREALARM and red SYSTEM OPERATING lamps are lit

CT: Operator directs AEOs to open 2-FP-283, 2-DR-174 and 198

CUE: AEO reports that smoke is observed in the CR ventilation filter housing.

CT: Operator places CR pressurization fans in stop

CT: Operator opens 12-ZMO-10 and 20 with control switch

Operator directs AEO to verify 2-ZRV-24 opens

CUE: AEOs report that 2-ZRV-24 is open and the filter housing is draining properly.

Operator sounds the fire siren and simulates notifying the fire brigade.

Operator simulates PA announcement

02-OHP 4024.201

Level of Use: REFERENCE

Drop 59

3.4.7 When the fire is extinguished:

- a. Announce on the PA that the fire is out.
- b. Ensure requirements of ATR# 2-FP-3 are met.
- c. Close and seal 2-FP-283.
- d. Reset fire system.
- e. After filter housing is drained, close 2-DR-174 and 2-DR-198.

3.5 IF alarm is spurious, or no fire exists, THEN place control switches for both Control Room Pressurization Fans in AUTO.

3.6 IF trouble condition exists, THEN:

3.6.1 Check power supply to fire system.

3.6.2 Check isolation switch for charcoal filter fire detection system.

CUE: Fire is out

**JPM IS COMPLETE.**

## **Task Briefing**

A Safety Injection (SI) has occurred on Unit 1.

The US directs you to verify that the Unit 2 Control Room Ventilation system is aligned for the Unit 1 SI signal by performing 02-OHP-4021-028-014 Attachment 13.

N02-07

TITLE  
PROGRAM

Energize SR Detectors and Audio Count Rate  
NRC License Exam

REVISION  
TIME

0  
15 Minutes

DEVELOPING  
INSTRUCTOR:

Name:

S. Pettinger

Signature:

*S. Pettinger*

DATE:

10/22/02

OPERATIONS  
REVIEW:

Name:

T. Werk

Signature:

*T. Werk*

10/22/02

<b>COURSE NUMBER AND TITLE:</b>	<b>N02-07 Energize SR Detectors and Audio Count Rate</b>	<b>REVISION: 0</b>
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References

02-OHP-4023-ES-1.2, Post LOCA Cooldown And Depressurization  
02-OHP-4021-013-005, Visual Audio Count Rate Channel (NIS)

Task: 0130010501: Energize Source Range NIS  
0130140101: Energize the Audio Count Rate Channel

K/A CROSS REFERENCE: 015 A2.02  
K/A IMPORTANCE: RO 3.1 SRO 3.5\*

Evaluation Setting

Simulator

Handouts

1. N02-07 Task Briefing
2. Copy of 02-OHP-4023-ES-1.2 (page 37)
3. Copy of 02-OHP-4021-013-005 (entire procedure)

Attachments

None

Simulator Setup

Post Trip conditions with snap # IC 995 (~850 PSIG, ~405 °F CETCs, ES 1.2 step 25)  
Malfunction: NI07A (severity 0%) N-35 failed high due to under compensated.  
RC10B (severity 50%) ~750 GPM SBLOCA (run for ~ 90 minutes to be in ES 1.2)

<b>COURSE NUMBER AND TITLE:</b>	<b>N02-07 Energize SR Detectors and Audio Count Rate</b>	<b>REVISION: 0</b>
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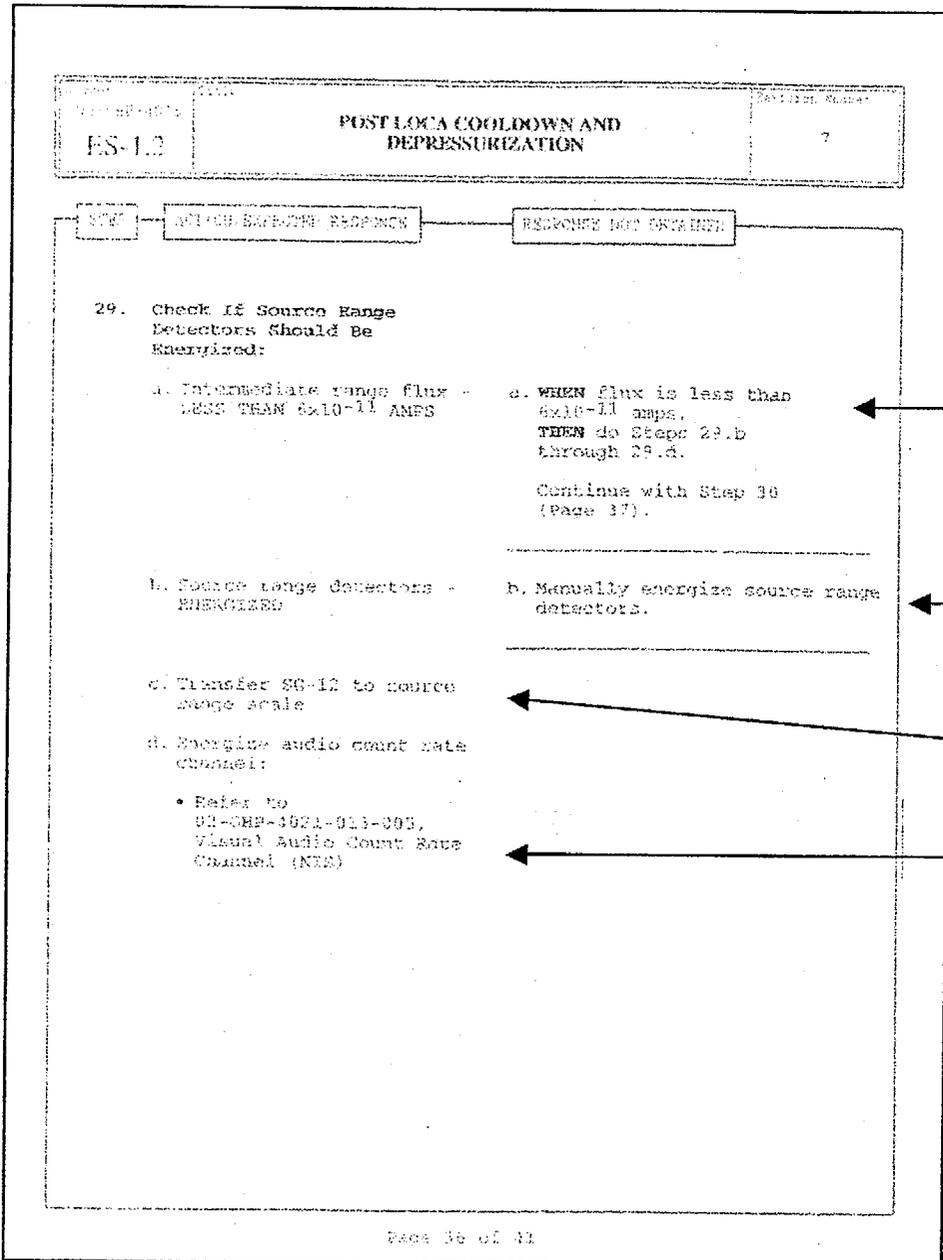
**Task Objectives/Standards**

Manually energize the Source Range Detectors and Audio Count Rate, observing all applicable precautions and limitations and procedure steps.

**Task Briefing**

90 minutes ago a reactor trip and safety injection were actuated in response to a RCS leak (small break LOCA) inside containment.

The US has directed you to check if the Source Range detectors should be energized per ES 1.2, POST LOCA COOLDOWN AND DEPRESSURIZATION, step 29.



**Evaluator Information:**

Since the Reactor tripped occurred ~90 minutes ago, the operator should expect both Source Range detectors to have auto energized. The under compensation malfunction on N-35 IR results in the channel reading high, while the unaffected IR Channel will indicate  $< 6 \times 10^{-11}$  AMPS and the 2/2 (P-6) logic NOT satisfied.

Operator determines N-36 IR Channel is  $< 6 \times 10^{-11}$  AMPS (and that N-35 is reading erroneously high).

CT: Operator determines the Source Range Detectors are NOT energized, momentarily places either "SOURCE RANGE TRIP BLK & RESET" switch to "UNBLOCK" position

Operator places either or both Red pen and Blue pen Neutron Flux Recorder Selector Switches to "SR1" and/or "SR2" position(s)

Operator obtains copy of 02-OHP-4021-013-005  
CUE: Provide Operator with copy of 02-OHP-4021-013-005

Reference	02-OHP-4021-013-005	Rev. 6	Page 4 of 16
VISUAL AUDIO COUNT RATE CHANNEL (NIS)			
Attachment 1	Setup of Audio Count Rate Channel	Pages: 4 - 5	

**1 PURPOSE AND SCOPE**

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

**2 PREREQUISITES**

2.1 None.

**3 PRECAUTIONS AND LIMITATIONS**

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

**4 DETAILS**

4.1 Place scaler timer POWER switch in ON position.

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

- AUDIO POWER ON
- SCALER POWER ON

4.3 Place CHANNEL SELECTOR switch to desired source range channel.

4.4 Place SAMPLING MODE selector switch in the following positions:

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

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

Operator checks scaler timer "POWER" toggle switch in the "UP" position

Operator checks lights lit

Operator checks Channel Selector switch in "SRN31" or "SRN32" position

Operator checks sampling mode switch in "COUNT/SEC" position

Operator checks "VOLUME" switch in any position

Reference	02-OHP-4021-013-005	Rev. 6	Page 5 of 16
VISUAL AUDIO COUNT RATE CHANNEL (NIS)			
Attachment 1	Setup of Audio Count Rate Channel	Pages:	4 - 5

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

- |   |  |
|---|--|
| <p>4.6 Position thumbwheels to 00600 or other value as desired.</p> <p>4.7 Place SAMPLING MODE toggle switch in AUTO.</p> <p>4.8 Press the following pushbuttons:</p> <p style="margin-left: 20px;">4.8.1 STOP</p> <p style="margin-left: 20px;">4.8.2 RESET</p> <p style="margin-left: 20px;">4.8.3 START</p> <p>4.9 Check GATE light is lit.</p> <p style="margin-left: 20px;">• IF GATE light is NOT lit, THEN notify I&amp;C.</p> <p>4.10 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)</p> <p>4.11 Verify count rate indication is audible in the following [Ref. 7.2.1a]:</p> <ul style="list-style-type: none"> <li>• Control Room (This step N/A if source range detectors are deenergized)</li> <li>• Containment (Mode 6 only)</li> </ul> | <p>← Operator checks thumbwheels set to 00600</p> <p>← Operator checks sampling mode toggle switch in "AUTO" position</p> <p>← Operator depresses the pushbuttons<br/>CT: "START" pushbutton is the critical portion of this step</p> <p>← Operator checks gate light lit</p> <p>← Operator adjusts audio multiplier switch to produce a distinguishable gap in audio output</p> <p>← Operator determines Containment is N/A</p> <p>← Reports task completed.</p> <p><b>JPM IS COMPLETE.</b></p> |
|---|--|

## Task Briefing

90 minutes ago a reactor trip and safety injection were actuated in response to a RCS leak (small break LOCA) inside containment.

The US has directed you to check if the Source Range detectors should be energized per ES 1.2, POST LOCA COOLDOWN AND DEPRESSURIZATION, step 29.

# Alternate Path JPM

N02-08

TITLE

Isolate SI Accumulators during Post LOCA  
Cooldown and Depressurization

REVISION

0

PROGRAM

NRC License Exam

TIME

15 Minutes

DEVELOPING  
INSTRUCTOR:

Name:

S. Pettinger

Signature:



DATE:

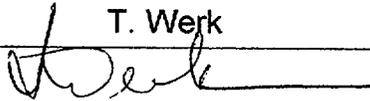
10/22/02

OPERATIONS  
REVIEW:

Name:

T. Werk

Signature:



10/22/02

**COURSE NUMBER  
AND TITLE:**

**N02-08 Isolate SI Accumulators during Post  
LOCA Cooldown and Depressurization**

**REVISION: 0**

### REFERENCES

02-OHP-4023.E-1, Loss of Reactor or Secondary Coolant

Task: 0080020101: Isolate Accumulators

K/A CROSS REFERENCE: 006 A4.02

K/A IMPORTANCE: RO 4.0\* SRO 3.8

### EVALUATION SETTINGS

Simulator

### HANDOUTS

1. N02-08 Briefing Sheet
2. Copy of 02-OHP 4023.E-1, Step 25

### ATTACHMENTS

1. NONE

### SIMULATOR SETUP

Post Trip conditions with snap # IC 995 (~850 PSIG, ~405 °F CETCs, ES 1.2 step 25)  
Malfunction: RC10B (severity 50%) ~750 GPM SBLOCA (run for ~ 90 minutes to be in ES 1.2)

- Insert Override ZDI101IMO120 to **OPEN**

<b>COURSE NUMBER AND TITLE:</b>	<b>N02-08 Isolate SI Accumulators during Post LOCA Cooldown and Depressurization</b>	<b>REVISION: 0</b>
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**TASK OBJECTIVES/STANDARDS**

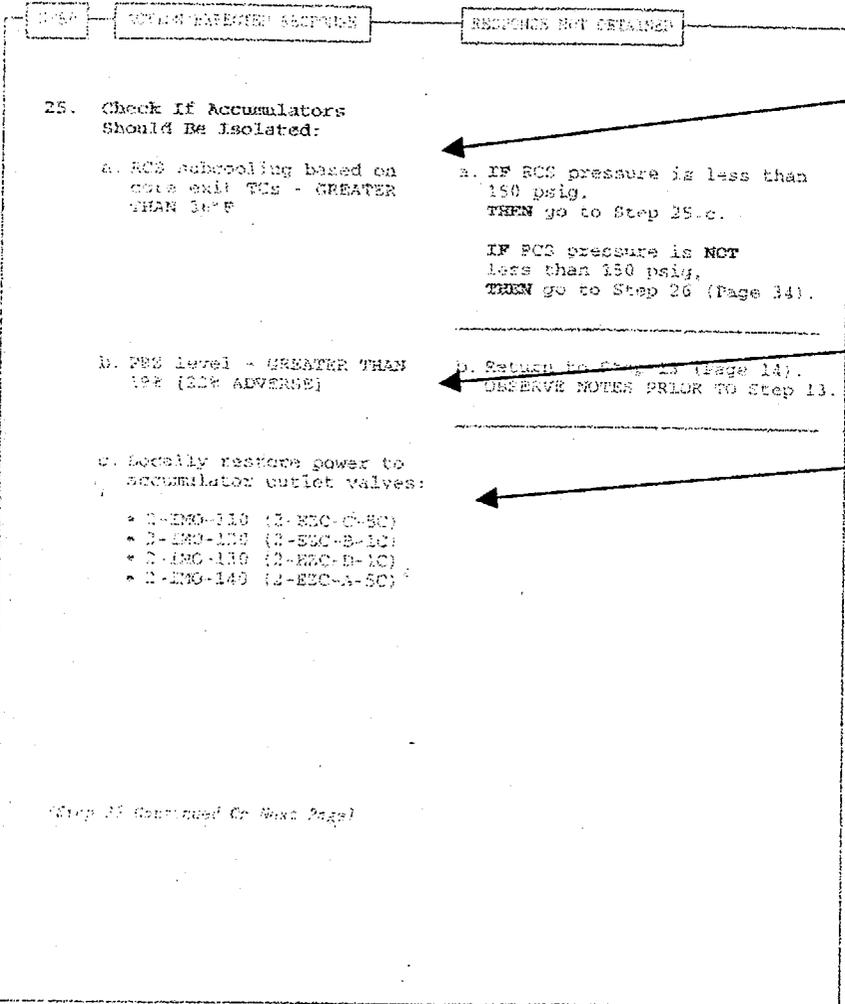
Operator has successfully isolated or vented ALL four accumulators per procedure ES 1.2 step 25.

**TASK BRIEFING**

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

The Unit Supervisor directs you to perform Step 25 of ES-1.2 to check if accumulators should be isolated.

17-000-0000	POST LOCA COOLDOWN AND DEPRESSURIZATION	Revision Number: 7
ES-1.2		



**Evaluator Information:**

#2 and #3 Accumulators isolation valves are faulted and will not close. The RNO column actions will be required to vent N<sup>2</sup> pressure to complete step 25.

Operator checks RCS subcooling >36 °F

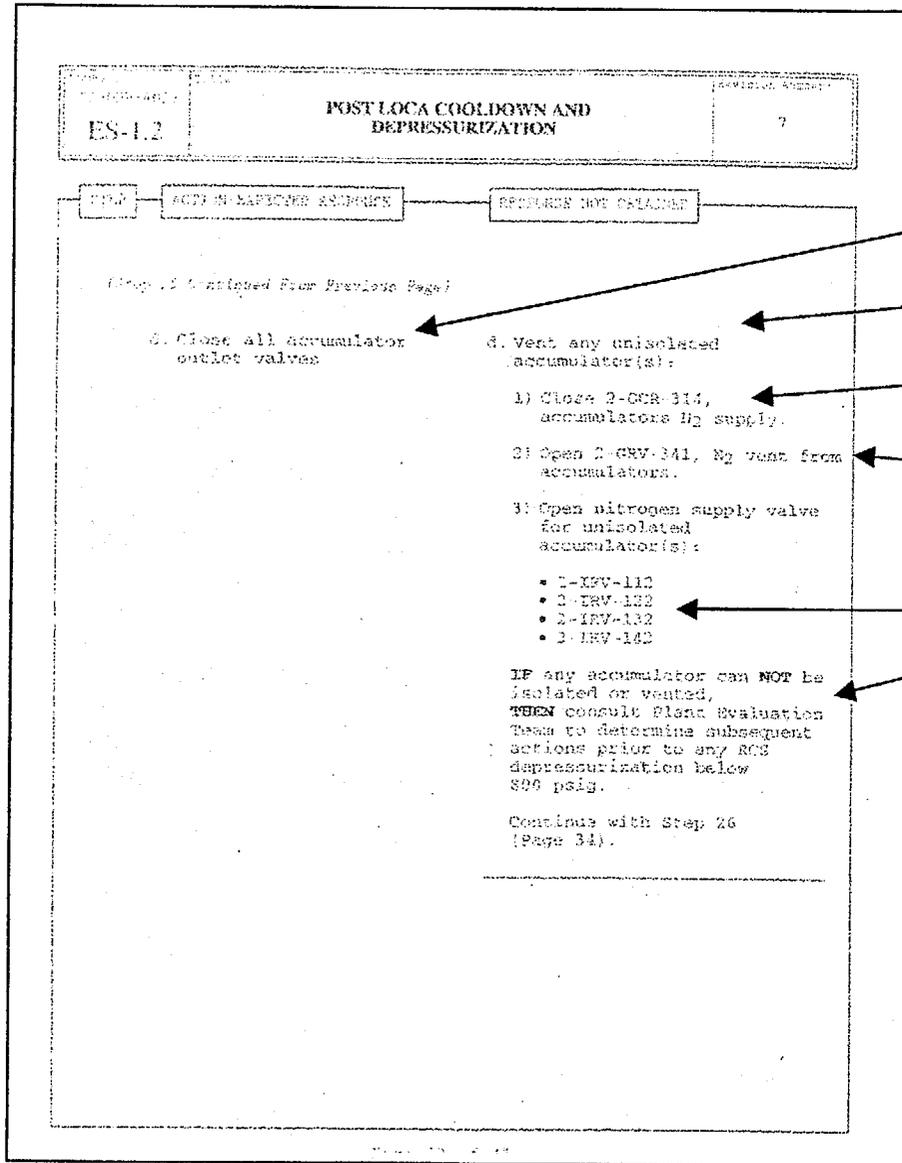
Operator checks Prz level >19%

CT: Operator directs Aux Operator to restore power

CUE: Local Aux Operator will restore power as directed

CUE: Booth Operator delete global malf 101IMO110, 101IMO120 and 101IMO140.

CUE: Report back to Operator that all breakers are energized except 2EZC-D-1C (for 2-IMO-130) which tripped free (would not stay closed).



CT: Operator closes 2-IMO-110 and 2-IMO140 (2-IMO-120 will not close)

Operator determines RNO is needed for #2 and 3 Accumulators

CT: Operator CLOSES: 2-GCR-314

CT: Operator OPENS 2-GRV-341

CT: Operator OPENS: 2-IRV-122 and 2-IRV-132

NOTE: Annunciator Panel 205 Drops 31 and 32 may alarm as the Accumulators are vented (containment pressure high alarms).

**TERMINATE JPM: When Panel 206 Drops 22 and 23 are acknowledged (accumulator 2 & 3 low pressure alarms)**

**JPM IS COMPLETE.**

## Task Briefing

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

The Unit Supervisor directs you to perform Step 25 of ES-1.2 to check if accumulators should be isolated.

N02-09

TITLE  
PROGRAM

Restore RCP Cooling during Post LOCA  
Cooldown and Depressurization  
NRC License Exam

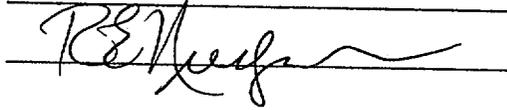
REVISION  
TIME

0  
15 Minutes

DEVELOPING  
INSTRUCTOR:

Name: R. Niedzielski

Signature:



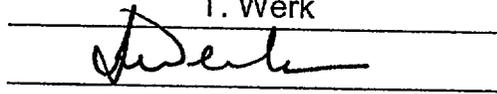
DATE:

9/7/02

OPERATIONS  
REVIEW:

Name: T. Werk

Signature:



9/9/02

**COURSE NUMBER  
AND TITLE:**

**N02-09 Restore RCP Cooling during Post LOCA  
Cooldown and Depressurization**

**REVISION: 0**

References

02-OHP-4023-ES-1.2, Post LOCA Cooldown and Depressurization.  
02-OHP-4023 SUP.007, Restoration of RCP cooling

Task: 0020030501: Restore RCP support systems following containment isolation

K/A CROSS REFERENCE: 003 A4.08

K/A IMPORTANCE: RO 3.2 SRO 2.9

Evaluation Setting

Simulator

Handouts

N02-09 Task Briefing  
Copy of 02-OHP-4023-ES1.2, Step 27

Attachments

None

Simulator Setup

Post Trip conditions with snap # IC 995 (~850 PSIG, ~405 °F CETCs, ES 1.2 step 25)  
Malfunction: RC10B (severity 50%) ~750 GPM SBLOCA (run for ~ 90 minutes to be in ES 1.2)  
CCW isolated to RCPs

<b>COURSE NUMBER AND TITLE:</b>	<b>N02-09 Restore RCP Cooling during Post LOCA Cooldown and Depressurization</b>	<b>REVISION: 0</b>
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**Task Objectives/Standards**

Establish normal cooling to RCPs in accordance with SUP.007, Restoration of RCP cooling.

**Task Briefing**

The plant has responded to a Small Break LOCA and the actions of E-0, Reactor Trip or Safety Injection and E-1, Loss of Primary or Secondary Coolant have been completed. The US has transitioned to ES-1.2, Post LOCA Cooldown and Depressurization.

The US directs you to perform step 27, of ES-1.2 to check RCP cooling.

Number: 02-ORP 4023 ES-1.2	Title: <b>POST LOCA COOLDOWN AND DEPRESSURIZATION</b>	Revision Number: 6
----------------------------------	--	-----------------------

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
26.	<p><b>Check If DGs Should Be Stopped:</b></p> <p>a. AC emergency buses - ENERGIZED BY OFFSITE POWER</p> <ul style="list-style-type: none"> <li>• T21A</li> <li>• T21B</li> <li>• T21C</li> <li>• T21D</li> </ul> <p>b. Stop any unloaded DG and place in standby</p> <p>c. Locally stop jacket water pumps for shutdown DG(s) and place in AUTO</p>	<p>a. Try to restore offsite power to AC emergency buses using SUP.002, Restoration of Reserve Power to 4KV Buses.</p>
27.	<p><b>Check RCP Cooling - NORMAL</b></p> <ul style="list-style-type: none"> <li>• CCW flow:</li> <li>• Lower bearing - AT LEAST 5 GPM</li> <li>• Thermal barrier - AT LEAST 35 GPM</li> <li>• Upper bearing - AT LEAST 97.5 GPM</li> <li>• Seal injection flow - 6 TO 12 GPM</li> </ul>	<p>Establish normal cooling to RCPs using SUP.007, Restoration of RCP Cooling.</p>

General CUES:

Operator determines the need to go to the RNO column and use SUP.007 to restore RCP cooling based on current plant conditions (No CCW flow).

CUE: Provide operator copy of SUP.007.

Number: 02-OHP 4023 <b>SUP.007</b>	Title: <b>RESTORATION OF RCP COOLING</b>	Revision Number: 1
--	---	-----------------------

STEP    ACTION/EXPECTED RESPONSE    RESPONSE NOT OBTAINED

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

**1. Check RCP Seal Temperatures - NORMAL**

- "RCP Seal 1 Outlet Temp High" annunciators - HAVE REMAINED CLEAR
- Panel 207, Drop 14 (RCP 1)
- Panel 207, Drop 34 (RCP 2)
- Panel 207, Drop 74 (RCP 3)
- Panel 207, Drop 94 (RCP 4)
- Lower bearing water temperatures - HAVE REMAINED LESS THAN 225°F

Perform the following:

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

**IF** at least one valve can **NOT** be manually closed, **THEN** locally close one valve.
- b. Return to procedure and step in effect.

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

Operator checks the annunciators clear

CUE: Alarms have remained clear

Operator checks the lower bearing water temperatures are less than 225 °F

CUE: Temperatures have been stable at the observed values

Number: 02-OHP 4023 <b>SUP.007</b>	Title: <b>RESTORATION OF RCP COOLING</b>	Revision Number: 1
--	---	-----------------------

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
------	--------------------------	-----------------------

**2. Establish CCM Flow To RCPs:**

a. Check "RCP Therm Barr Clg Wtr Temp High" annunciators - HAVE REMAINED CLEAR

- Panel 207, Drop 8 (RCP 1)
- Panel 207, Drop 28 (RCP 2)
- Panel 207, Drop 68 (RCP 3)
- Panel 207, Drop 88 (RCP 4)

a. Return to procedure and step in effect.

b. Open both CCW to RCP cooler valves:

- 2-CCM-458
- 2-CCM-459

c. Open both CCW from RCP thermal barriers valves:

- 2-CCM-453
- 2-CCM-454

d. Open both CCW from RCP oil cooler valves:

- 2-CCM-451
- 2-CCM-452

Operator checks the annunciators are clear

CUE: Annunciators have remained clear

CT: Operator OPENS both valves in any order

CT: Operator OPENS both valves in any order

CT: Operator OPENS both valves in any order

Number: 02-OHP 4023 <b>SUP.007</b>	Title: <b>RESTORATION OF RCP COOLING</b>	Revision Number: 1
--	---	-----------------------

STEP    ACTION/EXPECTED RESPONSE    RESPONSE NOT OBTAINED

**3. Check Charging System:**

- CCPs - AT LEAST ONE RUNNING

-OR-

- CVCS crosstie - ESTABLISHED

Return to procedure and step in effect.

Operator checks at least one CCP running

**4. Establish Normal Seal Injection Flow To RCPs:**

- a. Adjust 2-QRV-200, charging header pressure control valve as necessary to maintain:

- RCP seal injection flow - 6 TO 12 GPM

Operator verifies normal seal injection flow

**5. Return To Procedure And Step In Effect**

Reports task completed.

**JPM IS COMPLETE.**

-END-

## **Task Briefing**

The plant has responded to a Small Break LOCA and the actions of E-0, Reactor Trip or Safety Injection and E-1, Loss of Primary or Secondary Coolant have been completed. The US has transitioned to ES-1.2, Post LOCA Cooldown and Depressurization.

The US directs you to perform step 27, of ES-1.2 to check RCP cooling.

N02-10

TITLE  
PROGRAM

Perform an Authorized Gaseous Release  
NRC License Exam

REVISION  
TIME

0  
25 Minutes

DEVELOPING  
INSTRUCTOR:

Name: S. Pettinger

Signature:

*S. Pettinger*

DATE:

10/23/02

OPERATIONS  
REVIEW:

Name: T. Werk

Signature:

*T. Werk*

10/23/02

**COURSE NUMBER  
AND TITLE:**

**N02-10 - Perform an Authorized Gaseous  
Release**

**REVISION: 0**

### REFERENCES

12-OHP-4021.023.002, Release of Radioactive Waste From Gas Decay Tanks

Task: 0230120104; Release a Gas Decay Tank to atmosphere

K/A CROSS REFERENCE: 071 A4.26

K/A IMPORTANCE: RO 3.1 SRO 3.9

### Evaluation Setting

In-Plant (573' elevation Aux Building)

### Handouts

Task Briefing for N02-10  
Gas Release Package (attachments listed below)

### ATTACHMENTS

1. 12-OHP 4021.023.002, Attachment 2 completed through step 4.5.
2. 12-OHP 4021.023.002, Data Sheet 1, completed through Section 3.0
3. 12-OHP 4021.023.002, Figure 1

### SIMULATOR SETUP

N/A

**COURSE NUMBER  
AND TITLE:**

**N02-10 - Perform an Authorized Gaseous  
Release**

**REVISION: 0**

**Task Objectives/Standards**

Release the contents of #1 Gas Decay Tank to the vent header in accordance with the release procedure.

**Task Briefing**

#1 Gas Decay Tank has been isolated, sampled, and approved for release. 12-OHP 4021.023.002, Release Of Radioactive Waste From Gas Decay Tanks, Attachment 2, Release of Radioactive Gaseous Waste From Gas Decay Tanks, has been completed up through step 4.5. Data Sheet 1, Gas Decay Tank Release Permit, is complete up through section 3.0. All support equipment and instrumentation required for this release is in service and properly calibrated.

The US has directed you to perform a Gaseous Waste Release from #1 Gas Decay Tank beginning with step 4.6.

*All actions are to be simulated. Dual Concurrent Positioner and Independent Verifier actions are waived for performance of this JPM.*

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<b>RELEASE OF RADIOACTIVE WASTE FROM GAS DECAY TANKS</b>			
Attachment 2	Release of Radioactive Gaseous Waste From Gas Decay Tanks	Pages: 9 - 34	
Gas Decay Tank # _____		Release # _____	

4.5 Obtain SM/ASS permission to release appropriate Gas Decay Tank on Section 3 of Data Sheet 1, Gas Decay Tank Release Permit.

4.6 Align system for release:

**NOTE:** Two operators (dual concurrent verification) simultaneously perform the process of lining up the valves to release the Gas Decay Tank contents (Section 4.6.1 through 4.6.6). Independent verification must occur separately from the initial positioner/dual concurrent positioner and must be completed prior to performing Step 4.6.7.

4.6.1 Verify the following CVCS HUT to Radioactive Gas Decay Tanks Vent Header Valves - CLOSED:

- 12-CS-531      ←      \_\_\_\_\_  
Dual concurrent positioner      \_\_\_\_\_  
Independent verifier.      \_\_\_\_\_  
IV
- 12-CS-532      ←      \_\_\_\_\_  
Dual concurrent positioner      \_\_\_\_\_  
Independent verifier.      \_\_\_\_\_  
IV
- 12-CS-533      ←      \_\_\_\_\_  
Dual concurrent positioner      \_\_\_\_\_  
Independent verifier.      \_\_\_\_\_  
IV

General CUES:

Evaluator Note: Valves on this page located on 573' of Aux. Bldg.

*Cue: Local valve position verification can be waived due to ALARA considerations*

Operator verifies 12-CS-531 closed

*Cue: Indicator pin is in CLOSE position*

Operator verifies 12-CS-532 closed

*Cue: No chain (handwheel) movement when pulled in the closed direction.*

Operator verifies 12-CS-533 closed

*Cue: Indicator pin is in CLOSE position*

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<b>RELEASE OF RADIOACTIVE WASTE FROM GAS DECAY TANKS</b>			
Attachment 2	Release of Radioactive Gaseous Waste From Gas Decay Tanks		Pages: 9 - 34
Gas Decay Tank # _____	Release # _____		

4.6.2 Verify applicable manual sample line isolation valve for GDT being released - CLOSED (✓ valve verified CLOSED)

- 12-NS-440-1, Gas Decay Tank 1 Sample Valve  
12-RRV-310 Inlet Shutoff Valve
- 12-NS-440-2, Gas Decay Tank 2 Sample Valve  
12-RRV-320 Inlet Shutoff Valve
- 12-NS-440-3, Gas Decay Tank 3 Sample Valve  
12-RRV-330 Inlet Shutoff Valve
- 12-NS-440-4, Gas Decay Tank 4 Sample Valve  
12-RRV-340 Inlet Shutoff Valve
- 12-NS-440-5, Gas Decay Tank 5 Sample Valve  
12-RRV-350 Inlet Shutoff Valve
- 12-NS-440-6, Gas Decay Tank 6 Sample Valve  
12-RRV-360 Inlet Shutoff Valve
- 12-NS-440-7, Gas Decay Tank 7 Sample Valve  
12-RRV-370 Inlet Shutoff Valve
- 12-NS-440-8, Gas Decay Tank 8 Sample Valve  
12-RRV-380 Inlet Shutoff Valve

Dual concurrent positioner

Independent verifier.

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
IV

Evaluator Notes:

- Following valves located on 587' of Aux. Bldg.
- All valves for GDT #1 are initially closed

Operator verifies 12-NS-440-1 Closed  
Checks and initials

*Cue: No handwheel movement when turned in the closed direction  
(stem is in)*

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<b>RELEASE OF RADIOACTIVE WASTE FROM GAS DECAY TANKS</b>			
Attachment 2	Release of Radioactive Gaseous Waste From Gas Decay Tanks		Pages: 9 - 34
Gas Decay Tank # _____		Release # _____	

4.6.3 Verify applicable isolation valve from compressors - CLOSED  
(✓ valve verified CLOSED):

- 12-WD-227-1, Gas Decay Tank 1 Inlet Valve  
12-RRV-311 Upstream Shutoff Valve
- 12-WD-227-2, Gas Decay Tank 2 Inlet Valve  
12-RRV-321 Upstream Shutoff Valve
- 12-WD-227-3, Gas Decay Tank 3 Inlet Valve  
12-RRV-331 Upstream Shutoff Valve
- 12-WD-227-4, Gas Decay Tank 4 Inlet Valve  
12-RRV-341 Upstream Shutoff Valve
- 12-WD-227-5, Gas Decay Tank 5 Inlet Valve  
12-RRV-351 Upstream Shutoff Valve
- 12-WD-227-6, Gas Decay Tank 6 Inlet Valve  
12-RRV-361 Upstream Shutoff Valve
- 12-WD-227-7, Gas Decay Tank 7 Inlet Valve  
12-RRV-371 Upstream Shutoff Valve
- 12-WD-227-8, Gas Decay Tank 8 Inlet Valve  
12-RRV-381 Upstream Shutoff Valve

Dual concurrent positioner \_\_\_\_\_

Independent verifier. \_\_\_\_\_

IV

Operator verifies 12-WD-227-1 Closed  
Checks and initials

*Cue: No handwheel movement when turned in the closed direction  
(stem is in)*

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<b>RELEASE OF RADIOACTIVE WASTE FROM GAS DECAY TANKS</b>			
Attachment 2	Release of Radioactive Gaseous Waste From Gas Decay Tanks	Pages: 9 - 34	
Gas Decay Tank # _____	Release # _____		

4.6.4 Verify applicable isolation valve to recycle header - CLOSED  
(✓ valve verified CLOSED):

- 12-WD-231-1, Gas Decay Tank 1 to CVCS Cover Gas Header Shutoff Valve
- 12-WD-231-2, Gas Decay Tank 2 to CVCS Cover Gas Header Shutoff Valve
- 12-WD-231-3, Gas Decay Tank 3 to CVCS Cover Gas Header Shutoff Valve
- 12-WD-231-4, Gas Decay Tank 4 to CVCS Cover Gas Header Shutoff Valve
- 12-WD-231-5, Gas Decay Tank 5 to CVCS Cover Gas Header Shutoff Valve
- 12-WD-231-6, Gas Decay Tank 6 to CVCS Cover Gas Header Shutoff Valve
- 12-WD-231-7, Gas Decay Tank 7 to CVCS Cover Gas Header Shutoff Valve
- 12-WD-231-8, Gas Decay Tank 8 to CVCS Cover Gas Header Shutoff Valve

Dual concurrent positioner

Independent verifier.

IV

Operator verifies 12-WD-231-1 Closed Checks and initials

*Cue: No handwheel movement when turned in the closed direction. (stem is in)*

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<b>RELEASE OF RADIOACTIVE WASTE FROM GAS DECAY TANKS</b>			
Attachment 2	Release of Radioactive Gaseous Waste From Gas Decay Tanks	Pages: 9 - 34	
Gas Decay Tank # _____			Release # _____

- 4.6.5 Open applicable gas decay tank isolation valve (✓ valve OPENED):
- 12-WD-229-1, Gas Decay Tank 1 Isolation Valve
  - 12-WD-229-2, Gas Decay Tank 2 Isolation Valve
  - 12-WD-229-3, Gas Decay Tank 3 Isolation Valve
  - 12-WD-229-4, Gas Decay Tank 4 Isolation Valve
  - 12-WD-229-5, Gas Decay Tank 5 Isolation Valve
  - 12-WD-229-6, Gas Decay Tank 6 Isolation Valve
  - 12-WD-229-7, Gas Decay Tank 7 Isolation Valve
  - 12-WD-229-8, Gas Decay Tank 8 Isolation Valve

Dual concurrent positioner \_\_\_\_\_

Independent verifier. \_\_\_\_\_

IV

- 4.6.6 Verify GDT to GDT release header shutoff valves - CLOSED

- 12-WD-230-1, Gas Decay Tank 1 to GDT Release Header Shutoff Valve \_\_\_\_\_

Dual concurrent positioner \_\_\_\_\_

Independent verifier. \_\_\_\_\_

**CT: Operator (simulates) opens 12-WD-229-1  
Checks and initials**

*Cue: Handwheel turns when operated in the open direction then stops when fully open. (stem is out)*

**Operator verifies 12-WD-230-1 Closed**

*Cue: No handwheel movement when turned in the closed direction. (stem is in)*

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<b>RELEASE OF RADIOACTIVE WASTE FROM GAS DECAY TANKS</b>			
Attachment 2	Release of Radioactive Gaseous Waste From Gas Decay Tanks	Pages: 9 - 34	
Gas Decay Tank # _____	Release # _____		

- 12-WD-230-2, Gas Decay Tank 2 to GDT Release Header Shutoff Valve
  - Dual concurrent positioner \_\_\_\_\_
  - Independent verifier. \_\_\_\_\_
  - IV
- 12-WD-230-3, Gas Decay Tank 3 to GDT Release Header Shutoff Valve
  - Dual concurrent positioner \_\_\_\_\_
  - Independent verifier. \_\_\_\_\_
  - IV
- 12-WD-230-4, Gas Decay Tank 4 to GDT Release Header Shutoff Valve
  - Dual concurrent positioner \_\_\_\_\_
  - Independent verifier. \_\_\_\_\_
  - IV
- 12-WD-230-5, Gas Decay Tank 5 to GDT Release Header Shutoff Valve
  - Dual concurrent positioner \_\_\_\_\_
  - Independent verifier. \_\_\_\_\_
  - IV
- 12-WD-230-6, Gas Decay Tank 6 to GDT Release Header Shutoff Valve
  - Dual concurrent positioner \_\_\_\_\_
  - Independent verifier. \_\_\_\_\_

Evaluator Notes:

- All WD-230 valves are initially closed.

Operator verifies 12-WD-230-2 Closed

*Cue: No handwheel movement when turned in the closed direction (stem is in)*

Operator verifies 12-WD-230-3 Closed

*Cue: No handwheel movement when turned in the closed direction (stem is in)*

Operator verifies 12-WD-230-4 Closed

*Cue: No handwheel movement when turned in the closed direction (stem is in)*

Operator verifies 12-WD-230-5 Closed

*Cue: No handwheel movement when turned in the closed direction (stem is in)*

Operator verifies 12-WD-230-6 Closed

*Cue: No handwheel movement when turned in the closed direction (stem is in)*

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<b>RELEASE OF RADIOACTIVE WASTE FROM GAS DECAY TANKS</b>			
Attachment 2	Release of Radioactive Gaseous Waste From Gas Decay Tanks	Pages: 9 - 34	
Gas Decay Tank # _____	Release # _____		

- 12-WD-230-7, Gas Decay Tank 7 to GDT Release Header Shutoff Valve

Dual concurrent positioner

Independent verifier.

IV

- 12-WD-230-8, Gas Decay Tank 8 to GDT Release Header Shutoff Valve

Dual concurrent positioner

Independent verifier.

IV

Operator verifies 12-WD-230-7 Closed

*Cue: No handwheel movement when turned in the closed direction (stem is in)*

Operator verifies 12-WD-230-8 Closed

*Cue: No handwheel movement when turned in the closed direction (stem is in)*

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<b>RELEASE OF RADIOACTIVE WASTE FROM GAS DECAY TANKS</b>			
Attachment 2	Release of Radioactive Gaseous Waste From Gas Decay Tanks	Pages: 9 - 34	
Gas Decay Tank # _____	Release # _____		

4.6.7 Open applicable GDT to GDT release header shutoff valve (✓ valve OPENED):

- 12-WD-230-1, Gas Decay Tank 1 to GDT Release Header Shutoff Valve
- 12-WD-230-2, Gas Decay Tank 2 to GDT Release Header Shutoff Valve
- 12-WD-230-3, Gas Decay Tank 3 to GDT Release Header Shutoff Valve
- 12-WD-230-4, Gas Decay Tank 4 to GDT Release Header Shutoff Valve
- 12-WD-230-5, Gas Decay Tank 5 to GDT Release Header Shutoff Valve
- 12-WD-230-6, Gas Decay Tank 6 to GDT Release Header Shutoff Valve
- 12-WD-230-7, Gas Decay Tank 7 to GDT Release Header Shutoff Valve
- 12-WD-230-8, Gas Decay Tank 8 to GDT Release Header Shutoff Valve

Dual concurrent positioner

Independent verifier.

4.6.8 Open 12-WD-298, GDT Release Header Shutoff Valve 12-RRV-306 Outlet Valve.

Dual concurrent positioner

Independent verifier.

\_\_\_\_\_  
\_\_\_\_\_  
IV  
\_\_\_\_\_  
\_\_\_\_\_

**CT: Operator (simulates) opens 12-WD-230-1 Checks and initials**

*Cue: Handwheel turns when operated in the open direction then stops when fully open (stem is out)*

**CT: Operator (simulates) opens 12-WD-298 and initials**

*Cue: Handwheel turns when operated in the open direction then stops when fully open (stem is out)*

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<b>RELEASE OF RADIOACTIVE WASTE FROM GAS DECAY TANKS</b>			
Attachment 2	Release of Radioactive Gaseous Waste From Gas Decay Tanks	Pages: 9 - 34	
Gas Decay Tank # _____	Release # _____		

4.6.9 Open 12-WD-297, GDT Release Header Pressure Reducing Valve 12-RRV-305 Inlet Valve.

Dual concurrent positioner

Independent verifier.

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
IV

CT: Operator (simulates) opens 12-WD-297

Cue: Handwheel turns when rotated in the open direction (stem is out)

4.7 Initiate release:

4.7.1 Record INITIAL DATA in Section 4 of Data Sheet 1.

\_\_\_\_\_

Operator records Initial Data in Section 4

Cue: Wind Speed: 6.2 mph; Wind Direction: 200°; Temp Diff: -1; Vent Stack Flow: 9.25E4 scfm; Initial Tank Pressure: 97 psig

4.7.2 Verify 12-RRV-305, GDT Release Header to Aux Bldg Vent Stack Pressure Reducing Valve, set at 4 - 5 psig.

\_\_\_\_\_

Operator verifies 12-RRV-305 set for 4 - 5 psig

Cue: Reducing valve set at 4.5

4.7.3 Position 12-RRV-306:

a. Determine valve position (% open) from Figure 1, 12-RRV-306 Flow Rate, for source flow rate specified in Data Sheet 1, Section 2.

- 12-RRV-306 position: \_\_\_\_\_% OPEN

\_\_\_\_\_  
\_\_\_\_\_  
IV

Operator determines 12-RRV-306 position (98 -100%)

CT: Operator (simulates) opens 12-RRV-306 while observing flow on RFR-300

Cue: Flow is rising as valve is simulated being opened (red light lit). Flow is 120 scfm with valve fully open.

b. While observing reading of RFR-300, Waste Gas to Vent Stack Flow Transmitter (12-MR-57) to ensure specified max source flow rate is NOT exceeded, OPEN 12-RRV-306 to the determined position.

Dual concurrent positioner

Independent verifier.

\_\_\_\_\_  
\_\_\_\_\_  
IV

Operator records 120 scfm for Release Flow Data in Section 4

4.7.4 Record RELEASE FLOW DATA in Section 4 of Data Sheet 1.

\_\_\_\_\_

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<b>RELEASE OF RADIOACTIVE WASTE FROM GAS DECAY TANKS</b>			
Attachment 2	Release of Radioactive Gaseous Waste From Gas Decay Tanks		Pages: 9 - 34
Gas Decay Tank # _____	Release # _____		

4.7.5 **IF** during the release, a high radiation alarm is received on VRS-1505 or VRS-2505, an in-service Unit 1 Auxiliary Building Exhaust Fan fails **OR** a flow alarm is received on VFR-1510, **THEN** Go to Step 4.10.

4.7.6 Adjust system as necessary to ensure the following conditions are maintained **until** the release is complete:

- a. Source flow rate is less than the maximum dictated on Data Sheet 1, Section 2.
- b. GDT discharge pressure less than 5 psig as read on 12-RRV-305 controller.
- c. Unit vent flow rate within +10% of value recorded in Step 4.3.4.
- d. Gas Decay Tank pressure  $\geq$  10 psig.

4.8 **WHEN** desired release is complete, **THEN** stop release by closing 12-RRV-306.

Dual concurrent positioner

Independent verifier.

IV

Operator determines that no adjustments are necessary

**Cues:**

- Source flow rate: 120 scfm;
- GDT discharge pressure: 4.5 psig;
- Unit vent flow: 9.25E4 scfm;
- GDT #1 pressure 94 psig (and lowering 3 psig/min.)

**Note:** Time compression may be used to lower GDT pressure to desired value

**Cue:** Gas Decay Tank #1 pressure is 12 psig

**CT:** Operator stops release, by (simulates) closing 12-RRV-306, prior to lowering GDT pressure below 10 psig

**Cue:** Flow is lowering as valve is simulated being closed (green light lit). Flow is 0 scfm with valve fully closed.

**End of JPM**

## Task Briefing

#1 Gas Decay Tank has been isolated, sampled, and approved for release. 12-OHP 4021.023.002, Release Of Radioactive Waste From Gas Decay Tanks, Attachment 2, Release of Radioactive Gaseous Waste From Gas Decay Tanks, has been completed up through step 4.5. Data Sheet 1, Gas Decay Tank Release Permit, is complete up through section 3.0. All support equipment and instrumentation required for this release is in service and properly calibrated.

The US has directed you to perform a Gaseous Waste Release from #1 Gas Decay Tank beginning with step 4.6.

*All actions are to be simulated. Dual Concurrent Positioner and Independent Verifier actions are waived for performance of this JPM.*

# Alternate Path JPM

N02-11

<b>TITLE</b>	Restore Unit 1 'N' Train Battery Charger
<b>PROGRAM</b>	NRC License Exam

<b>REVISION</b>	0
<b>TIME</b>	14 Minutes

**DEVELOPING  
INSTRUCTOR:**

Name: S. Pettinger

Signature: \_\_\_\_\_

*S. Pettinger*

**DATE:**

10/23/02

**OPERATIONS  
REVIEW:**

Name: T. Werk

Signature: \_\_\_\_\_

*T. Werk*

10/23/02

<b>COURSE NUMBER AND TITLE:</b>	N02-11 Reset an 'N' Train Battery Charger (U1)	<b>REVISION: 0</b>
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**REFERENCES**

01-OHP 4024.115 Drop 57, Trains A & B N Battery CHG De-energized  
 01-OHP 4021.082.015, Rev. 5 Operation of the N Train Battery Charger

Task: 0820080504: Reset the N-train Battery Charger  
 0820160104: Switch N-Train Battery Chargers  
 0000000000: Startup and Switch a Vital Battery Charger

K/A IMPORTANCE: SRO 3.5 RO 3.4\*  
 K/A CROSS REFERENCE: APE 058 AA1.01

**EVALUATION SETTING**

Auxiliary Building 633'

**HANDOUTS**

Task Briefing for N02-11  
 01-OHP 4024.115 Drop 57, Trains A & B N Battery CHG De-energized  
 01-OHP 4021.082.015, Operation of the N Train Battery System

**ATTACHMENTS**

None

**SIMULATOR SETUP**

None – in-plant JPM

**COURSE NUMBER  
AND TITLE:**

**N02-11**

**Reset an 'N' Train Battery Charger (U1)**

**REVISION: 0**

**Task Objectives/Standards**

An N-Train Battery Charger is charging the N-Train battery following a SI and load shed condition.

**Task Briefing**

Unit 1 is in Mode 3 following a reactor trip with a safety injection.

The Unit Supervisor gives you a working copy of the annunciator response procedure for annunciator panel 115 drop 57 (N-Train Battery Charger De-Energized).

You are to review the subsequent actions of this annunciator response procedure and restore a N-Train battery charger to service.

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

01-OHP 4024.115

DROP 57

ANNUNCIATOR PANEL NUMBER 115

FEED PUMP TURBINE

SETPPOINT: N/A

INITIATING DEVICE: 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.

TRAINS A & B  
N BATTERY CHG  
DE-ENERGIZED

1.0 PROBABLE CAUSE

- 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 IMMEDIATE ACTION

- 2.1 Automatic
  - 2.1.1 None
- 2.2 Manual
  - 2.2.1 None

3.0 SUBSEQUENT ACTION

- 3.1 If switching battery chargers in progress, 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.
- 3.4 If the alarm is still standing upon completing the applicable checks from steps 3.1, 3.2, or 3.3, the operator should reference 01-OHP 4021.082.015, Operation of the N Train Battery System, to restore the N Train Battery Charger to service.

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Rev. 10

Operator recognizes that the N-Train battery charger must be manually reset following an SI and load shed on bus T-11B or T-11D.

CT: Operator (simulates) resets the in-service battery charger by placing the control switch to "OFF" and then back to the "AUTO" position.

CUE: Thermal overload device is NOT tripped

CUE: The control room reports that annunciator panel 115 drop 57 alarm has NOT cleared.

**OPERATION OF THE N TRAIN BATTERY SYSTEM**

**4 DETAILS**

**NOTE:** This procedure is referenced for use in the Emergency Operating procedures. Use of this procedure as directed by the EOP series is subject to rules of usage found in OHP-4023, Abnormal/Emergency Procedure Users Guide.

**4.1 Placing a Battery Charger in Service:**

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

4.1.2 Verify AC Input breaker for selected charger in OFF:

- 1-BC-A-CB1 Battery Charger AC Input From 1-AM-D-4A
- 1-BC-B-CB1 Battery Charger AC Input From 1-ABD-B-2A

4.1.3 Verify green AC POWER TO CHARGER OFF light – LIT on battery charger control box (1-BC-A-PNL or 1-BC-B-PNL).

a. IF light is NOT LIT, THEN close the selected AC supply breaker.

- 1-AM-D-4A Train 'N' Battery Distribution  
Train 'A' Battery Charger 1-BC-A
- 1-ABD-B-2A Train B N Train Battery  
Charger 1-BC-B

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

4.1.5 Close the Incoming Feed breaker for the selected battery charger:

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

**Evaluator Note:** The operator should recognize that he must place the opposite train (A) charger in service. If not prompt operator as US to place Train A charger in service. Provide operator with copy of 01-OHP 4021.082.015.

**CUE for Prerequisites:**  
If asked, "MCCs 1-AM-D and 1-ABD-B are energized; one battery exhaust fan is operating"

**CUE:** If asked, "The charger was in service yesterday with operating parameters within normal limits."

**Operator verifies the 1-BC-A-CB-1 is "OFF" (not closed).**

**CUE:** When checked, "The GREEN light on the standby battery charger control box is NOT LIT."

**CT:** Operator (simulates) closes 1-AM-D-4A breaker.

**CUE:** Breaker 1-AM-D-4A is closed.

**CUE:** "The charger to be placed in service will not be powered from a diesel."

**CT:** Operator (simulates) closes 1-DCN CKT 1 breaker

**CUE:** Breaker 1-DCN Circuit 1 is closed.

OPERATION OF THE N TRAIN BATTERY SYSTEM

**CAUTION:** Float charge should be 260 to 265 VDC.

Battery charger must NOT exceed 25 amps when placing in service.

4.1.6 Close DC Output breaker on selected charger:

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

CT: Operator (simulates) closes 1-BC-A-CB2 breaker.

CUE: Breaker clicks into position.

4.1.7 Close AC Input breaker on selected charger:

- 1-BC-A-CB1 Battery Charger AC Input From 1-AM-D-4A
- 1-BC-B-CB1 Battery Charger AC Input From 1-ABD-B-2A

CT: Operator (simulates) closes 1-BC-A-CB1 breaker.

CUE: Breaker clicks into position

4.1.8 Place control switch for selected charger in AUTO position:

- N Train Battery Train A Charger 1-BC-A Control Switch
- N Train Battery Train B Charger 1-BC-B Control Switch

CT: Operator (simulates) places 1-BC-A control switch in AUTO.

CUE: Control switch is in the position selected

4.1.9 IF chargers are being switched, THEN:

- Place the control switch for the charger being removed from service to OFF.
- Verify green AC POWER TO CHARGER OFF light – LIT for the charger being removed from service.

CT: Operator (simulates) places 1-BC-B control switch in OFF.

CUE: "The GREEN lamp is LIT on the Train B charger control box."

4.1.10 Verify red AC POWER TO CHARGER ON light – LIT for the charger being placed in service.

CUE: "The RED lamp is LIT on the Train A charger control box."

4.2 Removing a Battery Charger from Service:

4.2.1 Verify control switch for selected charger in OFF position:

- N Train Battery Train A Charger 1-BC-A Control Switch

**JPM IS COMPLETE**

## Task Briefing

Unit 1 is in Mode 3 following a reactor trip with a safety injection.

The Unit Supervisor gives you a working copy of the annunciator response procedure for annunciator panel 115 drop 57 (N-Train Battery Charger De-Energized).

You are to review the subsequent actions of this annunciator response procedure and restore a N-Train battery charger to service.

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

N02-12

**TITLE**  
**PROGRAM**

Establish ESW Cooling to CR Air Handling Units  
NRC License Exam

**REVISION**  
**TIME**

0  
13 Minutes

**DEVELOPING  
INSTRUCTOR:**

Name: S. Pettinger

Signature:

*S. Pettinger*

**DATE:**

10/23/02

**OPERATIONS  
REVIEW:**

Name: T. Werk

Signature:

*T. Werk*

10/23/02

**COURSE NUMBER  
AND TITLE:**

**N02-12 Establish ESW Cooling to CR Air  
Handling Units**

**REVISION: 0**

**References**

02-OHP-4023-ECA-0.0, Loss of All AC Power

02-OHP-4021-028-014 Attachment 6, Initiating or restoring from ESW Cooling to Air Handling units

Task: 0280250104: Align ESW to Control Room AC Air Handling Units

K/A CROSS REFERENCE: 076 A4.04

K/A IMPORTANCE: RO 3.5\* SRO 3.5

**Evaluation Setting**

In-plant, Unit 2 CR Ventilation Equipment Room, above 633' elevation

**Handouts**

Task Briefing for N02-12

Copy of 02-OHP-4021-028-014, Attachment 6

**Attachments**

None

**Simulator Setup**

N/A

**COURSE NUMBER  
AND TITLE:**

**N02-12 Establish ESW Cooling to CR Air  
Handling Units**

**REVISION: 0**

**Task Objectives/Standards**

Align ESW cooling to Unit 2 Control Room AC Air Handling Units per 02-OHP-4021-028-014, Observing all applicable precautions and limitations and procedural steps.

**Task Briefing**

A failure of both Unit 2 Control Room Chiller Packages has occurred.

The Control Room operator has directed you to establish ESW Cooling to the Unit 2 North Control Room AC Air Handling Unit using 02-OHP-4021-028-014 Attachment 6.

All procedure Precautions and Limitations have been met.

REFERENCE	02-OHP-4021-028-014	Rev. 14	Page 24 of 68
Operation of the Control Room Air Conditioning and Pressurization/Cleanup Filter Systems			
Attachment 6	Initiating Or Restoring From ESW Cooling To Air Handling Units Following A Failure Of Both Chiller Packages		Pages: 23 - 29

**4 DETAILS**

INIT

**NOTE:** Due to Chemistry concerns ESW may be lined up to only one Chiller package at the direction of the Unit Supervisor. N/A any steps for the Chiller unit which is not lined up to ESW.

4.1 To initiate ESW to Chiller package perform the following:

4.1.1 Stop chilled water pumps:

- 2-PP-82N, North Chilled Water Pump
- 2-PP-82S, South Chilled Water Pump

4.1.2 Place chiller control switches in - OFF:

- 2-HV-ACR-1, North Chiller
- 2-HV-ACR-2, South Chiller

4.1.3 Place first and second stage AHU heater control switches in - OFF:

- 2-101-ACRH11, North Cont Room AHU Elect HTR Heating Element #1 2-HV-ACR-H1-1
- 2-101-ACRH12, North Cont Room AHU Elect HTR Heating Element #2 2-HV-ACR-H1-2
- 2-101-ACRH21, South Cont Room AHU Elect HTR Heating Element #1 2-HV-ACR-H2-1
- 2-101-ACRH22, South Cont Room AHU Elect HTR Heating Element #2 2-HV-ACR-H2-2

General CUES:

This JPM is simulated ONLY, no operation of plant equipment is permitted.

CUE: If asked, ESW Supply temperature is 50 °F

CUE: ESW should be lined up to North Chiller package only

← CT: Operator simulates placing North CW pump in STOP

← Step is "N/A"

← CT: Operator simulates placing North Chiller in OFF

← Step is "N/A"

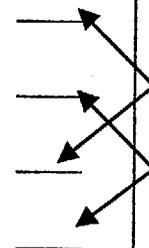
↗ CT: Operator simulates placing Electric Heating elements in OFF

↗ Steps are "N/A"

REFERENCE	02-OHP-4021-028-014	Rev. 14	Page 25 of 68
Operation of the Control Room Air Conditioning and Pressurization/Cleanup Filter Systems			
Attachment 6	Initiating Or Restoring From ESW Cooling To Air Handling Units Following A Failure Of Both Chiller Packages		Pages: 23 - 29

4.1.4 Close the following chill water valves:

- 2-DW-166N, CRAC North Chill Water Circ Pump Discharge Valve
- 2-DW-166S, CRAC South Chill Water Circ Pump Discharge Valve
- 2-DW-163N, CRAC Chill Water To North Liquid Chiller Inlet Isolation Valve
- 2-DW-163S, CRAC Chill Water To South Liquid Chiller Inlet Isolation Valve



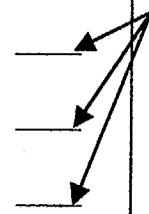
CT: Operator simulates closing North Chiller valves

Step is N/A

4.1.5 Open the following ESW supply valves:

North CRAC AHU

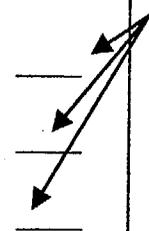
- 2-ESW-168N, Emergency ESW Supply To North CRAC AHU 2-HV-ACRA-1 Shutoff Valve
- 2-ESW-171N, Emergency ESW Return From North CRAC AHU 2-HV-ACRA-1 Shutoff Valve
- 2-ESW-296, Emergency ESW Supply To North CRAC AHU 2-HV-ACRA-1 Shutoff Valve



CT: Operator simulates opening North CRAC AHU ESW valves

South CRAC AHU

- 2-ESW-168S, Emergency ESW Supply To South CRAC AHU 2-HV-ACRA-2 Shutoff Valve
- 2-ESW-171S, Emergency ESW Return From South CRAC AHU 2-HV-ACRA-2 Shutoff Valve
- 2-ESW-298, Emergency ESW Supply To South CRAC AHU 2-HV-ACRA-2 Shutoff Valve



Step is N/A

REFERENCE	02-OHP-4021-028-014	Rev. 14	Page 26 of 68
Operation of the Control Room Air Conditioning and Pressurization/Cleanup Filter Systems			
Attachment 6	Initiating Or Restoring From ESW Cooling To Air Handling Units Following A Failure Of Both Chiller Packages		Pages: 23 - 29

4.1.6 IF control air is not available or the regulating valves and circuitry are not functioning properly, THEN close the following valve(s) to isolate control air to chill water control valves and ensure bypass flow is isolated:

- 2-CA-3134, 50 PSI Control Air To CRAC Chilled Water Reg Valve 2-VRV-315 Shutoff Valve (North CRAC Unit) \_\_\_\_\_
- 2-CA-3129, 50 PSI Control Air To CRAC Chilled Water Control Valve 2-VRV-325 Shutoff Valve (South CRAC Unit) \_\_\_\_\_

4.1.7 Place desired CRAC control switch in - RUN:

- 2-HV-ACRA-1, North Ctrl Room Air Hdlg Unit \_\_\_\_\_
- 2-HV-ACRA-2, South Ctrl Room Air Hdlg Unit \_\_\_\_\_

**NOTE:** Due to Chemistry concerns ESW should have been lined up to only one Chiller package at the direction of the Unit Supervisor. N/A any steps for the Chiller unit which was not lined up to ESW.

4.2 To restore chill water to the Air Handling Units perform the following:

4.2.1 Verify open the following valve(s) to restore control air to chill water control valves to ensure bypass flow is restored:

- 2-CA-3134, 50 PSI Control Air To CRAC Chilled Water Reg Valve 2-VRV-315 Shutoff Valve (North CRAC Unit) \_\_\_\_\_
- 2-CA-3129, 50 PSI Control Air To CRAC Chilled Water Control Valve 2-VRV-325 Shutoff Valve (South CRAC Unit) \_\_\_\_\_

← CUE: Control Air is available

← Operator determines step is N/A

← CT: Operator notifies Unit 2 CR to start 2-HV-ACRA-1.

← Step is N/A

CUE: Unit 2 reports that 2-HV-ACRA-1 is running.

Operator reports task is complete

CUE: JPM IS COMPLETE

## TASK BRIEFING

A failure of both Unit 2 Control Room Chiller Packages has occurred.

The Control Room operator has directed you to establish ESW Cooling to the Unit 2 North Control Room AC Air Handling Unit using 02-OHP-4021-028-014 Attachment 6.

All procedure Precautions and Limitations have been met.

# Alternate Path JPM

N02-13

**TITLE** Perform Local DG Trip and Isolation  
**PROGRAM** NRC License Exam

**REVISION** 0  
**TIME** 17 Minutes

**DEVELOPING  
INSTRUCTOR:**

Name: S. Pettinger

Signature:



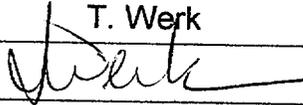
**DATE:**

10/23/02

**OPERATIONS  
REVIEW:**

Name: T. Werk

Signature:



10/23/02

**COURSE NUMBER  
AND TITLE:**

**N02-13 Perform Local Diesel Generator Trip and  
Isolation**

**REVISION: 0**

**References**

02-OHP-4025-LTI-3, Local Diesel Generator Isolation

Task: 0320250604 Locally trip the Emergency Diesel Generator

K/A CROSS REFERENCE: APE 068 AA1.31

K/A IMPORTANCE: RO 3.9 SRO 4.0

**Evaluation Setting**

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

**Handouts**

Task Briefing for N02-13

Copy of 02-OHP-4025-LTI-3, Local Diesel Generator Trip and Isolation

Picture of the inside of a 4KV Breaker Control Power (Top) Cubicle

**Attachments**

None

**Simulator Setup**

None

<b>COURSE NUMBER AND TITLE:</b>	<b>N02-13 Perform Local Diesel Generator Trip and Isolation</b>	<b>REVISION: 0</b>
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**Task Objectives/Standards**

Perform a local trip and isolation on Unit 2 CD Diesel Generator per 02-OHP-4025-LTI-3, observing applicable precautions and limitations and procedural steps.

**Task Briefing**

After a fire event on Unit 2, 2CD Diesel Generator started but failed to load.

The US directs you to locally trip and isolate the 2CD Diesel Generator per 02-OHP-4025-LTI-3-2 (page 5).

You are to simulate your actions on plant equipment and observe industrial safety requirements.

**GENERAL CUES:**

2CD Diesel Generator started but failed to load after a fire event on Unit 2.

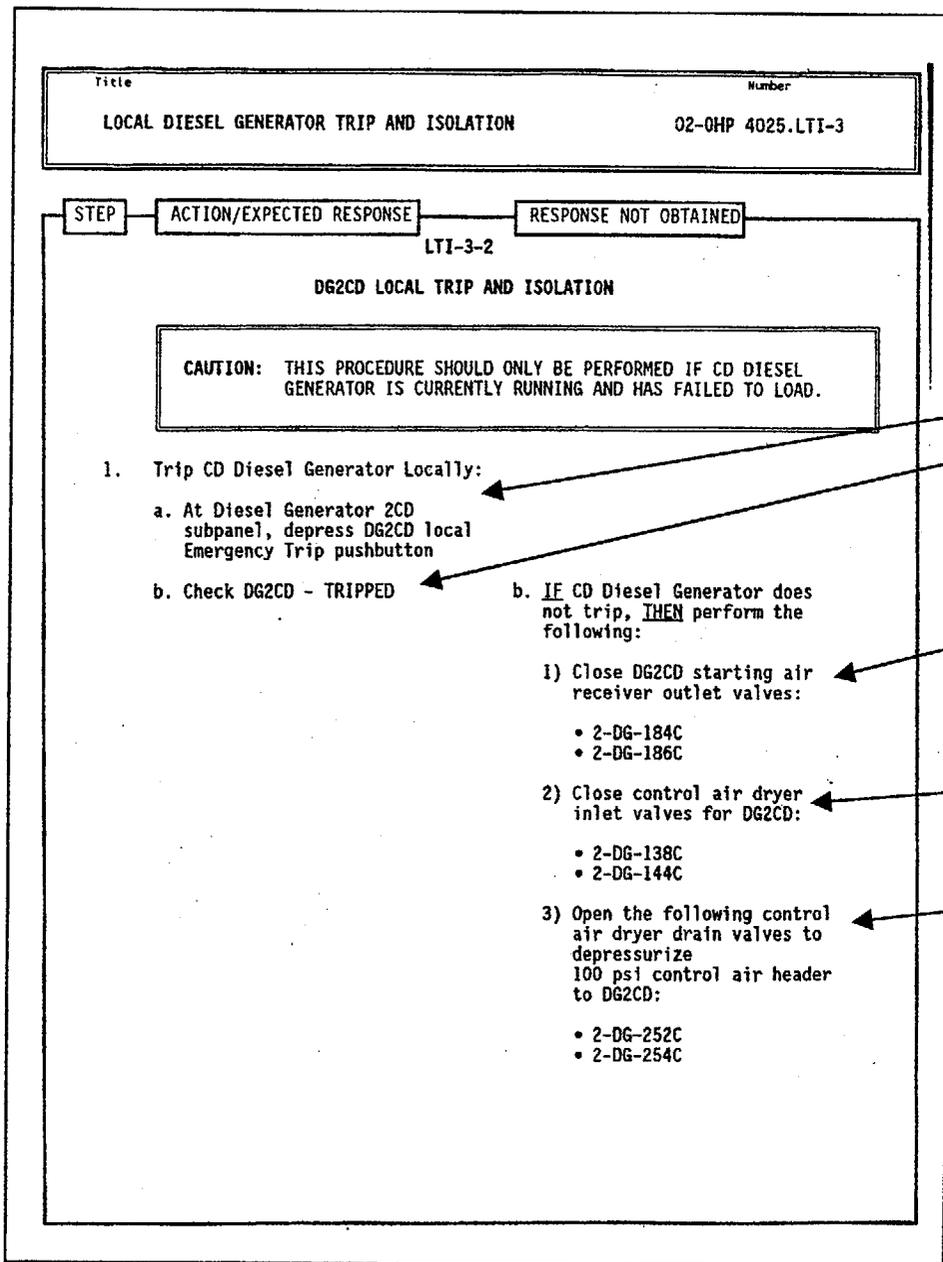
**CT:** Operator (simulates) depressing local EMERGENCY TRIP  
**CUE:** CD EDG is still Operating

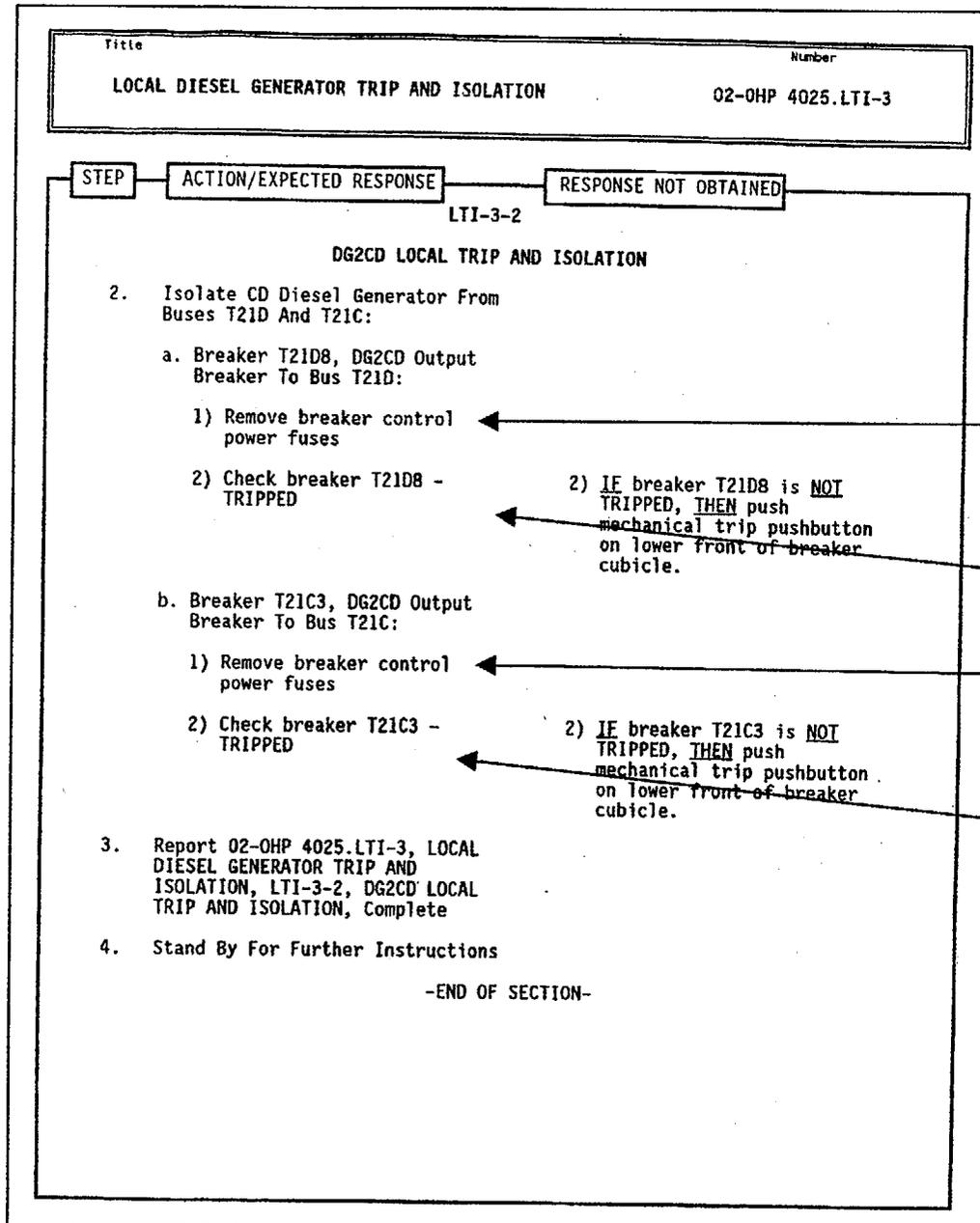
**CT:** Operator (Simulates) closing 2-DG-184C & 2-DG-186C  
**CUE :** Handwheel has stopped turning.

**CT:** Operator (Simulates) closing 2-DG-138C & 2-DG-144C  
**CUE :** Handwheel has stopped turning.

**CT:** Operator (Simulates) opening 2-DG-252C & 2-DG-254C  
**CUE :** Handwheel has stopped turning. Air is blowing from the drain valves and air receiver pressure is lowering to 0 psig.

**CUE:** 2 CD EDG has stopped running.





NOTE: Operator leaves the 2CD DG room and proceeds to the 4KV Switchgear Room (609' TB)

NOTE: Operator (simulates) dons Full Flash Equipment

**EVALUATOR NOTE: Use attached picture (Inside of a 4KV Breaker Control Power (Top) Cubicle) to evaluate operator's ability to locate control power fuses.**

CT: Operator locates T21D8 breaker and (simulates) removes control power fuses  
CUE: Green lights OFF on front of breaker panel.

CT: Operator verifies breaker T21D8 tripped  
CUE: Breaker T21D8 green OPEN flag is showing.

CT: Operator locates T21C3 breaker and (simulates) removes control power fuses  
CUE: Green lights OFF on front of breaker panel.

CT: Operator verifies breaker T21C3 tripped  
CUE: Breaker T21C3 green OPEN flag is showing.

Reports task completed.

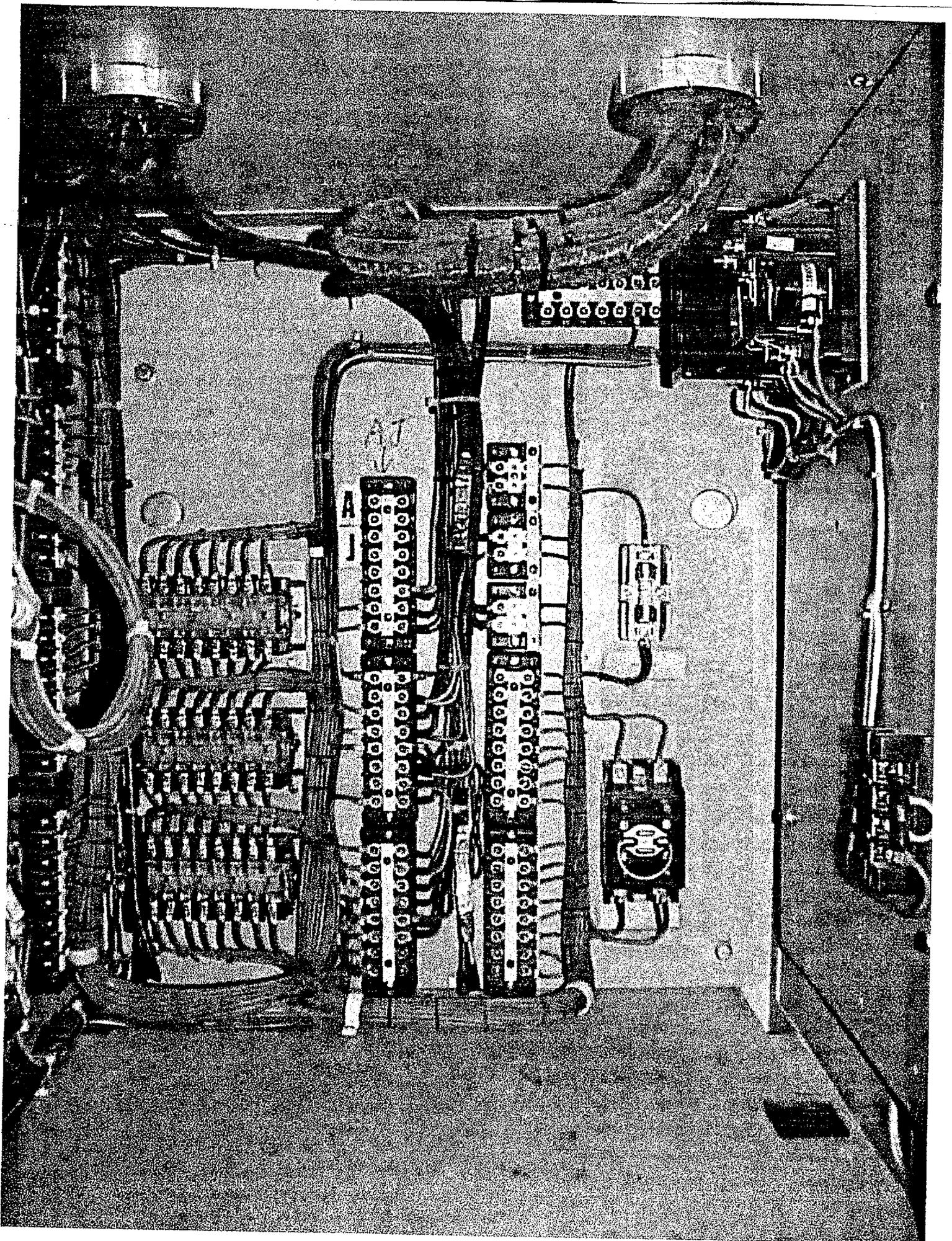
**JPM IS COMPLETE.**

## **Task Briefing**

After a fire event on Unit 2, 2CD Diesel Generator started but failed to load.

The US directs you to locally trip and isolated the 2CD Diesel Generator per 02-OHP-4025-LTI-3-2 (page 5).

You are to simulate your actions on plant equipment and observe industrial safety requirements.



# Alternate Path JPM

N02-14

TITLE	Modify, Relatch and Locally Start TDAFP
PROGRAM	NRC License Exam

REVISION	0
TIME	20 Minutes

DEVELOPING INSTRUCTOR:
---------------------------

Name: S. Pettinger

Signature:



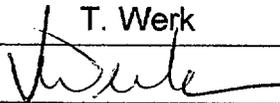
DATE:
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10/23/02

OPERATIONS REVIEW:
-----------------------

Name: T. Werk

Signature:



10/23/02

<b>COURSE NUMBER AND TITLE:</b>	<b>N02-14 Modify, Relatch and Locally Start TDAFP</b>	<b>REVISION: 0</b>
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**REFERENCES**

01-OHP 4025.LS-2, Start-up AFW  
01-OHP 4025.001.001, Emergency Remote Shutdown

Task: APR0060612 Startup AFW using Local Controls

K/A CROSS REFERENCE: APE 068 AA1.02  
K/A IMPORTANCE: RO 4.3 SRO 4.5

**EVALUATION SETTING**

- In-Plant Simulate (Sequenced)
- 1. 633' Unit 1 AB
  - 2. 587' Unit 1 AB
  - 3. 591' Unit 1 TB TDAFP Room

**HANDOUTS**

Task Briefing for N02-14  
Copy of O1-OHP 4025.LS-2, Start-up AFW

**ATTACHMENTS**

None

**SIMULATOR SETUP**

None

**COURSE NUMBER  
AND TITLE:**

**N02-14 Modify, Relatch and Locally Start TDAFP**

**REVISION: 0**

**TASK OBJECTIVES/STANDARDS**

Unit 1 TDAFW running after being relatched and started locally per 01-OHP-4025-LS-2, observing applicable precautions and limitations and procedural steps.

**TASK BRIEFING**

The Unit 1 Control Room has been evacuated due to heavy smoke from a fire in the control board panels. Neither Motor Driven AFW pump was capable of being started. You are a member of the Emergency Remote Shutdown (ERS) Team assembled in the Unit 2 Control Room.

You have been directed to relatch and start the TDAFP locally in accordance with 01-OHP 4025.LS-2-3, Relatch TDAFP, and LS-2-4, Start TDAFP.

Title	Number
START-UP AFW	01-OHP 4025.LS-2

**LS-2 INDEX  
INDEX FOR PROCEDURE LS-2**

**PAGE #**

**LS-2-3 RELATCH TDAFP**

6

**PURPOSE:**

Manually resets TDAFP for restarting in the event normal remote control fails, and de-energizes the TDAFP turbine steam supply isolation valves to prevent spurious closure.

**REQUIREMENTS:**

Operators	1
Special Tools and Equipment	Fuse Pullers, Jumper, Diagonal Pliers, Flat-Tip Screwdriver
Security Keys	AFW PP Room, N Train Battery Room, A-37 Key - For Appendix R Toolbox, A-2 Key - For Safety Equipment Locker
Protective Clothing	Full Flash Equipment
Est. Time to Completion	15 min.

**LS-2-4 START TDAFP**

9

**PURPOSE:**

Manually starts TDAFP in the event normal remote control fails.

**REQUIREMENTS:**

Operators	1
Special Tools and Equipment	NONE
Security Keys	AFW PP Room
Protective Clothing	NONE
Est. Time to Completion	5 min.

General CUES:

Operator reviews purpose and equipment requirements for performing LS.2-3 and LS.2-4

**Evaluator Note: Equipment lockers are located in various areas throughout the plant.**

Operator obtains tools, keys, and protective clothing as specified  
NOTE: The evaluator may ensure the operator knows what protective equipment is required and where it is located in-lieu of actually obtaining the protective equipment.

Title <b>START-UP AFW</b>		Number <b>01-OHP 4025.LS-2</b>
<b>STEP</b>	<b>ACTION/EXPECTED RESPONSE</b>	<b>RESPONSE NOT OBTAINED</b>

**LS-2-3**

**RELATCH TDAFP**

1. Verify Valves - OPEN
  - a. 1-MCM-221, #12 SG Supply To TDAFP
  - b. 1-MCM-231, #13 SG Supply To TDAFP

**NOTE:**

- Tools required to complete this procedure are stored in the Appendix R toolbox located in the Turbine Building on 591' elevation, in the hallway outside of the E MDAFP and TDAFP Rooms.
- The following steps will be performed in Unit 1 auxiliary building on 633' elevation.

2. Open Circuit Breakers:
  - a. 1-DCN, Ckt #6, TDAFP Control Bus Feeder
  - b. 1-AM-A-1B, 1-MCM-221 (#12 SG Supply To TDAFP)
  - c. 1-AM-D-R6C, 1-MCM-231 (#13 SG Supply To TDAFP)

**NOTE:** The following step will be performed in Unit 1 auxiliary building on 587' elevation.

3. Remove Control Power Fuses From 1-AB-N-3B, TDAFP Trip And Throttle Valve Control Circuit (1-QT-506)

**Evaluator Note:** Steps 2, 3, and 6 are performed in the Auxiliary Building.

Operator verifies Valves open  
CUE: The US reports 1-MCM-221 and 231 are open at the Hot Shutdown Panel (HSD).

Operator reviews notes prior to step 2

Cue: Initially breakers are in ON position (Evaluator may elect to locate panel at a different time to avoid multiple trips into the Aux Building)

CT: Operator locates Panel 1-DCN and (simulates) places breaker Ckt. 6 in OFF position

CT: Operator locates MCC 1-AM-A and (simulates) places breaker 1-AM-A-1B in OFF position

CT: Operator locates MCC 1-AM-D and (simulates) places breaker 1-AM-D-R6C in OFF position

Cue: Breakers are in OFF position

CT: Operator locates panel VCC-1-AB-N cubicle 1-QT-506, simulates opening cubicle door and describes process of pulling fuses for 2-AB-N-3B

Cue: Door is open and fuses pulled

Title <b>START-UP AFW</b>		Number <b>01-OHP 4025.LS-2</b>
STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED

**LS-2-3**

**RELATCH TDAFP**

**NOTE:** The following steps will be performed in the turbine building on 591' elevation, in the Unit 1 turbine driven auxiliary feedwater pump room.

4. Lift Wires Inside Turbine Driven Auxiliary Feedwater Pump Subpanel 1-TFP:

a. Terminal Block TCE:

TERMINAL BLOCK POINT	CABLE #
TD+	9000BR-1
TD-	9000BR-1
TDTV-3	9000BR-1
TDTV-4	9000BR-1
TDTV-5	9000BR-1
TDTV-6	9000BR-1

b. Terminal Block TCF:

TERMINAL BLOCK POINT	CABLE #
14A	9001BR-1
15	9001BR-1

**Evaluator Note:** Emergency modification equipment box is located in the AFW pump area.

**CT:** Operator locates Subpanel 1-TFP and identifies that this action is to be performed inside the subpanel.

**Cue:** The wires have been lifted on Terminal Block TCE and Terminal Block TCF

Title		Number
START-UP AFW		01-OHP 4025.LS-2
STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
LS-2-3 RELATCH TDAFP		
5.	Establish Local TDAFP Speed Indication By Installing Jumper Between Points 14A and 15 On Terminal Block TCF	
NOTE: The following step will be performed in Unit 1 auxiliary building on 633' elevation.		
6.	Close 1-DCN, Ckt #6, Turbine Driven Auxiliary Feedwater Pump Control Bus Feeder	
NOTE: The following step will be performed in turbine building on 591' elevation, in the Unit 1 turbine driven auxiliary feedwater pump room.		
7.	Check 1-QT-506, Turbine Driven Auxiliary Feedwater Pump Trip And Throttle Valve - LATCHED	IF TDAFP TTV is UNLATCHED, THEN perform the following:
	a. Engage handwheel clutch.	
	b. Rotate handwheel CLOCKWISE until latching lever is in the RESET position.	
	c. IF latching mechanism will NOT engage, THEN reset Mechanical Overspeed Trip Device per Operator Aid 1-0A-MSTM-2-2 posted at TDAFP TTV.	
8.	Report 01-OHP 4025.LS-2, START-UP AFW, LS-2-3, RELATCH TDAFP Complete	
-END OF SECTION-		

Operator identifies that this action is to be performed inside subpanel 1-TFP.

Cue: A Jumper has been placed between points 14A and 15 on Terminal Block TCF

CT: Operator Returns to panel 1-DCN and (simulates) closes circuit 6 (NOTE: Evaluator may ask location of panel 1-DCN in-lieu of returning to the panel or locate the panel at a different time - same breaker as in step 2.a.)

Cue: Circuit 6 is in ON position

CT: Operator checks TTV latched

Cue: Latching mechanism is not engaged

CT: Operator (simulates) performs RNO: TTV Clutch pushed in downward direction to engage handwheel

Cue: Clutch lever lowers and will not move any further

CT: Operator (simulates) turns TTV handwheel clockwise until latching lever raises to RESET position

Cue: Latching mechanism is engaged in the reset position

Operator reports TDAFP is latched.

Cue: "I understand that the TDAFP is latched, start the TDAFP in accordance with LS-2-4."

Title		Number
START-UP AFW		01-OHP 4025.LS-2
STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
<b>LS-2-4</b>		
<b>START TDAFP</b>		
1.	Verify 01-OHP 4025.LS-2, START-UP AFW, LS-2-3, RELATCH TDAFP – COMPLETE	
<p><b>NOTE:</b> The following steps will be performed in turbine building on 591' elevation, in the Unit 1 turbine driven auxiliary feedwater pump room.</p>		
2.	Start Turbine Driven Auxiliary Feedwater Pump:	
	a. SLOWLY open 1-QT-506, TDAFP TTV, by rotating handwheel COUNTER-CLOCKWISE	
	b. WHEN TDAFP speed becomes controlled by governor, THEN fully open 1-QT-506, TDAFP TTV	
3.	Check Proper TDAFP Operation:	
	<ul style="list-style-type: none"> <li>• Unusual noise</li> <li>• Oil leakage</li> <li>• Vibration</li> </ul>	
4.	Report 01-OHP 4025.LS-2, START-UP AFW, LS-2-4, START TDAFP Complete	
-END OF SECTION-		

Operator acknowledges that LS-2-3 is complete

CT: Operator (simulates) slowly turns TTV handwheel counterclockwise until speed indications stops rising then fully opens TTV

Cue: Provide rising speed indications until turbine speed is at 4110 rpm and then stops rising. After speed stabilizes, operator continues to turn TTV handwheel in CCW direction

Operator Checks for proper operation

Cue: No unusual noise, no excessive vibrations, and no oil leaks

Reports task complete

**JPM IS COMPLETE**

## **Task Briefing**

The Unit 1 Control Room has been evacuated due to heavy smoke from a fire in the control board panels. Neither Motor Driven AFW pump was capable of being started. You are a member of the Emergency Remote Shutdown (ERS) Team assembled in the Unit 2 Control Room.

You have been directed to relatch and start the TDAFP locally in accordance with 01-OHP 4025.LS-2-3, Relatch TDAFP, and LS-2-4, Start TDAFP.

N02-15

TITLE  
PROGRAM

Local Control of RHR Valve for RCS Cooldown  
NRC License Exam

REVISION  
TIME

0  
12 Minutes

DEVELOPING  
INSTRUCTOR:

Name: S. Pettinger  
Signature: *S. Pettinger*

DATE:

10/23/02

OPERATIONS  
REVIEW:

Name: T. Werk  
Signature: *T. Werk*

10/23/02

<b>COURSE NUMBER AND TITLE:</b>	<b>N02-15 Local Control of RHR Valve for RCS Cooldown</b>	<b>REVISION: 0</b>
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References

01-OHP-4025-LS-7, RCS Cooldown using RHR

Task: APR0010604 Local Control of RHR and CVCS air operated regulating valves

K/A CROSS REFERENCE: 005 A2.04  
K/A IMPORTANCE: RO 2.9 SRO 2.9

Evaluation Settings

In Plant Simulation Unit 1 609' elevation of Aux Building

Handouts

Task Briefing for N02-15 .  
Copy of 01-OHP-4025-LS-7, RCS Cooldown using RHR, pages 25 and 26

Attachments

None

Simulator Setup

None

<b>COURSE NUMBER AND TITLE:</b>	<b>N02-15 Local Control of RHR Valve for RCS Cooldown</b>	<b>REVISION: 0</b>
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**Task Objectives/Standards**

Establish local control of RHR valves during RCS cooldown per 01-OHP-4025-LS-7, observing applicable precautions and limitations and procedural steps.

**Task Briefing**

Unit 1 is in Mode 4 with a cooldown to cold shutdown in progress using the west train of RHR. A fire has impacted the operation of the West RHR HX Outlet Flow Control valve, 1-IRV-320. Control Air is available.

The procedure for RCS cooldown using the West RHR Train (01-OHP-4024-LS-7-2) has been implemented and at step 4, the remote operation of 1-IRV-320 is unavailable.

The US directs you to perform the step 4 RNO actions of 01-OHP-4025-LS-7-2 and verify proper operation of 1-IRV-320.

There no hazardous conditions in route or at the local control stations and no tools are required to complete your task.

<small>Title</small> RCS COOLDOWN USING RHR	<small>Number</small> 01-OHP 4025.LS-7
--	---

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
LS-7-2		
RCS COOLDOWN USING WEST RHR TRAIN		
4.	<p>Check Remote Control Operation Of RHR Valves:</p> <ul style="list-style-type: none"> <li>• 1-IRV-320, 1W RHR Hx Outlet Flow Control Valve</li> <li>• 1-IRV-311, RHR Hx Bypass Flow Control Valve</li> </ul>	<p>IF remote control operation is unavailable THEN modify valve(s) for local operation by performing the following:</p> <ol style="list-style-type: none"> <li>a. Go to appropriate local control station:                             <ul style="list-style-type: none"> <li>• Located Aux Bldg, 609' elevation, outside of U-1 RHR Hx Rooms</li> </ul> </li> <li>b. Locate flex hose and emergency control air connection for the affected valve:                             <ul style="list-style-type: none"> <li>• Verify valve number on flex hose matches number on emergency air connection.</li> </ul> </li> <li>c. Close normal control air supply valve to electro-pneumatic transducer (EPT).</li> <li>d. Disconnect flex hose from normal control air connection.</li> <li>e. Connect flex hose to emergency control air connection.</li> <li>f. Open emergency control air supply valve.</li> </ol>
This Step continued on the next page.		

General CUES:

Remote operation of 1-IRV-320 is unavailable

Operator performs actions of RNO

Operator goes to Hallway by U-1 RHR HX rooms

Operator locates hose for 1-IRV-320, verifies number match

CT: Operator (simulates) closes air supply to EPT for 1-IRV-320

CT: Operator (simulates) disconnects air hose for 1-IRV-320  
**(quick disconnect)**

CT: Operator (simulates) connects emergency hose to emergency control air supply for 1-IRV-320  
**(quick disconnect)**

CT: Operator (simulates) opens emergency control air supply for 1-IRV-320

COURSE NUMBER  
AND TITLE:

N02-15 Local Control of RHR Valve for RCS Cooldown

REVISION: 0

Title

Number

RCS COOLDOWN USING RHR

01-OHP 4025.LS-7

STEP

ACTION/EXPECTED RESPONSE

RESPONSE NOT OBTAINED

LS-7-2

RCS COOLDOWN USING WEST RHR TRAIN

g. Adjust pressure regulator and check regulator output gauge to verify proper valve operation:

- FULL OPEN - 3 psig
- FULL CLOSED - 15 psig

IF 1-IRV-320 OR 1-IRV-311 will NOT respond to local control station operation, THEN FAIL OPEN the applicable valve(s) by performing the following:

- 1) Verify closed the normal control air supply valve to electro-pneumatic transducer (EPT).
- 2) Close emergency control air supply valve.
- 3) Disconnect flex hose from emergency control air connection.
- 4) Connect flex hose to normal control air connection.
- 5) Visually verify applicable valve(s) open:
  - 1-IRV-320 - Located in 1W RHR Hx Room
  - 1-IRV-311 - Located in 1E RHR Hx Room

This Step continued on the next page.

CT: Operator (simulates) adjusts pressure regulator for 1-IRV-320 to verify valve opens and closes

CUE: Another operator stationed at valve reports:  
1-IRV-320 is open at 3 psig  
1-IRV-320 is closed at 15 psig.

Reports task is complete

**JPM IS COMPLETE**

## TASK BRIEFING

Unit 1 is in Mode 4 with a cooldown to cold shutdown in progress using the west train of RHR. A fire has impacted the operation of the West RHR HX Outlet Flow Control valve, 1-IRV-320. Control Air is available.

The procedure for RCS cooldown using the West RHR Train (01-OHP-4024-LS-7-2) has been implemented and at step 4, the remote operation of 1-IRV-320 is unavailable.

The US directs you to perform the step 4 RNO actions of 01-OHP-4025-LS-7-2 and verify proper operation of 1-IRV-320.

There no hazardous conditions in route or at the local control stations and no tools are required to complete your task.