NRC2007-SIM06

TITLE	**Switching CCW Pumps**	**REVISION**	**0**
PROGRAM	**Initial Licensed Operator (ILT)**	**TIME**	**20 Minutes**

SCOPE OF REVISION:

Initial Issue: Derived from Audit06-Sim04

			DATE:
AUTHOR	**Name:**	John T Conrad	
	Signature:		
FACILITY REVIEWER	**Name:**		
	Signature:		
		Facility Supervisor / Manager	

COURSE NUMBER AND TITLE:	NRC2007-Sim06 Switching CCW Pumps	REVISION: 0

REFERENCES

02-OHP-4021-016-003 Rev. 15, 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

Task Briefing
Copy of 02-OHP-4021-016-003 Attachment 2

ATTACHMENTS

None

SIMULATOR SETUP

Initialize any IC with CCW in normal operation aligned as follows:

- East CCW Pump – In Service
- West CCW Pump – In Standby)

Verify prerequisites of controlling procedure are met

COURSE NUMBER AND TITLE:	NRC2007-Sim06 Switching CCW Pumps	REVISION: 0

TASK OBJECTIVES/STANDARDS

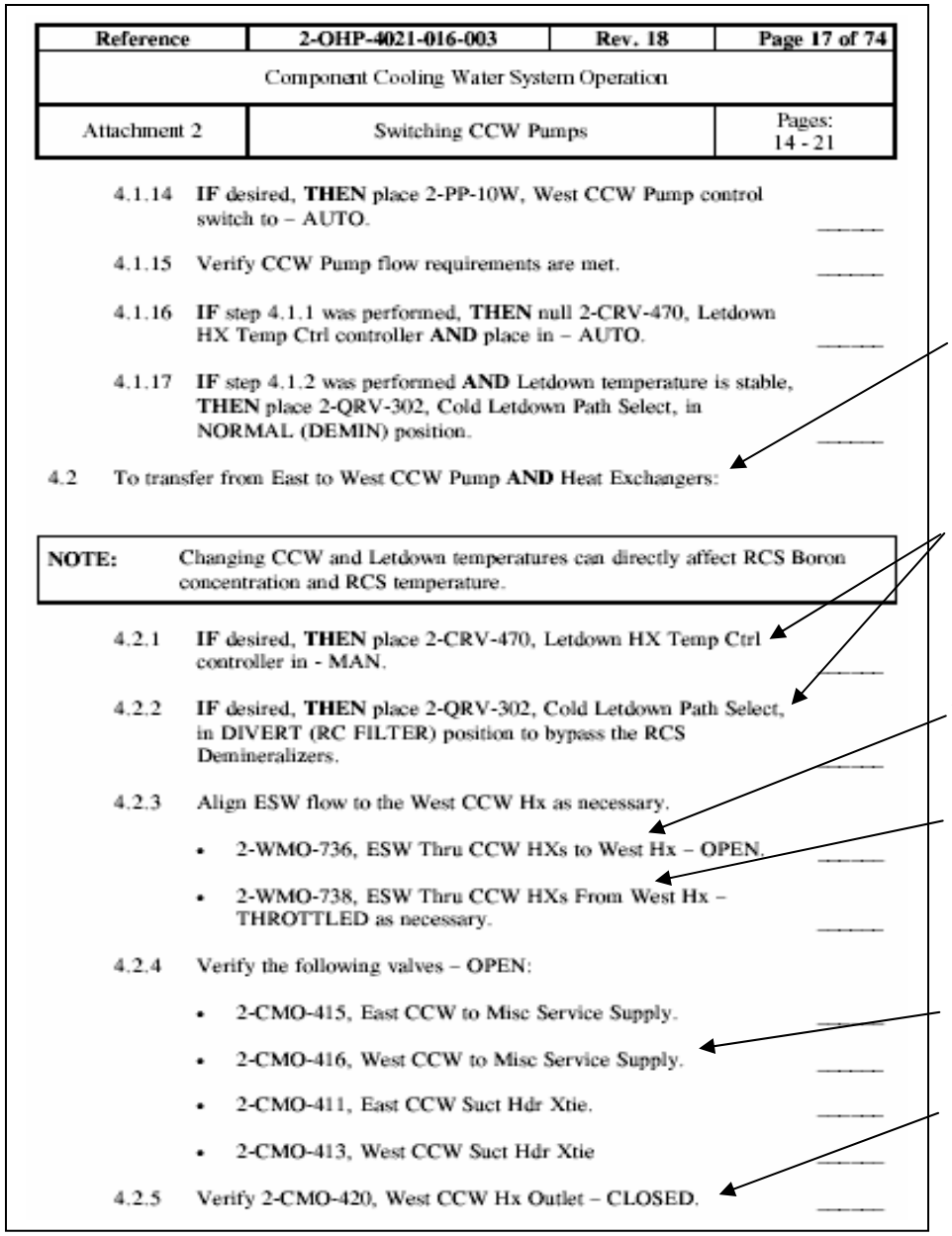
Performs switching of the CCW pumps, observing all applicable precautions and limitations and procedure steps.

TASK BRIEFING

You are an Extra Operator

The US directs you to switch the running CCW pumps per 02-OHP-4021-016-003, Operation of the CCW System Startup and Power Operation.

COURSE NUMBER AND TITLE:	NRC2007-Sim06 Switching CCW Pumps	REVISION: 0



Reference	2-OHP-4021-016-003	Rev. 18	Page 17 of 74
Component Cooling Water System Operation			
Attachment 2	Switching CCW Pumps		Pages: 14 - 21

4.1.14 **IF** desired, **THEN** place 2-PP-10W, West CCW Pump control switch to – AUTO. _____

4.1.15 Verify CCW Pump flow requirements are met. _____

4.1.16 **IF** step 4.1.1 was performed, **THEN** null 2-CRV-470, Letdown HX Temp Ctrl controller **AND** place in – AUTO. _____

4.1.17 **IF** step 4.1.2 was performed **AND** Letdown temperature is stable, **THEN** place 2-QRV-302, Cold Letdown Path Select, in NORMAL (DEMIN) position. _____

4.2 To transfer from East to West CCW Pump **AND** Heat Exchangers:

NOTE: Changing CCW and Letdown temperatures can directly affect RCS Boron concentration and RCS temperature.

4.2.1 **IF** desired, **THEN** place 2-CRV-470, Letdown HX Temp Ctrl controller in - MAN. _____

4.2.2 **IF** desired, **THEN** place 2-QRV-302, Cold Letdown Path Select, in DIVERT (RC FILTER) position to bypass the RCS Demineralizers. _____

4.2.3 Align ESW flow to the West CCW Hx as necessary.

- 2-WMO-736, ESW Thru CCW HXs to West Hx – OPEN. _____
- 2-WMO-738, ESW Thru CCW HXs From West Hx – THROTTLED as necessary. _____

4.2.4 Verify the following valves – OPEN:

- 2-CMO-415, East CCW to Misc Service Supply. _____
- 2-CMO-416, West CCW to Misc Service Supply. _____
- 2-CMO-411, East CCW Suct Hdr Xtie. _____
- 2-CMO-413, West CCW Suct Hdr Xtie _____

4.2.5 Verify 2-CMO-420, West CCW Hx Outlet – CLOSED. _____

General CUES:

1. Provide an annotated copy of 02-OHP-4021-016-003

2. Inform candidate the West CCW pump is operable

Operator determines this is the correct step to begin

CUE: Unit Supervisor determines that steps 4.2.1, and 4.2.2are not required.

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).

Operator verifies each valve is OPEN in any order

Operator verifies valve is CLOSED

Reference	2-OHP-4021-016-003	Rev. 18	Page 18 of 74
Component Cooling Water System Operation			
Attachment 2	Switching CCW Pumps		Pages: 14 - 21

4.2.6 Start 2-PP-10W, West CCW Pump. _____

4.2.7 Open 2-CMO-420, West CCW Hx Outlet. _____

4.2.8 Verify proper operation of 2-PP-10W, West CCW Pump. _____

4.2.9 **IF** the West CCW Pump is **OPERABLE OR** in Mode 5, 6, or Defueled, **THEN** verify at least one of the following valves – CLOSED: [Ref. 6.2.2e]

- 2-CMO-412, East CCW Disch Hdr Xtie. _____

-OR-

- 2-CMO-414, West CCW Disch Hdr Xtie. _____

4.2.10 **IF** the West CCW Pump is Inoperable **AND** in Mode 1-4, **THEN** verify the following valves – **OPEN**:

- 2-CMO-412, East CCW Disch Hdr Xtie. _____
- 2-CMO-414, West CCW Disch Hdr Xtie. _____

4.2.11 Close 2-CMO-410, East CCW Hx Outlet _____

4.2.12 Stop 2-PP-10E, East CCW Pump. _____

4.2.13 Verify the following valves - **OPEN**:

- 2-CMO-412, East CCW Disch Hdr Xtie. _____
- 2-CMO-414, West CCW Disch Hdr Xtie. _____

4.2.14 **IF** desired, **THEN** place 2-PP-10E, East CCW Pump control switch to - AUTO. _____

4.2.15 Verify CCW Pump flow requirements are met. _____

4.2.16 **IF** step 4.2.1 was performed, **THEN** null 2-CRV-470, Letdown HX Temp Ctrl controller **AND** place in – AUTO. _____

4.2.17 **IF** step 4.2.2 was performed **AND** Letdown temperature is stable, **THEN** place 2-QRV-302, Cold Letdown Path Select, in NORMAL (DEMIN) position. _____

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 <u>at least one</u> valve.

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

CT: Operator closes valve 2-CMO-410
Note: Operator may declare East CCW Train Inoperable based on Step 3.4 (Step 4.2.9 & 4.2.11 meet action Level)
CT: Operator stops East CCW pump

CT: Operator verifies valves OPEN
Note: whichever valve(s) was/were closed in step 4.2.9, must be manually reopened

Operator places control switch to AUTO

Operator verifies flow meets Precaution 3.3
Reports task completed.

CUE: US determines these steps are NOT desired

EVALUATOR: "THIS JPM IS COMPLETE"

Task Briefing

You are an Extra Operator

The US directs you to switch the running CCW pumps per 02-OHP-4021-016-003, Operation of the CCW System Startup and Power Operation.

NRC2007-SIM07

TITLE	**Verify Containment Isolation Phase A IAW OHP-4023-E-0 Att. A (Alternate Path with OHP-4023-SUP-03)**	**REVISION**	**0**
PROGRAM	**Initial Licensed Operator (ILT)**	**TIME**	**15 Minutes**

SCOPE OF REVISION:

Initial Issue

			DATE:
AUTHOR	**Name:**	John T Conrad	
	Signature:		
FACILITY REVIEWER	**Name:**		
	Signature:		
		Facility Supervisor / Manager	

REFERENCES

02-OHP-4023-E-0 Reactor Trip or Safety Injection
02_OHP-4023-SUP-003 Phase A Isolation Checklist

TASK ID: ADM0370302 Verify Limiting Conditions for Operations are met in accordance with Technical Specifications

K/A Statement: SYS 103 A2.03 Ability to (a) predict the impacts of a Phase A and B isolation on the containment system and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those malfunctions or operations
K/A Importance: RO: 3.5 SRO: 3.8

EVALUATION SETTING

Simulator – Cover PPC Screen With NRC2007-Sim07 Screen.

HANDOUTS

02-OHP-4023-E-0 Reactor Trip or Safety Injection
02_OHP-4023-SUP-003 Phase A Isolation Checklist

ATTACHMENTS

None

SIMULATOR SETUP

Reset to IC 987 with SGTR E-3 and Power Lost to T21D
Insert Malfunctions **RP13B & RP14B** to cause a failure of Train B Auto/Manual Phase A Isolation

- Modify Remote Function **IAR11** to **OPEN** to Cause XCR100 to stick open & ZLO101XCR100[GRN] OFF

Insert Global Malfunction **101QCM250** to keep power off the valve.
Override Lights to Simulate QCR301 & DCR600 open.

- ZLO101DCR600[RED] ON
- ZLO101DCR600[GRN] OFF
- ZLO101QCR301[RED] ON
- ZLO101QCR301[GRN] OFF

COURSE NUMBER AND TITLE:	NRC2007-SIM07	REVISION: 1

TASK OBJECTIVES/STANDARDS

Verify completion of Containment Isolation Phase A/Containment Vent Isolation/

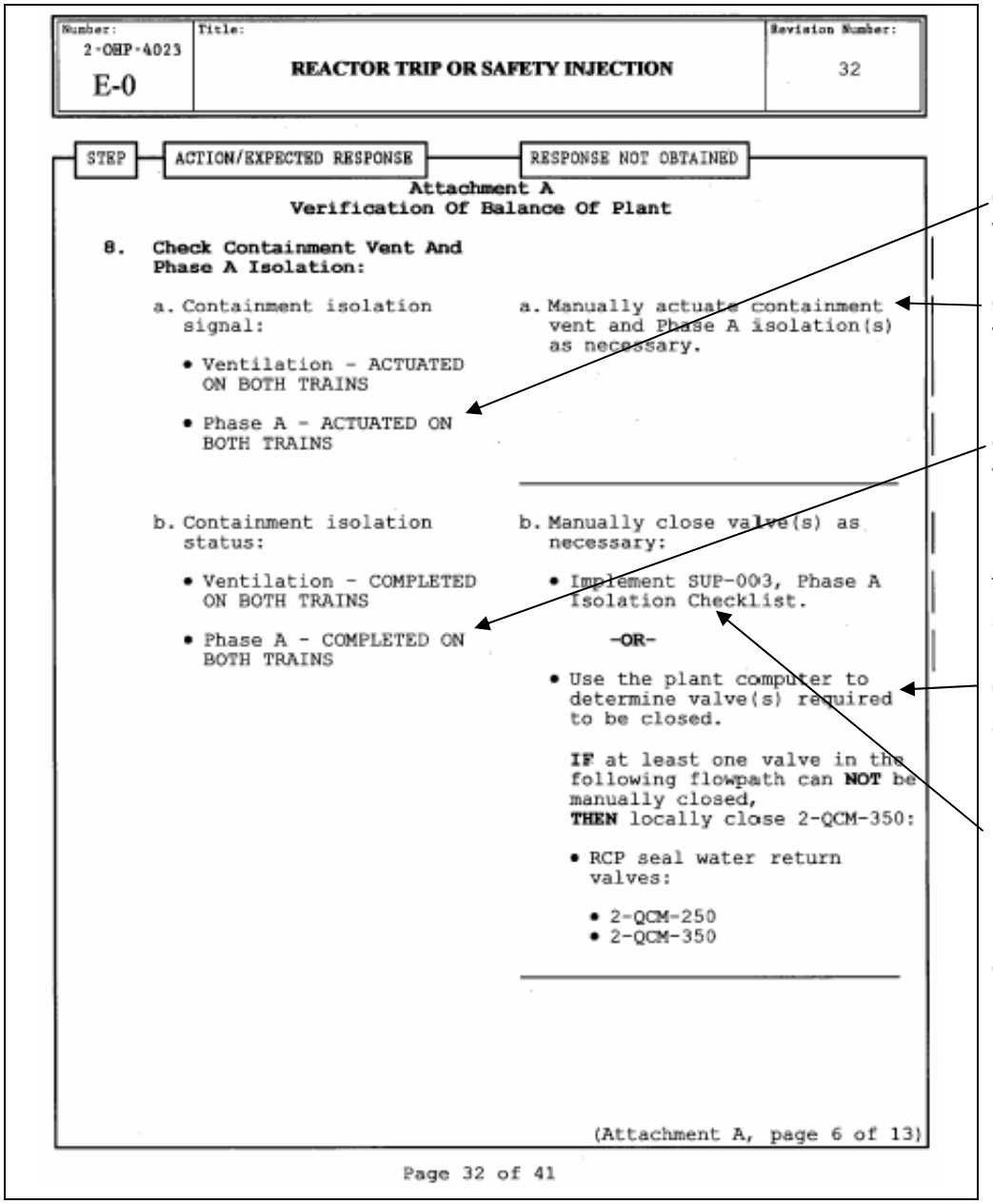
EVALUATOR INSTRUCTIONS

Provide the operator with a completed copy of Attachment 1 of 01-OHP-4020-001-012 and Tech Data Book Figures

TASK BREIFING

You are the BOP on Unit 2.

The Unit Supervisor has requested that you verify Containment Isolation Phase A/Containment Vent Isolation in accordance with E-0, Attachment A.



Number:	Title:	Revision Number:
2-OHP-4023 E-0	REACTOR TRIP OR SAFETY INJECTION	32

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED

Attachment A
Verification Of Balance Of Plant

8. Check Containment Vent And Phase A Isolation:

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

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

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

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

-OR-

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

IF at least one valve in the following flowpath can **NOT** be manually closed,
THEN locally close 2-QCM-350:

- RCP seal water return valves:
  - 2-QCM-250
  - 2-QCM-350

(Attachment A, page 6 of 13)

Page 32 of 41

CT: Operator recognizes that Containment Isolation Phase A, Train B did not actuate, and manually initiates

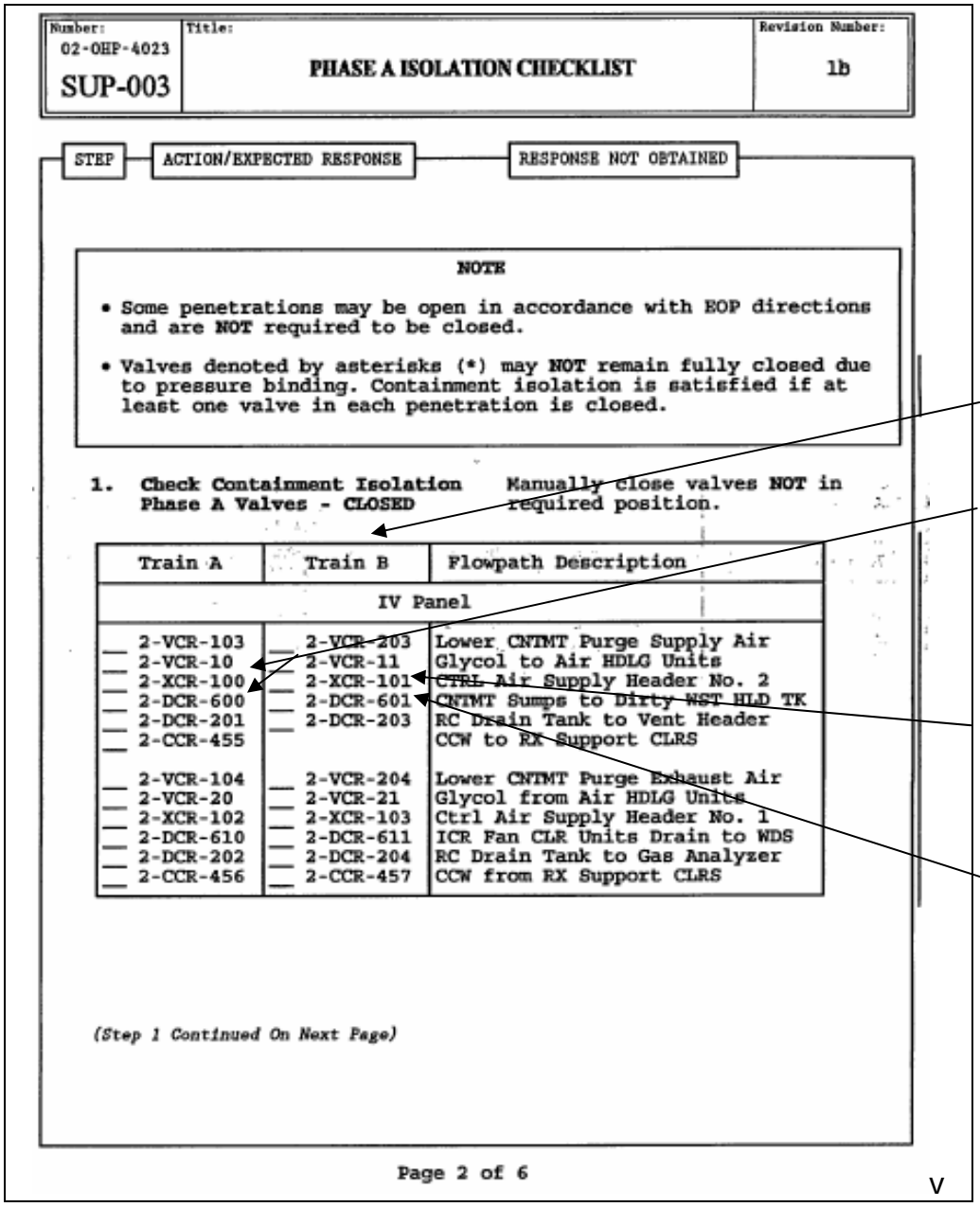
CT: Operator determines that Containment Isolation Phase A, Train B did not manually actuate.

CT: Operator recognizes that Containment Isolation Phase A, Train B valves are still open and

Note: Four valves (DCR-600, QCR-301, XCR-100, QCM-250) for Containment Isolation Phase A, Train A are also still open and will need to be closed in SUP-003.

CUE: The PPC Containment Isolation Screen function is NOT available.

CT: Operator Implements SUP-003.



Number: 02-OHP-4023 SUP-003

Title: PHASE A ISOLATION CHECKLIST

Revision Number: 1b

STEP | ACTION/EXPECTED RESPONSE | RESPONSE NOT OBTAINED

NOTE

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

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

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

(Step 1 Continued On Next Page)

Page 2 of 6

V

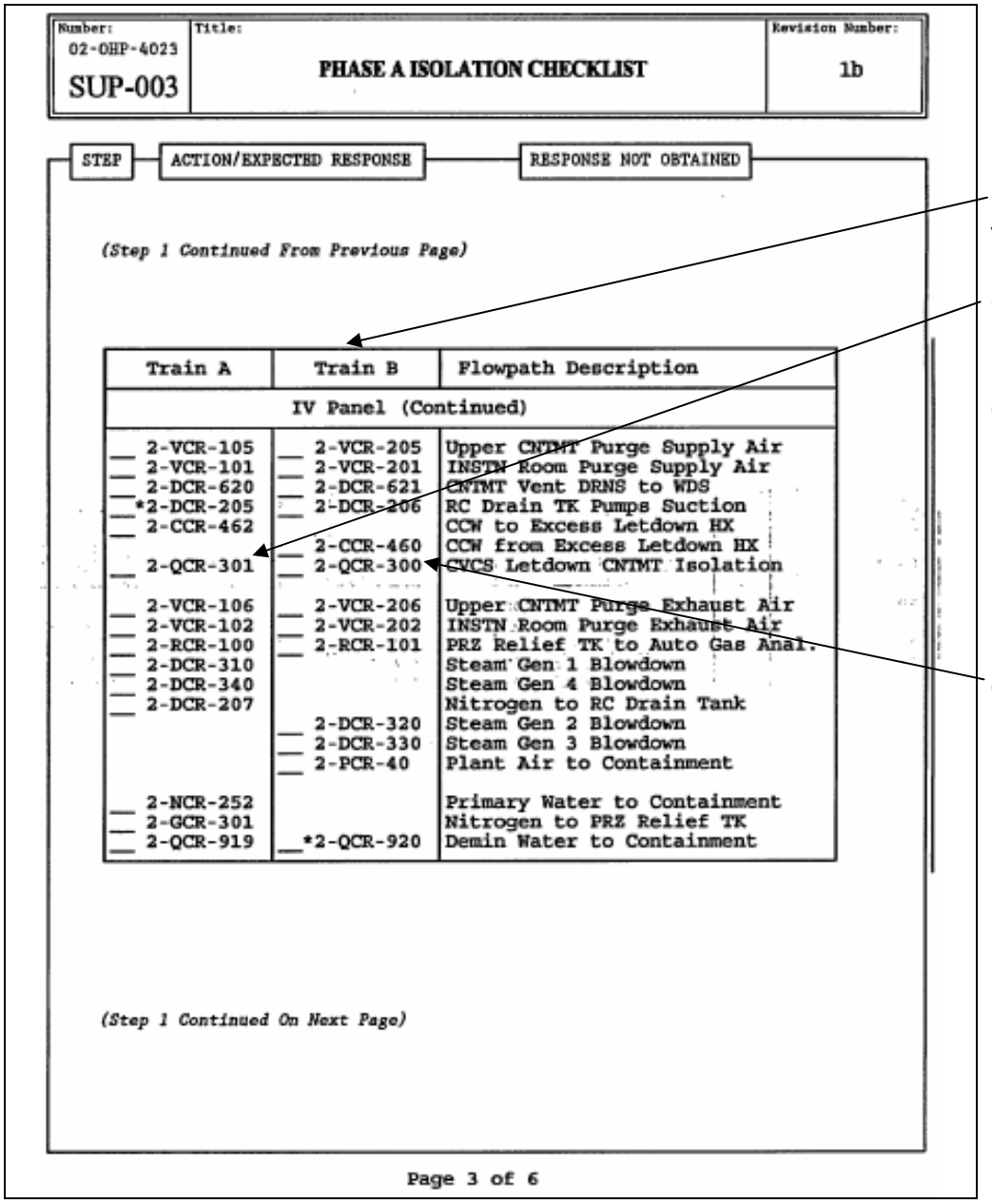
Operator closes all Containment Isolation Phase A, Train B valves on the IV panel.

Operator attempts to close XCR-100 and DCR-600.

NOTE: Only four valves are Critical Task related due to the corresponding Train A valve failing to close.

CT: Operator closes XCR-101

CT: Operator closes DCR-601



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

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED

(Step 1 Continued From Previous Page)

Train A	Train B	Flowpath Description
IV Panel (Continued)		
__ 2-VCR-105	__ 2-VCR-205	Upper CNTMT Purge Supply Air
__ 2-VCR-101	__ 2-VCR-201	INSTM Room Purge Supply Air
__ 2-DCR-620	__ 2-DCR-621	CNTMT Vent DRNS to WDS
__ *2-DCR-205	__ 2-DCR-206	RC Drain TK Pumps Suction
__ 2-CCR-462		CCW to Excess Letdown HX
	__ 2-CCR-460	CCW from Excess Letdown HX
__ 2-QCR-301	__ 2-QCR-300	CVCS Letdown CNTMT Isolation
__ 2-VCR-106	__ 2-VCR-206	Upper CNTMT Purge Exhaust Air
__ 2-VCR-102	__ 2-VCR-202	INSTN Room Purge Exhaust Air
__ 2-RCR-100	__ 2-RCR-101	PRZ Relief TK to Auto Gas Anal.
__ 2-DCR-310		Steam Gen 1 Blowdown
__ 2-DCR-340		Steam Gen 4 Blowdown
__ 2-DCR-207		Nitrogen to RC Drain Tank
	__ 2-DCR-320	Steam Gen 2 Blowdown
	__ 2-DCR-330	Steam Gen 3 Blowdown
	__ 2-PCR-40	Plant Air to Containment
__ 2-NCR-252		Primary Water to Containment
__ 2-GCR-301		Nitrogen to PRZ Relief TK
__ 2-QCR-919	__ *2-QCR-920	Demin Water to Containment

(Step 1 Continued On Next Page)

Page 3 of 6

Operator closes all Containment Isolation Phase A, Train B valves on the IV panel.

Operator attempts to close QCR-301.

NOTE: Only four valves are Critical Task related due to the corresponding Train A valve failing to close.

CT: Operator closes QCR-300

Number: 02-OHP-4023 SUP-003	Title: PHASE A ISOLATION CHECKLIST	Revision Number: 1b

STEP | ACTION/EXPECTED RESPONSE | RESPONSE NOT OBTAINED

(Step 1 Continued From Previous Page)

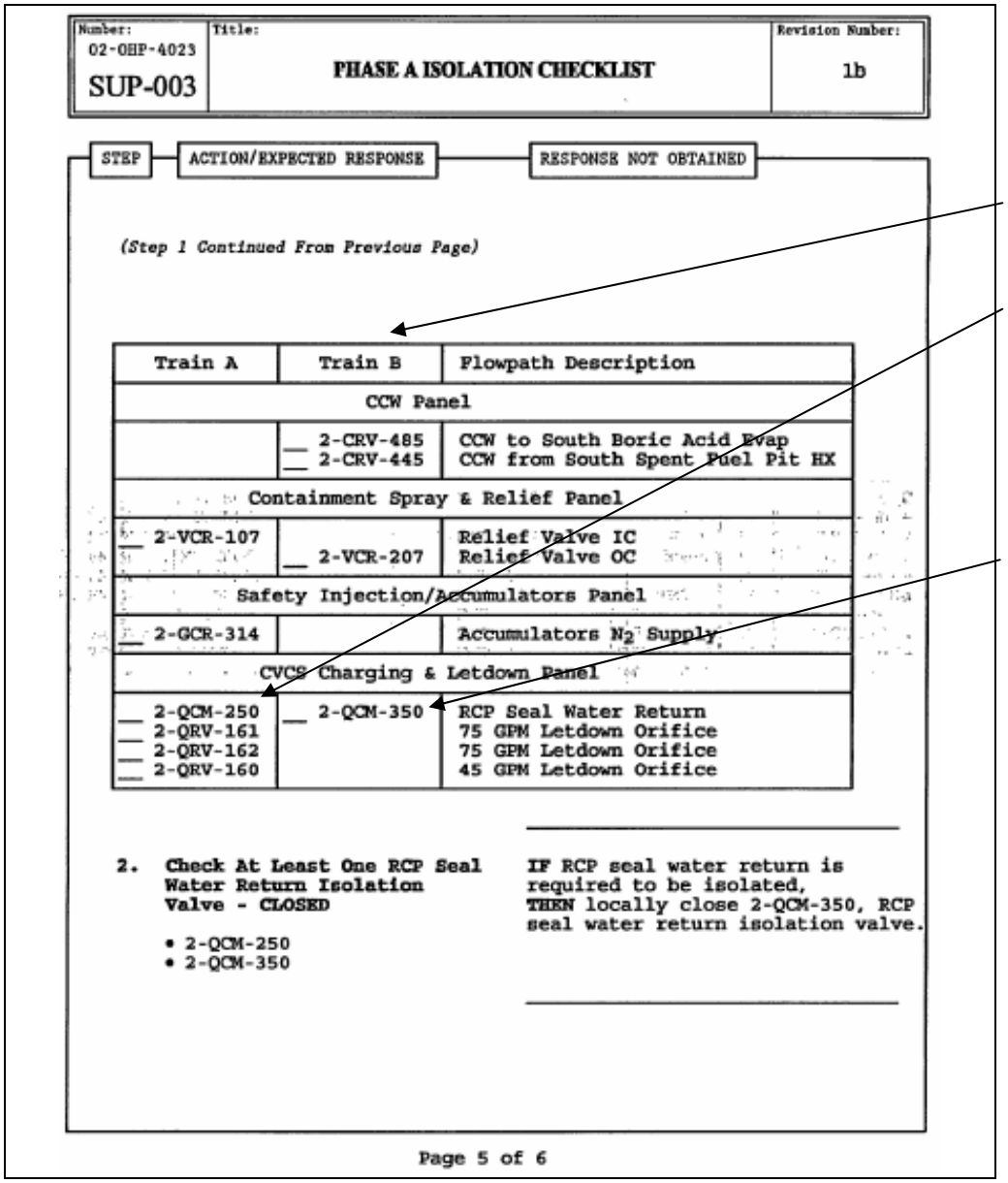
IV Panel Status Light Panels		
Indicating Lights	**Status Lights**	**Panel Description**
SML-1	SML-4	H_2 Sampling Isol Valves
__ 2-ECR-11 and 21		H_2 SMPL FM E UP CNTMT
__ 2-ECR-12 and 22		CNTMT Air (E RECOMB)
__ 2-ECR-13 and 23		H_2 SMPL FM E LWR CNTMT
	__ 2-ECR-14 and 24	H_2 SMPL FM W LWR CNTMT
__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

(Step 1 Continued On Next Page)

Page 4 of 6

Operator verifies all Containment Isolation Phase A, Train A and B valves on SML-1 and SML-4 indicate closed.

NOTE: Only four valves are Critical Task related due to the corresponding Train A valve failing to close.



Number: 02-OHP-4023 SUP-003	Title: PHASE A ISOLATION CHECKLIST	Revision Number: 1b

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED

(Step 1 Continued From Previous Page)

Train A	Train B	Flowpath Description
CCW Panel		
	__ 2-CRV-485 __ 2-CRV-445	CCW to South Boric Acid Evap CCW from South Spent Fuel Pit HX
Containment Spray & Relief Panel		
__ 2-VCR-107	__ 2-VCR-207	Relief Valve IC Relief Valve OC
Safety Injection/Accumulators Panel		
__ 2-GCR-314		Accumulators N_2 Supply
CVCS Charging & Letdown Panel		
__ 2-QCM-250 __ 2-QRV-161 __ 2-QRV-162 __ 2-QRV-160	__ 2-QCM-350	RCP Seal Water Return 75 GPM Letdown Orifice 75 GPM Letdown Orifice 45 GPM Letdown Orifice

2. Check At Least One RCP Seal Water Return Isolation Valve - CLOSED

- 2-QCM-250
- 2-QCM-350

IF RCP seal water return is required to be isolated, **THEN** locally close 2-QCM-350, RCP seal water return isolation valve.

Page 5 of 6

Operator closes all remaining Containment Isolation Phase A, Train B.

Operator attempts to close QCM-250

NOTE: Only four valves are Critical Task related due to the corresponding Train A valve failing to close.

CT: Operator closes QCM-350

EVALUATOR: "JPM IS COMPLETE."

Task Briefing

You are the BOP on Unit 2.

The Unit Supervisor has requested that you verify Containment Isolation Phase A/Containment Vent Isolation in accordance with E-0, Attachment A.

NRC2007-Sim08

TITLE	**Depressurize the RCS to Minimize Backflow/Refill the Pressurizer during SGTR**	**REVISION**	**1**
PROGRAM	**Initial Licensed Operator (ILT)**	**TIME**	**20 Minutes**

SCOPE OF REVISION: New Issue

			DATE:
AUTHOR	**Name:**	Ted Conrad	
	Signature:		
FACILITY REVIEWER	**Name:**		
	Signature:		

TITLE:	NRC2007-Sim08 - Depressurize the RCS to Minimize Backflow/Refill the Pressurizer during SGTR	REVISION: 1

REFERENCES

2-OHP-4023-E-3, Steam Generator Tube Rupture

TASK

TASK ID: EOP0070501, Control RCS Pressure and Inventory following a SGTR.

K/A Statement: EPE 038 EA1.04, Ability to operate and monitor the PZR spray, to reduce coolant system pressure as it applies to a SGTR:

K/A Importance: RO: 4.3 SRO: 4.1

EVALUATION SETTING

Simulator

HANDOUTS

2-OHP-4023-E-3, Steam Generator Tube Rupture

Handout 1, 2-OHP-4023-E-3, Attachment B.

ATTACHMENTS

None

TITLE:	NRC2007-Sim08 - Depressurize the RCS to Minimize Backflow/Refill the Pressurizer during SGTR	REVISION: 1

SIMULATOR SETUP

Reset to an IC 988 with:

- Globals on QMO-200, IMO 255 (Valves that have lost power from T21D)
- A SGTR in progress and ready to depressurize RCS
- Bus T21D de-energized
- Trigger NRV-163/164 to 5% open when Red Light is lit.
    - o **TRG 2 PZR Spray Open** (**ZLONRV163(2) == -1**), MF **RC15A** & **RC15B** to **5**%
- Close PRZ PORV Block Valves **NMO151 & NMO153, PORV NRV-151,** Caution Tag NRV 153 & Block Closed for Leakage, Clearance Tag NRV-151 & NMO151
- Insert Global Malfunctions **101NRV151, 101NRV152, 101NRV 153 & 101NMO151**
- Override Lights **OFF** on **ZLO101NRV152[GRN] & ZLO101NRV153[GRN]**
- **Trg 1 – NMO153 to Open (ZGI101NMO153 == 2),** MF **101NMO153**
- **OOS Tag NRV & NMO 151, Caution Tag NMO 153**
-

TASK OBJECTIVES/STANDARDS

Perform RCS Depressurization to Minimize Break Flow and Refill the Pressurizer using Aux Spray.

EVALUATOR INSTRUCTIONS

Provide the operator with 2-OHP-4023-E-3, Steps 18, 19, and 20, and Attachment B (Handout)

TASK BREIFING

You are the RO in Unit 2.

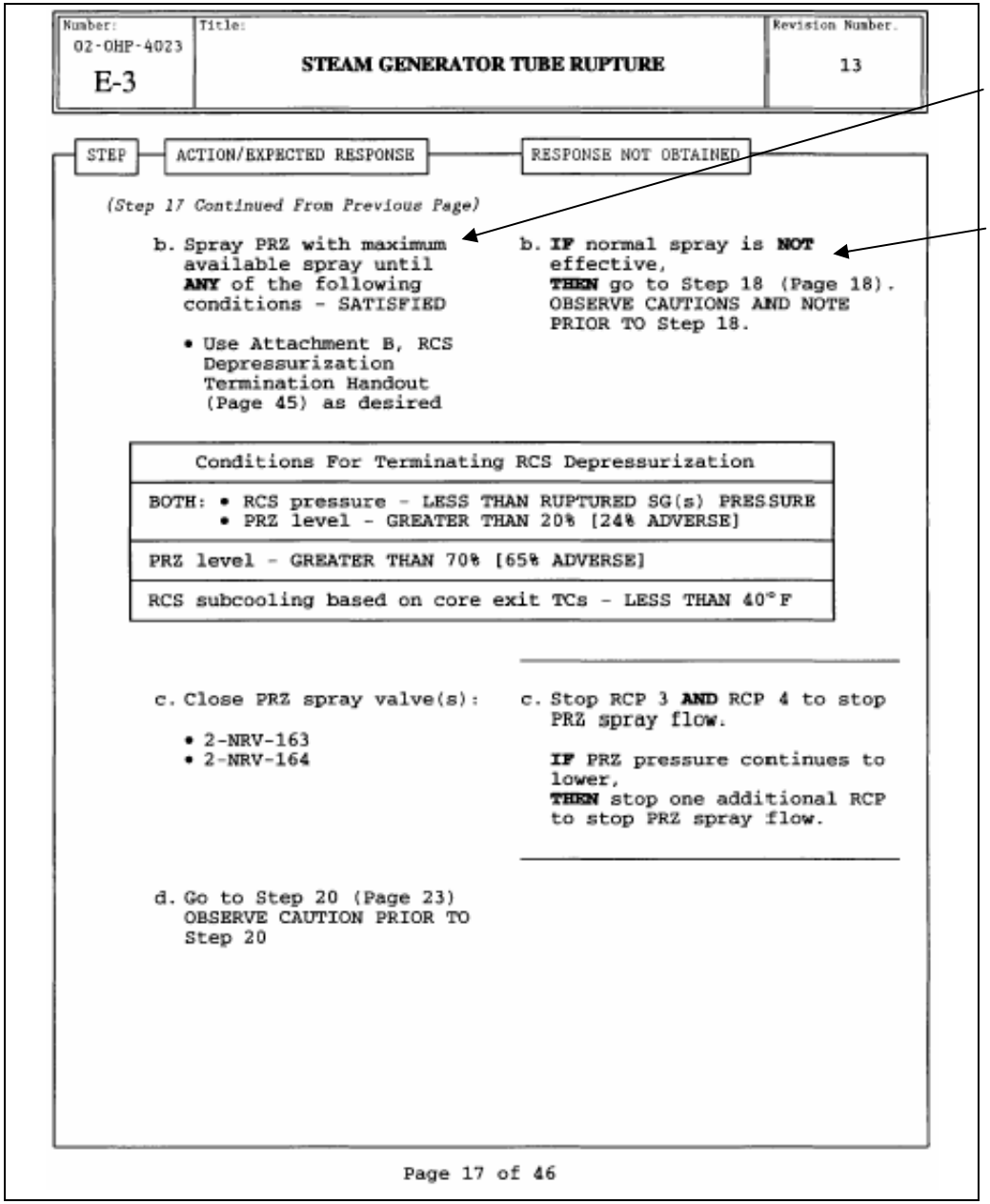
Unit 2 is responding to a SG Tube Rupture. The cooldown is complete. The Unit Supervisor has requested that you implement Step 17 of 2-OHP-4023-E-3 to Depressurize the RCS to Minimize Break Flow and Refill the Pressurizer.

Number	Title:	Revision Number:
02-OHP-4023 E-3	STEAM GENERATOR TUBE RUPTURE	13

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
	(Step 14 Continued From Previous Page)	
	c. Maintain core exit TCs - LESS THAN REQUIRED TEMPERATURE	
15.	**Check Ruptured SG(s) Pressure - STABLE OR RISING**	Perform the following: a. Attempt to maintain a minimum ΔP of 250 psid between the ruptured and intact SGs. b. Initiate RCS cooldown at less than 100°F/hr if necessary. c. **IF** the minimum ΔP of 250 psid can **NOT** be maintained, **THEN** go to ECA-3.1, SGTR With Loss Of Reactor Coolant - Subcooled Recovery Desired, Step 1.
16.	**Check RCS Subcooling Based On Core Exit TCs - GREATER THAN 60°F**	Go to ECA-3.1, SGTR With Loss Of Reactor Coolant - Subcooled Recovery Desired, Step 1.
17.	**Depressurize RCS To Minimize Break Flow And Refill PRZ:**	
	a. Normal PRZ spray - AVAILABLE	a. Go to Step 18 (Page 18). OBSERVE CAUTIONS AND NOTE PRIOR TO Step 18.
	(Step 17 Continued On Next Page)	

Page 16 of 46

Operator determines that Normal Spray is available (Air to containment and RCP3/4 running)



Number: 02-OHP-4023 E-3	Title: STEAM GENERATOR TUBE RUPTURE	Revision Number: 13

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED

(Step 17 Continued From Previous Page)

b. Spray PRZ with maximum available spray until **ANY** of the following conditions - SATISFIED

- Use Attachment B, RCS Depressurization Termination Handout (Page 45) as desired

b. **IF** normal spray is **NOT** effective,
THEN go to Step 18 (Page 18).
OBSERVE CAUTIONS AND NOTE PRIOR TO Step 18.

Conditions For Terminating RCS Depressurization
BOTH: • RCS pressure - LESS THAN RUPTURED SG(s) PRESSURE • PRZ level - GREATER THAN 20% [24% ADVERSE]
PRZ level - GREATER THAN 70% [65% ADVERSE]
RCS subcooling based on core exit TCs - LESS THAN 40°F

c. Close PRZ spray valve(s):

- 2-NRV-163
- 2-NRV-164

c. Stop RCP 3 **AND** RCP 4 to stop PRZ spray flow.

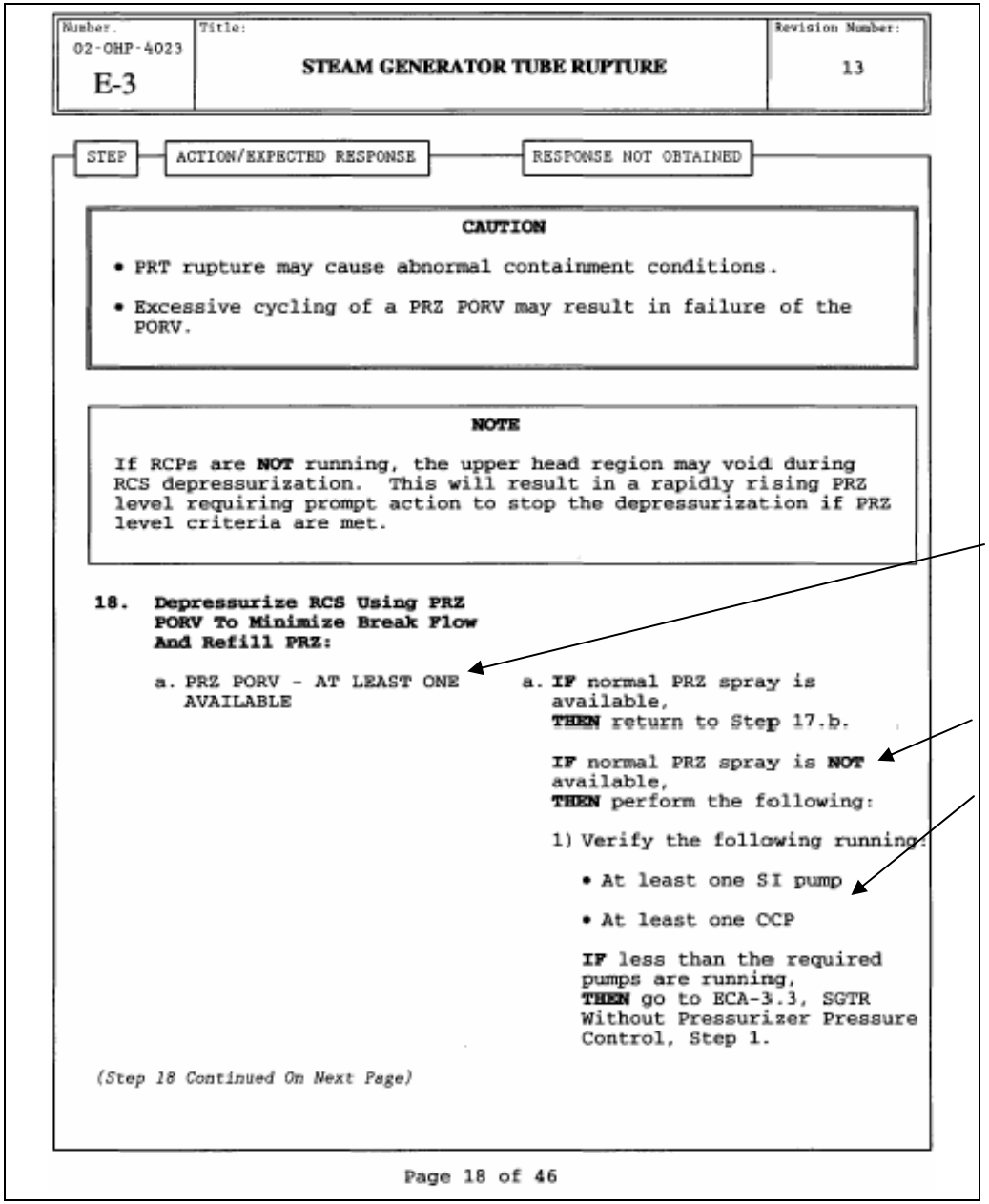
IF PRZ pressure continues to lower,
THEN stop one additional RCP to stop PRZ spray flow.

d. Go to Step 20 (Page 23)
OBSERVE CAUTION PRIOR TO Step 20

Page 17 of 46

CT: Operator opens NRV-163/164 full open.

CT: Operator determines that spray valves are not being effective in reducing RCS pressure, THEN goes to Step 18.



Number: 02-OHP-4023 E-3	Title: STEAM GENERATOR TUBE RUPTURE	Revision Number: 13

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED

CAUTION

- PRT rupture may cause abnormal containment conditions.
- Excessive cycling of a PRZ PORV may result in failure of the PORV.

NOTE

If RCPs are **NOT** running, the upper head region may void during RCS depressurization. This will result in a rapidly rising PRZ level requiring prompt action to stop the depressurization if PRZ level criteria are met.

18. Depressurize RCS Using PRZ PORV To Minimize Break Flow And Refill PRZ:

a. PRZ PORV - AT LEAST ONE AVAILABLE

a. **IF** normal PRZ spray is available,
THEN return to Step 17.b.

IF normal PRZ spray is **NOT** available,
THEN perform the following:

1) Verify the following running:

- At least one SI pump
- At least one CCP

IF less than the required pumps are running,
THEN go to ECA-3.3, SGTR Without Pressurizer Pressure Control, Step 1.

(Step 18 Continued On Next Page)

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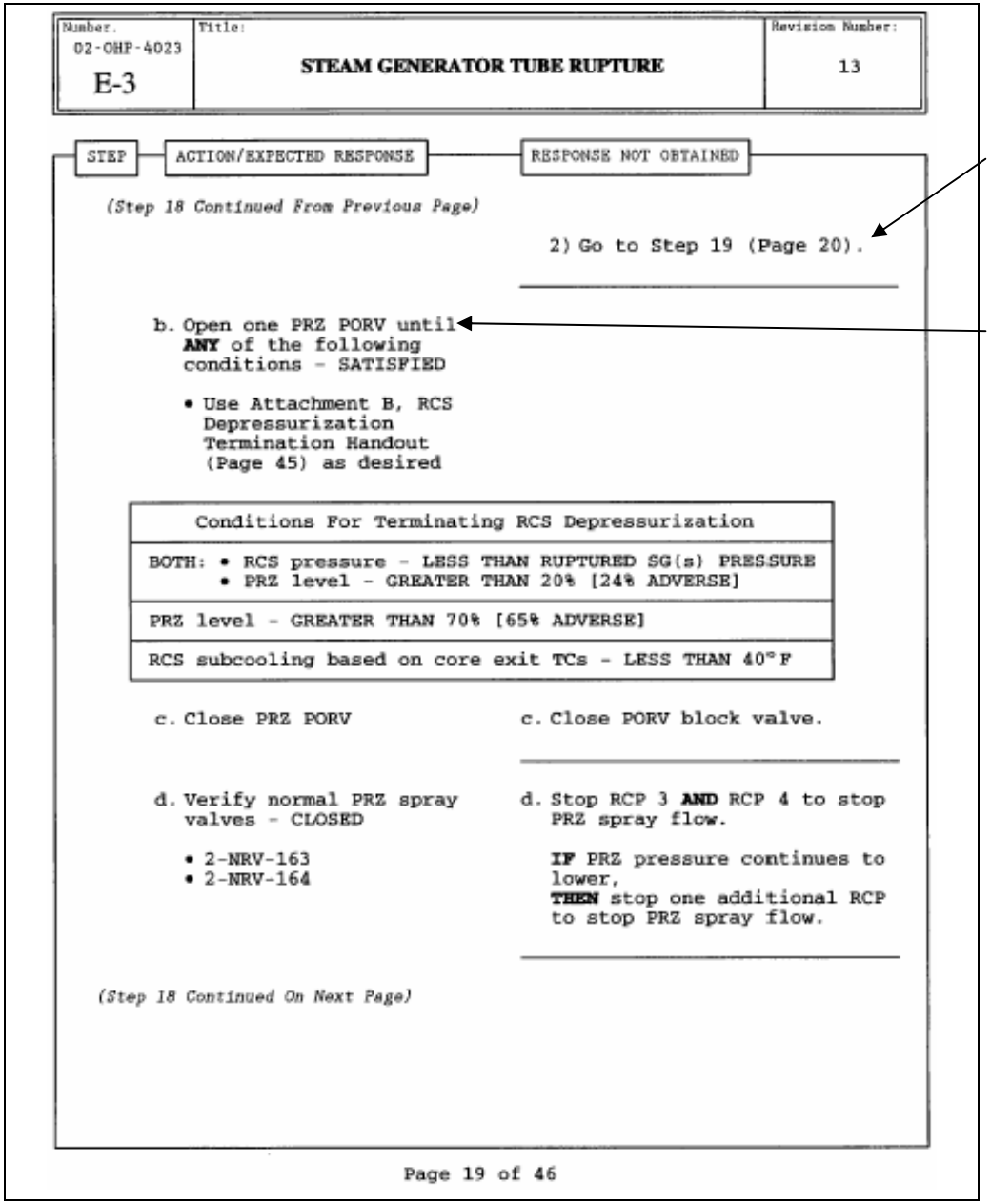
Operator determines that NO PORVs are available

Operator May try to Open NMO 153, But the Breaker for the Valve will Trip

Operator determines that Normal Spray is NOT available.

CT: Operator verifies that at least one SI and one CCP are in operation.



Number: 02-OHP-4023 E-3	Title: STEAM GENERATOR TUBE RUPTURE	Revision Number: 13

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED

(Step 18 Continued From Previous Page)

2) Go to Step 19 (Page 20).

b. Open one PRZ PORV until **ANY** of the following conditions - SATISFIED

- Use Attachment B, RCS Depressurization Termination Handout (Page 45) as desired

Conditions For Terminating RCS Depressurization
BOTH: • RCS pressure - LESS THAN RUPTURED SG(s) PRESSURE • PRZ level - GREATER THAN 20% [24% ADVERSE]
PRZ level - GREATER THAN 70% [65% ADVERSE]
RCS subcooling based on core exit TCs - LESS THAN 40°F

c. Close PRZ PORV — c. Close PORV block valve.

d. Verify normal PRZ spray valves - CLOSED

- 2-NRV-163
- 2-NRV-164

d. Stop RCP 3 **AND** RCP 4 to stop PRZ spray flow.

IF PRZ pressure continues to lower,
THEN stop one additional RCP to stop PRZ spray flow.

(Step 18 Continued On Next Page)

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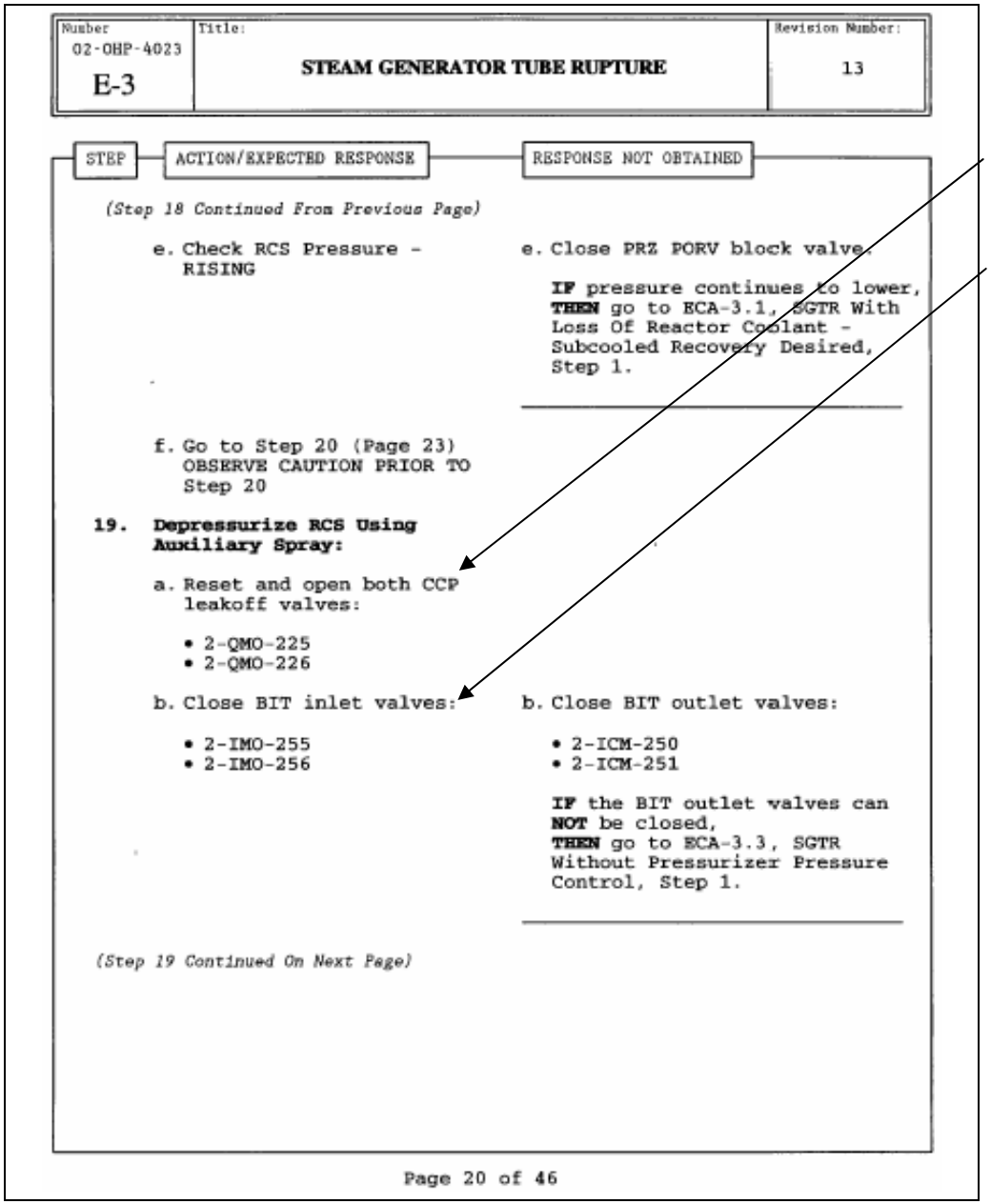
CT: Operator transitions to Step 19.

If Operator tries to Open PORVs & discovers not available, Direct as US to perform Step 18 a RNO.



Number	Title:	Revision Number:
02-OHP-4023 E-3	STEAM GENERATOR TUBE RUPTURE	13

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
	(Step 18 Continued From Previous Page)	
	e. Check RCS Pressure - RISING	e. Close PRZ PORV block valve. **IF** pressure continues to lower, **THEN** go to ECA-3.1, SGTR With Loss Of Reactor Coolant - Subcooled Recovery Desired, Step 1.
	f. Go to Step 20 (Page 23) OBSERVE CAUTION PRIOR TO Step 20	
19.	**Depressurize RCS Using Auxiliary Spray:**	
	a. Reset and open both CCP leakoff valves: • 2-QMO-225 • 2-QMO-226	
	b. Close BIT inlet valves: • 2-IMO-255 • 2-IMO-256	b. Close BIT outlet valves: • 2-ICM-250 • 2-ICM-251 **IF** the BIT outlet valves can **NOT** be closed, **THEN** go to ECA-3.3, SGTR Without Pressurizer Pressure Control, Step 1.
	(Step 19 Continued On Next Page)	

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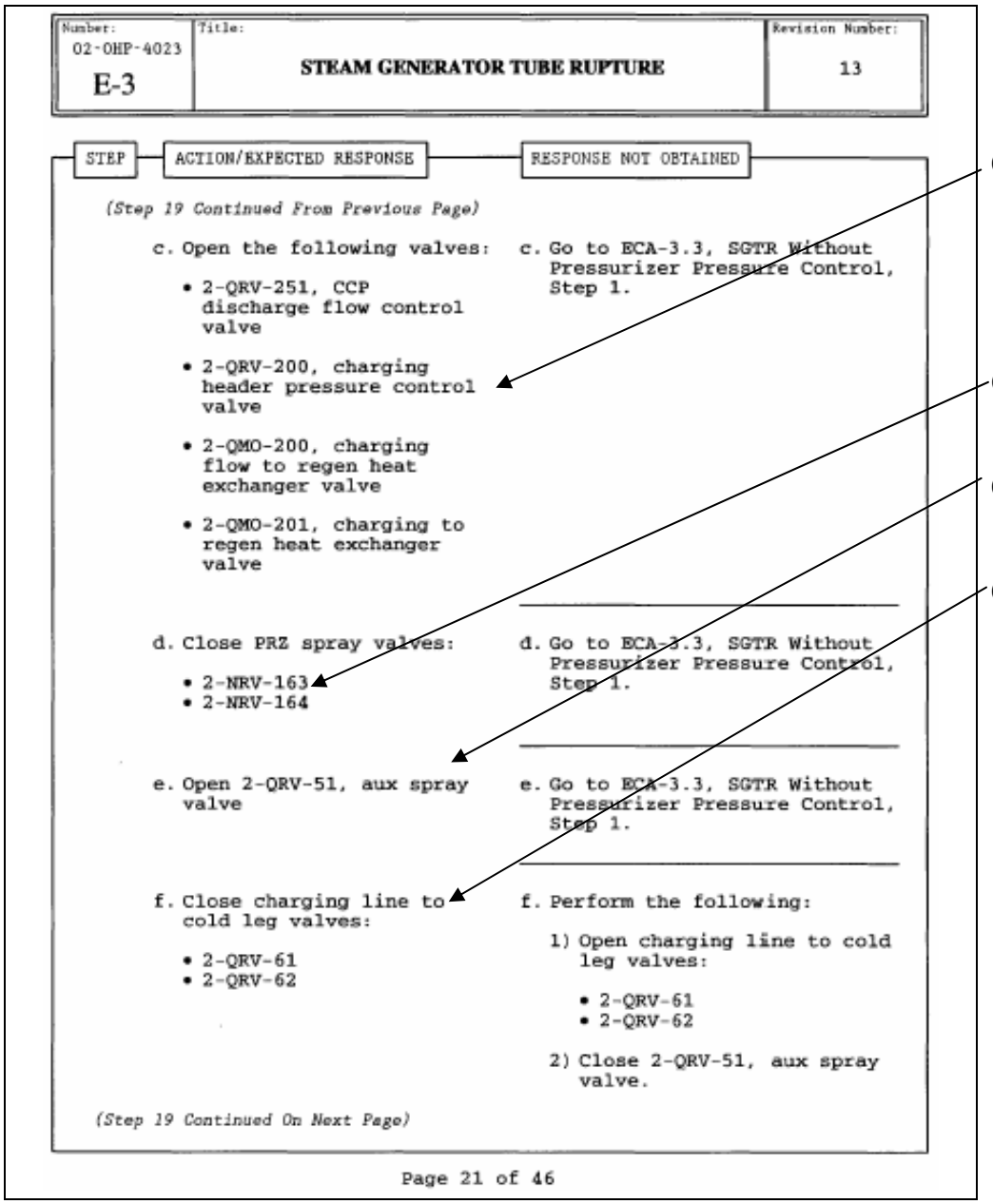
CT: Operator resets and opens QMO-225/226.

CT: Operator closes BIT Inlet Valves.



Number: 02-OHP-4023 E-3	Title: STEAM GENERATOR TUBE RUPTURE	Revision Number: 13

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
	(Step 19 Continued From Previous Page)	
	c. Open the following valves: • 2-QRV-251, CCP discharge flow control valve • 2-QRV-200, charging header pressure control valve • 2-QMO-200, charging flow to regen heat exchanger valve • 2-QMO-201, charging to regen heat exchanger valve	c. Go to ECA-3.3, SGTR Without Pressurizer Pressure Control, Step 1.
	d. Close PRZ spray valves: • 2-NRV-163 • 2-NRV-164	d. Go to ECA-3.3, SGTR Without Pressurizer Pressure Control, Step 1.
	e. Open 2-QRV-51, aux spray valve	e. Go to ECA-3.3, SGTR Without Pressurizer Pressure Control, Step 1.
	f. Close charging line to cold leg valves: • 2-QRV-61 • 2-QRV-62	f. Perform the following: 1) Open charging line to cold leg valves: • 2-QRV-61 • 2-QRV-62 2) Close 2-QRV-51, aux spray valve.
	(Step 19 Continued On Next Page)	

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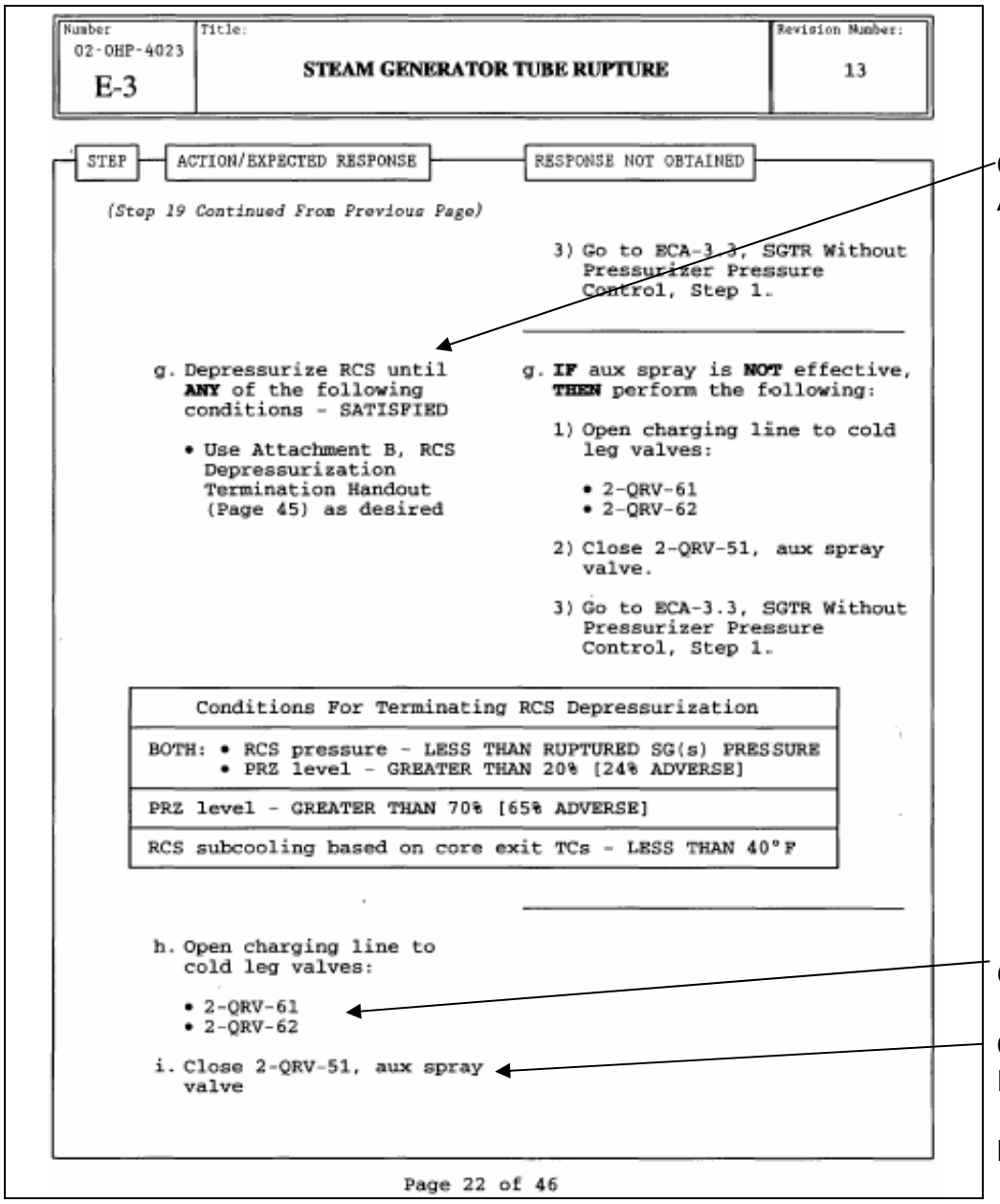
CT: Operator opens the following valves:
- 2-QRV-251
- 2-QRV-200
- 2-QMO-200
- 2-QMO-201

Operator closes normal spray valves.

CT: Operator opens QRV-51.

CT: Operator closes QRV-61/62.



Number	Title:	Revision Number:
02-OHP-4023 E-3	STEAM GENERATOR TUBE RUPTURE	13

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
	(Step 19 Continued From Previous Page)	3) Go to ECA-3.3, SGTR Without Pressurizer Pressure Control, Step 1.
g.	g. Depressurize RCS until **ANY** of the following conditions - SATISFIED • Use Attachment B, RCS Depressurization Termination Handout (Page 45) as desired	g. **IF** aux spray is **NOT** effective, **THEN** perform the following: 1) Open charging line to cold leg valves: • 2-QRV-61 • 2-QRV-62 2) Close 2-QRV-51, aux spray valve. 3) Go to ECA-3.3, SGTR Without Pressurizer Pressure Control, Step 1.

Conditions For Terminating RCS Depressurization
BOTH: • RCS pressure - LESS THAN RUPTURED SG(s) PRESSURE • PRZ level - GREATER THAN 20% [24% ADVERSE]
PRZ level - GREATER THAN 70% [65% ADVERSE]
RCS subcooling based on core exit TCs - LESS THAN 40°F

h.	h. Open charging line to cold leg valves: • 2-QRV-61 • 2-QRV-62	
i.	i. Close 2-QRV-51, aux spray valve	

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CT: Operator depressurizes RCS until the conditions for Attachment B are met. (See Handout)

Operator opens QRV-61/62

CT: Operator stops spray flow when conditions of Attachment B are complete.

EVALUATOR: “This JPM is complete.”

Task Briefing

You are the RO in Unit 2.

Unit 2 is responding to a SG Tube Rupture. The cooldown is complete. The Unit Supervisor has requested that you implement Step 17 of 2-OHP-4023-E-3 to Depressurize the RCS to Minimize Break Flow and Refill the Pressurizer.