ROCHESTER GAS AND ELECTRIC CORPORATION

GINNA STATION

CONTROLLED COPY NUMBER 23

TECHNICAL REVIEW

PORC REVIEW DATE 4-21-93

Thomas A. Marlow
PLANT SUPERINTENDENT

4-23-93
EFFECTIVE DATE

CATEGORY 1.0

REVIEWED BY:_____

A. PURPOSE - This procedure provides actions to respond to a failure of the S/G ARVs and Condenser Dump Valves.

B. ENTRY CONDITIONS/SYMPTOMS

1. ENTRY CONDITIONS - This procedure is entered from F-0.3, HEAT SINK Critical Safety Function Status Tree on a YELLOW condition.

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED

* *

CAUTION

IF AFFECTED S/G(S) NARROW RANGE LEVEL INCREASES TO GREATER THAN 90% [85% ADVERSE CNMT], THEN STEAM SHOULD NOT BE RELEASED FROM THE AFFECTED S/G(S).

* *

NOTE:
- o Throughout this procedure, "affected" refers to any S/G in which pressure is greater than 1085 psig.
- o Adverse CNMT values should be used whenever CNMT pressure is greater than 4 psig or CNMT radiation is greater than 10^{+05} R/hr.

1 Try To Restore Normal Steam Release Capability Of Affected S/G(s):

a. Check if condenser available

- o Affected S/G MSIV(s) - OPEN
- o Either CW pump - RUNNING
- o Condenser vacuum - GREATER THAN 20 INCHES HG

b. Operate condenser steam dump manually:

1) Place steam dump mode selector to MANUAL

2) Place condenser steam dump controller to MANUAL

3) Open steam dump valves as required

a. Perform the following:

1) Place affected S/G(s) ARV controller to manual and attempt to open ARV.

IF S/G ARV(s) can NOT be opened, THEN dispatch AO to check nitrogen supply to ARVs.

2) Go to Step 2.

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
2	Check RCP Status:	
	a. RCPs - BOTH RUNNING	a. Go to Step 3.
	b. Stop RCP in affected loop	
3	Check S/G Pressures - LESS THAN 1085 PSIG	Perform the following: a. Manually open affected S/G(s) TDAFW pump steam supply valves • S/G A, MOV-3505A • S/G B, MOV-3504A b. Dispatch AO to perform the following: 1) Open affected S/G MSIV bypass valve. 2) Open priming air ejector steam isolation valves. • V-3580 • V-3581 c. Local operation of affected S/G ARV may be attempted. (Establish communications with control room.)

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
4	Return To Procedure And Step In Effect	

-END-

ROCHESTER GAS AND ELECTRIC CORPORATION

GINNA STATION

CONTROLLED COPY NUMBER 23

TECHNICAL REVIEW

PORC REVIEW DATE 6-8-94

PLANT SUPERINTENDENT

6-9-94
EFFECTIVE DATE

CATEGORY 1.0

REVIEWED BY:_____

A. PURPOSE - This procedure provides actions to respond to a high PRZR level.

B. ENTRY CONDITIONS/SYMPTOMS .

1. ENTRY CONDITIONS - This procedure is entered from:

a. F-0.6, INVENTORY Critical Safety Function Status Tree on a YELLOW condition.

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED

NOTE: Adverse CNMT values should be used whenever CNMT pressure is greater than 4 psig or CNMT radiation is greater than 10^{+05} R/hr.

1	Check RCS Hot Leg Temperature - STABLE OR DECREASING	Dump steam from intact S/G(s) to stabilize RCS temperature.
2	Verify Adequate SW Flow:	
	a. At least three SW pumps - RUNNING	a. Manually start pumps as power supply permits (258 kw each). IF less than two SW pumps can be operated, THEN perform the following: 1) Ensure SW isolation 2) Go to Step 7.
	b. Dispatch AO to establish normal shutdown alignment (Refer to Attachment SD-1)	
	c. Verify AUX BLDG SW isolation valves - AT LEAST ONE SET OPEN • MOV-4615 and MOV-4734 • MOV-4616 and MOV-4735	c. Establish SW to AUX BLDG. (Refer to Attachment AUX BLDG SW.)
	d. Verify CNMT RECIRC fans annunciator C-2, HIGH TEMPERATURE ALARM - EXTINGUISHED	d. Dispatch AO to locally throttle flow to CCW Hx to between 5000 gpm and 6000 gpm total flow.

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
3	Establish IA to CNMT:	
	a. Verify non-safeguards busses energized from offsite power o Bus 13 normal feed - CLOSED -OR- o Bus 15 normal feed - CLOSED	a. Perform the following: 1) Close non-safeguards bus tie breakers: • Bus 13 to Bus 14 tie • Bus 15 to Bus 16 tie 2) <u>WHEN</u> bus 15 restored, <u>THEN</u> reset control room lighting.
	b. Verify SW isolation valves to turbine building - OPEN • MOV-4613 and MOV-4670 • MOV-4614 and MOV-4664	b. Manually align valves.
	c. Verify at least two air compressors - RUNNING	c. Manually start air compressors as power supply permits (75 kw each). <u>IF</u> air compressors can <u>NOT</u> be started, <u>THEN</u> dispatch AO to locally reset compressors as necessary.
	d. Check IA supply: o Pressure - GREATER THAN 60 PSIG o Pressure - STABLE OR INCREASING	d. Perform the following: 1) Continue attempts to restore IA (Refer to AP-IA.1, LOSS OF INSTRUMENT AIR). 2) Continue with Step 7. <u>WHEN</u> IA restored, <u>THEN</u> do Steps 3e and f.
	e. Reset both trains of XY relays for IA to CNMT AOV-5392	
	f. Verify IA to CNMT AOV-5392 - OPEN	

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CAUTION

CHARGING AND LETDOWN FLOW SHOULD BE CAREFULLY CONTROLLED TO AVOID SUDDEN RCS PRESSURE CHANGES SINCE THE PRZR MAY BE WATER SOLID.

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STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
4	Check If Normal CVCS Operation Can Be Established	
	a. Verify IA restored: o IA to CNMT (AOV-5392) - OPEN o IA pressure - GREATER THAN 60 PSIG	a. Continue with Step 7. <u>WHEN</u> IA restored, <u>THEN</u> do Steps 4 through 6.
	b. CCW pumps - ANY RUNNING	b. Perform the following: 1) <u>IF</u> any RCP #1 seal outlet temperature offscale high, <u>THEN</u> isolate CCW to thermal barrier of affected RCP(s). • RCP A, MOV-749A and MOV-759A • RCP B, MOV-749B and MOV-759B 2) Manually start one CCW pump.
	c. Verify instrument bus D - ENERGIZED	c. Energize MCC B. <u>IF</u> MCC B <u>NOT</u> available, <u>THEN</u> perform the following: 1) Verify MCC A energized. 2) Place instrument bus D on maintenance supply.

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
5	Check If Seal Return Flow Should Be Established:	
	a. Verify RCP #1 seal outlet temperature - LESS THAN 235°F	a. Go to Step 7.
	b. Verify RCP seal outlet valves - OPEN • AOV-270A • AOV-270B	b. Manually open valves as necessary.
	c. Reset both trains of XY relays for RCP seal return isolation valve MOV-313	
	d. Open RCP seal return isolation valve MOV-313	d. Perform the following: 1) Place MOV-313 switch to OPEN. 2) Dispatch AO with key to RWST gate to locally open MOV-313.
	e. Verify RCP #1 seal leakoff flow - LESS THAN 5.5 GPM	e. <u>IF</u> any RCP seal leakoff flow greater than 5.5 gpm <u>THEN</u>: o Close the affected RCP seal discharge valve • RCP A, AOV-270A • RCP B, AOV-270B o Trip the affected RCP <u>IF</u> both RCP seal discharge valves are shut, <u>THEN</u> go to Step 7.
	f. Verify RCP #1 seal leakoff flow - GREATER THAN 0.25 GPM	f. Refer to AP-RCP.1, RCP SEAL MALFUNCTION.

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
6	Check Normal Letdown - IN SERVICE	Establish excess letdown as follows: o Place AOV-312 to NORMAL o Ensure CCW from excess letdown, (AOV-745). o Open excess letdown isolation valve AOV-310. o Slowly open HCV-123 to maintain excess letdown temperature less than 195°F and pressure less than 100 psig.

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
7	Check If Charging Flow Has Been Established:	
	a. Charging pumps - ANY RUNNING	a. Perform the following: 1) <u>IF</u> CCW flow is lost to any RCP thermal barrier <u>OR</u> any RCP #1 seal outlet temperature offscale high, <u>THEN</u> dispatch AO with key to RWST gate to locally close seal injection needle valve(s) to affected RCP: • RCP A, V-300A • RCP B, V-300B 2) Ensure HCV-142 open, demand at 0%.
	b. Charging pump suction aligned to RWST: o LCV-112B - OPEN o LCV-112C - CLOSED	b. Manually align valves as necessary. <u>IF</u> LCV-112B can <u>NOT</u> be opened, <u>THEN</u> perform the following: 1) Verify charging pump A <u>NOT</u> running and place in PULL STOP. 2) Dispatch AO to locally open manual charging pump suction from RWST (V-358 located in charging pump room). 3) <u>WHEN</u> V-358 open, <u>THEN</u> direct AO to close V-268 to isolate charging pumps B and C from VCT (V-268 located in charging pump room).
	c. Start charging pumps as necessary and adjust charging flow to restore PRZR level	

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
8	Check Normal Letdown - IN SERVICE	Establish Normal Letdown: a. Establish charging flow to REGEN Hx greater than 20 gpm. b. Place the following switches to CLOSE: • Letdown orifice valves (AOV-200A, AOV-200B, and AOV-202) • AOV-427, loop B cold leg to REGEN Hx • AOV-371, letdown isolation valves c. Place letdown controllers TCV-130 and PCV-135 in MANUAL at 40% open • TCV-130 • PCV-135 d. Reset both trains of XY relays for AOV-371 and AOV-427 e. Open AOV-371 and AOV-427 f. Open letdown orifice valves as necessary g. Place TCV-130 in AUTO at 105°F h. Place PCV-135 in AUTO at 250 psig i. Adjust charging pump speed and HCV-142 as necessary j. <u>WHEN</u> normal letdown in service, <u>THEN</u> secure excess letdown. o Close excess letdown flow control valve, HCV-123. o Close excess letdown isolation valve, AOV-310.

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
9	Check PRZR Pressure:	
	a. Pressure - LESS THAN 2335 PSIG	a. Verify at least one PRZR PORV and block valve open. IF NOT, THEN open one PORV and block valve as necessary until pressure less than 2335 psig. IF IA NOT available, THEN refer to Attachment N2 PORVS to operate PORVs.
	b. Pressure - LESS THAN 2260 PSIG	b. Control charging and letdown flow as necessary to decrease PRZR pressure to less than 2260 psig.
10	Verify PRZR PORVs - CLOSED	Manually close PORVs. IF any valve can NOT be closed, THEN manually close its block valve.
11	Restore PRZR To Saturation Conditions:	
	a. Verify letdown - IN SERVICE	a. Do NOT energize PRZR heaters. Continue with Step 13. WHEN letdown established, THEN energize PRZR heaters.
	b. Energize PRZR heaters	

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
12	Check PRZR Spray Valves:	
	a. Auxiliary spray valve (AOV-296) - CLOSED	a. Manually close auxiliary spray valve. IF valve can NOT be closed, THEN perform the following: 1) Establish excess letdown (Refer to Step 6). 2) Close loop B cold leg to REGEN Hx (AOV-427). 3) Ensure HCV-142 demand at 0%.
	b. Verify normal PRZR spray valve controllers - DEMAND AT 0%	b. Place controllers in manual at 0% demand.
	NOTE: PRZR temperature at which bubble should form may be determined from steam table.	
13	Control Charging And Letdown Flow As Necessary To Maintain RCS Pressure Stable	
14	Check PRZR level - LESS THAN 87%	Perform the following: a. Consult TSC to determine if RCPs should be stopped to isolated failed spray valve. b. Return to Step 13.

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
15	Return To Procedure And Step In Effect	

-END-

FR-I.1 APPENDIX LIST

	TITLE	PAGES
1)	ATTACHMENT N2 PORVS	1
2)	ATTACHMENT SD-1	1
3)	ATTACHMENT AUX BLDG SW	1

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PORC REVIEW DATE 6-8-94

PLANT SUPERINTENDENT

6-9-94
EFFECTIVE DATE

CATEGORY 1.0

REVIEWED BY:_____

A. PURPOSE - This procedure provides actions to avoid, or limit, thermal shock or pressurized thermal shock to the reactor pressure vessel, or overpressure conditions at low temperature.

B. ENTRY CONDITIONS/SYMPTOMS

1. ENTRY CONDITIONS - This procedure is entered from:

   a. F-0.4, INTEGRITY Critical Safety Function Status Tree, on either a RED or ORANGE condition.

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
	NOTE: Adverse CNMT values should be used whenever CNMT pressure is greater than 4 psig or CNMT radiation is greater than 10^{+05} R/hr.	
1	Check RCS Pressure - GREATER THAN 250 PSIG [465 PSIG adverse CNMT]	IF RHR flow greater than 475 gpm, THEN return to procedure and step in effect.

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED

NOTE: A faulted S/G is any S/G that is depressurizing in an uncontrolled manner or is completely depressurized.

2 Check RCS Cold Leg Temperatures - STABLE OR INCREASING	Try to stop RCS cooldown: a. Ensure S/G ARVs closed. b. Close both S/G MSIVs. c. Ensure MFW flow control valves closed. • MFW regulating valves • MFW bypass valves d. Ensure MFW pumps tripped. e. Rotate reheater steam supply controller cam to close reheater steam supply valves. f. IF S/G pressure less than condensate pressure, THEN stop all condensate pumps. g. IF RHR system in service, THEN stop any cooldown from RHR system. h. Control total feed flow to non-faulted S/G(s) greater than 200 gpm until narrow range level greater than 5% [25% adverse CNMT] in at least one non-faulted S/G. WHEN S/G level greater than 5% [25% adverse CNMT] in one non-faulted S/G, THEN limit feed flow to stop RCS cooldown.

This Step continued on the next page.

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
	(Step 2 continued from previous page)	
		i. Minimize cooldown from faulted S/G(s): 1) Close faulted S/G(s) TDAFW pump steam supply valve(s). • S/G A, MOV-3505A • S/G B, MOV-3504A 2) IF both S/G(s) faulted, THEN control feed flow at 50 gpm to each S/G. 3) IF any S/G NOT faulted, THEN isolate all feedwater to faulted S/G unless necessary for RCS temperature control. IF a faulted S/G is necessary for RCS temperature control, THEN control feed flow at 50 gpm to that S/G.
3	Check PRZR PORV Block Valves:	
	a. Power to PORV block valves - AVAILABLE	a. Restore power to block valves unless block valve was closed to isolate an open PORV: • MOV-515, MCC C position 6C • MOV-516, MCC D position 6C
	b. Block valves - AT LEAST ONE OPEN	b. Open one block valve unless it was closed to isolate an open PORV. IF at least one block valve can NOT be opened, THEN dispatch AO to locally check breaker. • MOV-515, MCC C position 6C • MOV-516, MCC D position 6C

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED

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CAUTION

IF ANY PRZR PORV OPENS BECAUSE OF HIGH PRZR PRESSURE, THEN STEP 4 SHOULD BE PERFORMED AFTER PRESSURE DECREASES TO LESS THAN THE APPLICABLE PORV SETPOINT.

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4 Check PRZR PORV Status:	
a. Check Reactor Vessel Overpressure Protection System - IN SERVICE	a. Go to Step 4d.
b. Check RCS pressure - LESS THAN 410 PSIG	b. Perform the following: 1) Ensure at least one PRZR PORV open. 2) Continue with Step 5. <u>WHEN</u> pressure less than setpoint, <u>THEN</u> do Step 4e.
c. Go to Step 4e	
d. PRZR pressure - LESS THAN 2335 PSIG	d. Perform the following: 1) Ensure at least one PRZR PORV open. 2) Continue with Step 5. <u>WHEN</u> pressure less than setpoint, <u>THEN</u> do Step 4e.
e. Verify PRZR PORVs - CLOSED	e. Manually close valve. <u>IF</u> any valve can <u>NOT</u> be closed, <u>THEN</u> manually close its block valve.

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
5	Check SI Pumps - ANY RUNNING	Go to Step 13.
6	Check If SI Can Be Terminated: o RCS subcooling based on core exit T/Cs - GREATER THAN 50°F USING FIGURE MIN SUBCOOLING o Check RVLIS indication: o Level (no RCPs) - GREATER THAN 68% [73% adverse CNMT] -OR- o Fluid fraction (any RCP running) - GREATER THAN 80%	Do <u>NOT</u> stop SI pumps. Perform the following: a. <u>IF</u> RCS subcooling based on core exit T/Cs greater than 0°F using Figure MIN SUBCOOLING and no RCP running, <u>THEN</u> attempt to start an RCP: 1) Establish conditions for starting an RCP: o Bus 11A or 11B energized o Refer to Attachment RCP START 2) <u>IF</u> conditions established, <u>THEN</u> start one RCP. b. Go to Step 26.

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<u>CAUTION</u>

IF OFFSITE POWER IS LOST AFTER SI RESET, THEN SELECTED SW PUMPS AND ONE CCW PUMP WILL AUTO START ON EMERGENCY D/G. MANUAL ACTION WILL BE REQUIRED TO RESTART SAFEGUARDS EQUIPMENT.

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STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
7	Reset SI	

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
8	Stop SI And RHR Pumps And Place In AUTO	
9	Reset CI:	
	a. Depress CI reset pushbutton	
	b. Verify annunciator A-26, CNMT ISOLATION - EXTINGUISHED	b. Perform the following: 1) Reset SI. 2) Depress CI reset pushbutton.
10	Verify Adequate SW Flow:	
	a. Check at least two SW pumps - RUNNING	a. Manually start SW pumps as power supply permits (258 kw each). <u>IF</u> less than two SW pumps running, <u>THEN</u> perform the following: 1) Ensure SW isolation. 2) Dispatch AO to establish normal shutdown alignment (Refer to Attachment SD-1). 3) Go to Step 12. <u>WHEN</u> adequate SW available, <u>THEN</u> do Step 11.
	b. Dispatch AO to establish normal shutdown alignment (Refer to Attachment SD-1)	

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
11	Establish IA to CNMT:	
	a. Verify non-safeguards busses energized from offsite power o Bus 13 normal feed - CLOSED -OR- o Bus 15 normal feed - CLOSED	a. Perform the following: 1) Close non-safeguards bus tie breakers: • Bus 13 to Bus 14 tie • Bus 15 to Bus 16 tie 2) Verify adequate emergency D/G capacity to run air compressors (75 kw each). IF NOT, THEN evaluate if CNMT RECIRC fans should be stopped (Refer to Attachment CNMT RECIRC FANS). 3) WHEN bus 15 restored, THEN reset control room lighting.
	b. Verify SW isolation valves to turbine building - OPEN • MOV-4613 and MOV-4670 • MOV-4614 and MOV-4664	b. Manually align valves.
	c. Verify at least two air compressors - RUNNING	c. Manually start air compressors as power supply permits (75 kw each). IF air compressors can NOT be started, THEN dispatch AO to locally reset compressors as necessary.
	d. Check IA supply: o Pressure - GREATER THAN 60 PSIG o Pressure - STABLE OR INCREASING	d. Perform the following: 1) Continue attempts to restore IA (Refer to AP-IA.1, LOSS OF INSTRUMENT AIR). 2) Continue with Step 12. WHEN IA restored, THEN do Steps 11e and f.
	e. Reset both trains of XY relays for IA to CNMT AOV-5392	
	f. Verify IA to CNMT AOV-5392 - OPEN	

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
12	Check If Charging Flow Has Been Established:	
	a. Charging pumps - ANY RUNNING	a. Perform the following: 1) <u>IF</u> CCW flow is lost to any RCP thermal barrier <u>OR</u> any RCP #1 seal outlet temperature offscale high, <u>THEN</u> dispatch AO with key to RWST gate to locally close seal injection needle valve(s) to affected RCP: • RCP A, V-300A • RCP B, V-300B 2) Ensure HCV-142 open, demand at 0%.
	b. Align charging pump suction to RWST: o LCV-112B - OPEN o LCV-112C - CLOSED	b. <u>IF</u> LCV-112B can <u>NOT</u> be opened, <u>THEN</u> perform the following: 1) Verify charging pump A <u>NOT</u> running and place in PULL STOP. 2) Dispatch AO to locally open manual charging pump suction from RWST (V-358 located in charging pump room). 3) <u>WHEN</u> V-358 open, <u>THEN</u> direct AO to close V-268 to isolate charging pumps B and C from VCT (V-268 located in charging pump room).
	c. Start charging pumps as necessary and adjust charging flow to restore PRZR level	

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
*13	Monitor SI Reinitiation Criteria: o RCS subcooling based on core exit T/Cs - GREATER THAN FIGURE MIN SUBCOOLING o RVLIS indication: o Level - GREATER THAN 68% [73% adverse CNMT] -OR- o Fluid fraction (any RCP running) - GREATER THAN 80%	Manually operate SI pumps as necessary and perform the following: a. <u>IF</u> RCS subcooling based on core exit T/Cs greater than Figure MIN SUBCOOLING and no RCP running, <u>THEN</u> attempt to start a RCP: 1) Establish conditions for starting an RCP: o Bus 11A or 11B energized o Refer to Attachment RCP START 2) <u>IF</u> conditions established, <u>THEN</u> start one RCP. b. Go to Step 26.
14	Check RCS Hot Leg Temperatures - STABLE	<u>IF</u> increasing, <u>THEN</u> control feed flow and dump steam to stabilize RCS hot leg temperatures. <u>IF</u> decreasing, <u>THEN</u> verify that actions of Step 2 have been performed before continuing with procedure.

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
15	Check If SI ACCUMs Should Be Isolated:	
	a. Check the following: o RCS subcooling based on core exit T/Cs - GREATER THAN 0°F USING FIGURE MIN SUBCOOLING o RVLIS indication: o Level - GREATER THAN 68% [73% adverse CNMT] -OR- o Fluid fraction (any RCP running) - GREATER THAN 80%	a. Return to Step 13.
	b. Dispatch AO with locked valve key to locally close breakers for SI ACCUM discharge valves • MOV-841, MCC C position 12F • MOV-865, MCC D position 12C	
	c. Close SI ACCUM discharge valves • MOV-841 • MOV-865	c. Vent any unisolated ACCUMs: 1) Open vent valves for unisolated SI ACCUMs. • ACCUM A, AOV-834A • ACCUM B, AOV-834B 2) Open HCV-945. 3) Continue with Step 16. Do <u>NOT</u> decrease RCS pressure to less than unisolated ACCUM pressure.
	d. Locally reopen breakers for MOV-841 and MOV-865	

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED

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CAUTION

THE RCS SHOULD NOT BE DEPRESSURIZED TO LESS THAN SI ACCUM PRESSURE UNTIL SI ACCUMS ISOLATED.

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NOTE:
- o If auxiliary spray is in use, spray flow may be increased by closing normal charging valve AOV-294 and normal PRZR spray valves.
- o When using a PRZR PORV select one with an operable block valve.

16 Depressurize RCS To Decrease RCS Subcooling:

a. Depressurize using normal PRZR spray if available

a. IF normal spray NOT available, THEN use one PRZR PORV. IF IA NOT available, THEN refer to Attachment N2 PORVS.

IF no PRZR PORV available, THEN use auxiliary spray valve (AOV-296).

b. Depressurize RCS until either of the following conditions satisfied:

- o RCS subcooling based on core exit T/Cs - LESS THAN 10°F USING FIGURE MIN SUBCOOLING

-OR-

- o PRZR level - GREATER THAN 87% [75% adverse CNMT]

c. Stop RCS depressurization

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
17	Check If RCPs Must Be Stopped:	
	a. RCPs - ANY RUNNING	a. Go to Step 18.
	b. Check the following:	b. Go to Step 18.
	o RCP #1 seal D/P - LESS THAN 220 PSID	
	-OR-	
	o RCP #1 seal leakoff - LESS THAN 0.25 GPM	
	c. Stop affected RCP(s)	

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<u>CAUTION</u>

AN INCREASE IN RCS PRESSURE MAY RESULT IN EXCESSIVE REACTOR VESSEL STRESS. RCS PRESSURE AND TEMPERATURE SHOULD BE MAINTAINED STABLE WHILE PERFORMING SUBSEQUENT STEPS IN THIS PROCEDURE.

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STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
18	Check PRZR Level - GREATER THAN 13% [40% adverse CNMT]	Try to restore level with charging while maintaining stable RCS pressure. <u>IF</u> level can <u>NOT</u> be restored, <u>THEN</u> go to Step 25.

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
19	Check If Normal CVCS Operation Can Be Established	
	a. Verify IA restored: o IA to CNMT (AOV-5392) - OPEN o IA pressure - GREATER THAN 60 PSIG	a. Continue with Step 23. <u>WHEN</u> IA restored, <u>THEN</u> do Steps 19 through 22.
	b. CCW pumps - ANY RUNNING	b. Perform the following: 1) <u>IF</u> any RCP #1 seal outlet temperature offscale high, <u>THEN</u> isolate CCW to thermal barrier of affected RCP(s). • RCP A, MOV-749A and MOV-759A • RCP B, MOV-749B and MOV-759B 2) Manually start one CCW pump.
	c. Verify instrument bus D - ENERGIZED	c. Energize MCC B. <u>IF</u> MCC B <u>NOT</u> available, <u>THEN</u> perform the following: 1) Verify MCC A energized. 2) Place instrument bus D on maintenance supply.
	d. Charging pump - ANY RUNNING	d. Continue with Step 24. <u>WHEN</u> any charging pump running, <u>THEN</u> do Steps 20 through 24.

STEP — ACTION/EXPECTED RESPONSE — RESPONSE NOT OBTAINED

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CAUTION

IF RCS PRESSURE LESS THAN 250 PSIG, THEN PCV-135 SHOULD BE ADJUSTED TO ESTABLISH DESIRED LETDOWN FLOW, NOT TO INCREASE PRESSURE.

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20 Establish Normal Letdown:

a. Establish charging line flow to REGEN Hx - GREATER THAN 20 GPM

b. Place the following switches to CLOSE:

- Letdown orifice valves (AOV-200A, AOV-200B, and AOV-202)
- AOV-371, letdown isolation valve
- AOV-427, loop B cold leg to REGEN Hx

c. Place letdown controllers in MANUAL at 40% open

- TCV-130
- PCV-135

d. Reset both trains of XY relays for AOV-371 and AOV-427

e. Open AOV-371 and AOV-427

f. Open letdown orifice valves as necessary

g. Place TCV-130 in AUTO at 105°F

h. Place PCV-135 in AUTO at 250 psig

i. Adjust charging pump speed and HCV-142 as necessary

<u>IF</u> RCP seal return has been established, <u>THEN</u> establish excess letdown as follows:

o Place excess letdown divert valve, AOV-312, to NORMAL.

o Ensure CCW from excess letdown open, (AOV-745).

o Open excess letdown isolation valve AOV-310.

o Slowly open HCV-123 to maintain excess letdown temperature less than 195°F and pressure less than 100 psig.

o Adjust charging pump speed as necessary.

<u>IF</u> RCP seal return <u>NOT</u> established, <u>THEN</u> consult TSC to determine if excess letdown should be placed in service.

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
21	Check VCT Makeup System:	
	a. Adjust boric acid flow control valve in AUTO to 9.5 gpm	
	b. Verify the following: 1) RMW mode selector switch in AUTO 2) RMW control armed - RED LIGHT LIT	b. Adjust controls as necessary.
	c. Check VCT level: o Level - GREATER THAN 20% -OR- o Level - STABLE OR INCREASING	c. Manually increase VCT makeup flow as follows: 1) Ensure BA transfer pumps and RMW pumps running. <u>IF NOT</u>, <u>THEN</u> reset MCC C and MCC D UV lockouts as necessary. 2) Place RMW flow control valve HCV-111 in MANUAL and increase RMW flow. 3) Increase boric acid flow as necessary.

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
22	Check Charging Pump Suction Aligned To VCT:	
	a. VCT level - GREATER THAN 20%	a. IF VCT level can NOT be maintained greater than 5%, THEN perform the following: 1) Ensure charging pump suction aligned to RWST o LCV-112B open o LCV-112C closed 2) Continue with Step 23. WHEN VCT level greater than 40%, THEN do Step 22b.
	b. Verify charging pumps aligned to VCT o LCV-112C - OPEN o LCV-112B - CLOSED	b. Manually align valves as necessary.
23	Check PRZR Level - LESS THAN 87% [75% adverse CNMT]	Control charging and letdown as necessary to reduce PRZR level to less than 87% [75% adverse CNMT]. If necessary establish excess letdown. IF no letdown available AND CCW to RCPs established, THEN cycle charging pumps as necessary to control PRZR level.

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
	NOTE: For optimum long term pressure control, saturated conditions should be restored in the PRZR.	
24	Verify PRZR Liquid Temperature (TI-424) - AT SATURATION FOR DESIRED PRESSURE	IF PRZR liquid temperature low, THEN energize PRZR heaters as necessary to establish desired temperature.
25	Check RCS Subcooling Based On Core Exit T/Cs - BETWEEN 0°F AND 10°F USING FIGURE MIN SUBCOOLING	IF RCS pressure less than 160 psig [200 psig adverse CNMT], THEN go to Step 26. IF NOT, THEN depressurize using normal spray. IF normal spray NOT available and letdown is in service, THEN use auxiliary spray for any further depressurization. Return to Step 16b. IF auxiliary spray NOT available, THEN return to Step 16a.
26	Check Cool Down Rate In RCS Cold Legs - GREATER THAN 100°F IN ANY 60 MINUTES PERIOD	Return to procedure and step in effect.
27	Maintain RCS Pressure And Temperature Stable For At Least 1 Hour a. Control steam dump and feed flow as necessary b. Perform actions of other procedures in effect which do not cool down the RCS or increase RCS pressure until the RCS temperature soak has been completed	

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
28	<u>WHEN</u> 1 HOUR Soak Is Complete, <u>THEN</u> Continue RCS Cooldown And Depressurization As Necessary a. Maintain RCS pressure and cold leg temperature within the limits of Figure SOAK LIMITS b. Establish and maintain cooldown rate in RCS cold legs - LESS THAN 50°F IN ANY 60 MINUTES PERIOD	
29	Verify SI Flow Not Required: o RCS subcooling based on core exit T/Cs - GREATER THAN FIGURE MIN SUBCOOLING o RVLIS indication: o Level - GREATER THAN 68% [73% adverse CNMT] -OR- o Fluid fraction (any RCP running) - GREATER THAN 80%	Manually operate SI pumps as necessary. <u>IF</u> RCS subcooling based on core exit T/Cs greater than Figure MIN SUBCOOLING and no RCP running, <u>THEN</u> perform the following: a. Establish conditions for starting an RCP: o Bus 11A or 11B energized o Refer to Attachment RCP START b. <u>IF</u> conditions established, <u>THEN</u> start one RCP.

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
30	Return To Procedure And Step In Effect	

-END-

FR-P.1 APPENDIX LIST

	TITLE	PAGES
1)	FIGURE MIN SUBCOOLING	1
2)	FIGURE SOAK LIMITS	1
3)	ATTACHMENT RCP START	1
4)	ATTACHMENT SD-1	1
5)	ATTACHMENT CNMT RECIRC FANS	1
6)	ATTACHMENT N2 PORVS	1

FIGURE MIN SUBCOOLING

NOTE: Subcooling Margin = Saturation Temperature From Figure Below [-] Core Exit T/C Indication

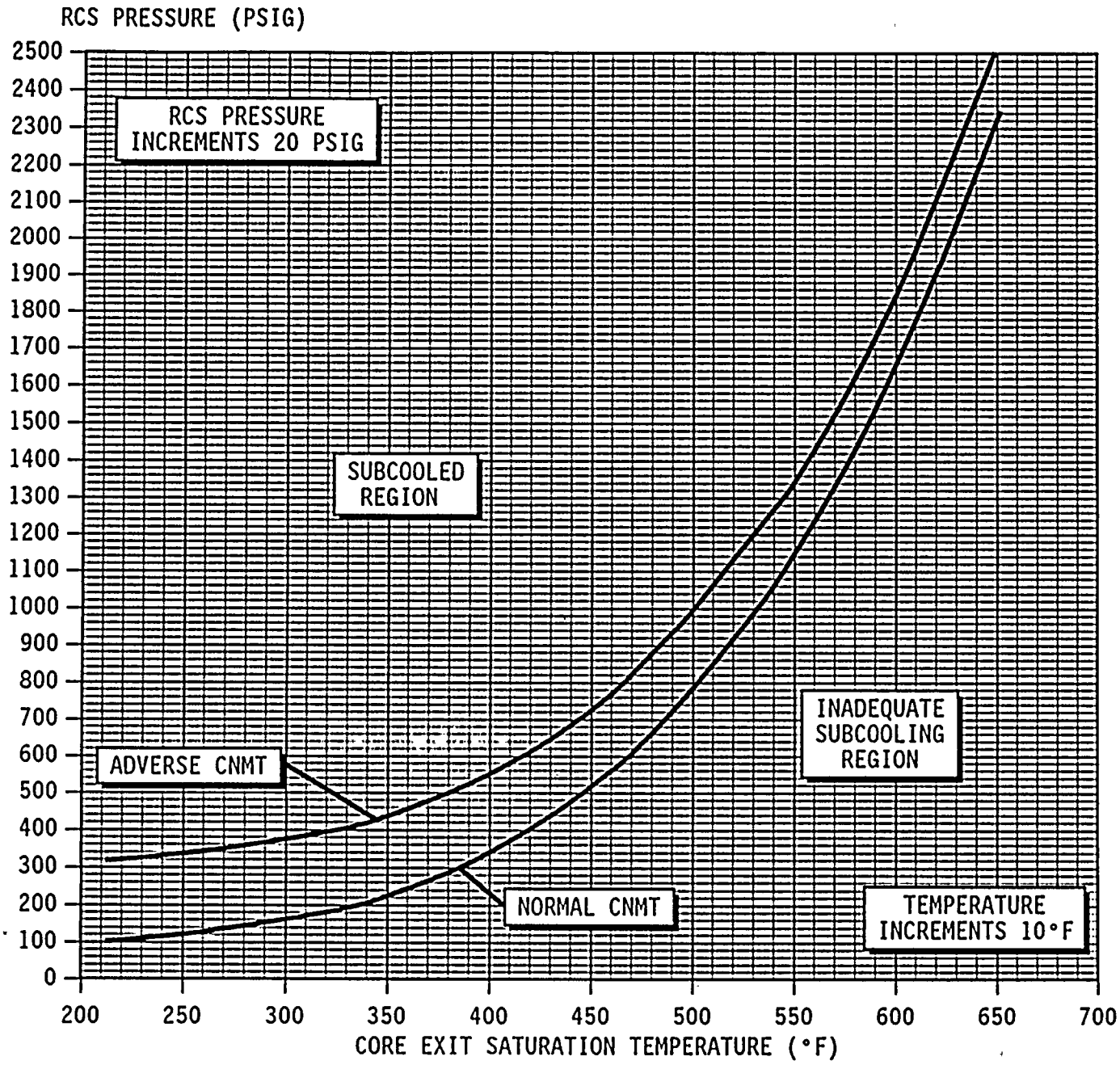

FIGURE SOAK LIMITS