ROCHESTER GAS AND ELECTRIC CORPORATION

GINNA STATION

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TECHNICAL REVIEW

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CATEGORY 1.0

REVIEWED BY:_____

A. PURPOSE - This procedure provides actions to cool down and depressurize the RCS to cold shutdown conditions while minimizing loss of RCS inventory and voiding in the RCS for an SGTR concurrent with a LOCA (i.e. Ruptured-Faulted S/G).

B. ENTRY CONDITIONS/SYMPTOMS

1. ENTRY CONDITIONS - This procedure is entered from:

a. E-3, STEAM GENERATOR TUBE RUPTURE, if ruptured S/G can not be isolated from any intact S/G.

b. E-3, STEAM GENERATOR TUBE RUPTURE, if PRZR PORV can not be isolated by closing its block valve.

c. E-3, STEAM GENERATOR TUBE RUPTURE, if ruptured S/G is faulted.

d. E-3, STEAM GENERATOR TUBE RUPTURE, if no intact S/G is available for RCS cooldown.

e. E-3, STEAM GENERATOR TUBE RUPTURE, if minimum D/P between ruptured and intact S/G cannot be maintained.

f. E-3, STEAM GENERATOR TUBE RUPTURE, if RCS subcooling is less than required.

g. E-3, STEAM GENERATOR TUBE RUPTURE, if RCS pressure does not increase after closing PRZR PORV and block valve.

h. E-3, STEAM GENERATOR TUBE RUPTURE, and ECA-3.3, SGTR WITHOUT PRESSURIZER PRESSURE CONTROL, if SI can not be terminated.

i. E-3, STEAM GENERATOR TUBE RUPTURE, and ECA-3.3, SGTR WITHOUT PRESSURIZER PRESSURE CONTROL, if SI is reinitiated after termination.

j. E-3, STEAM GENERATOR TUBE RUPTURE, ES-3.1, POST-SGTR COOLDOWN USING BACKFILL, ES-3.2, POST-SGTR COOLDOWN USING BLOWDOWN, and ES-3.3, POST-SGTR COOLDOWN USING STEAM DUMP, if SI accumulators should not be isolated.

k. ES-3.1, POST-SGTR COOLDOWN USING BACKFILL,
ES-3.2, POST-SGTR COOLDOWN USING BLOWDOWN, and
ES-3.3, POST-SGTR COOLDOWN USING STEAM DUMP, if a non-ruptured S/G is not available for RCS cooldown.

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED

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CAUTION

- IF RWST LEVEL DECREASES TO LESS THAN 28%, THEN THE SI SYSTEM SHOULD BE ALIGNED FOR COLD LEG RECIRCULATION USING ES-1.3, TRANSFER TO COLD LEG RECIRCULATION.
- IF PRZR LEVEL IS LESS THAN 50% OR IF ADVERSE CNMT CONDITIONS EXIST, THEN PRZR HEATERS SHOULD NOT BE ENERGIZED UNTIL PRZR LEVEL IS EVALUATED BY THE TSC.
- 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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NOTE:
- Foldout page should be open AND monitored periodically.
- 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 Reset SI

2 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.

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
3	Verify Adequate SW Flow:	
	a. Check at least two SW pumps - RUNNING	a. Manually start SW pumps as power supply permits (258 kw each). IF less than two SW pumps running, THEN perform the following: 1) Ensure SW isolation. 2) Dispatch AO to establish normal shutdown alignment (Refer to Attachment SD-1). 3) Go to Step 5.
	b. Dispatch AO to establish normal shutdown alignment (Refer to Attachment SD-1)	

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
4	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).
	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 5. WHEN IA restored, THEN do Steps 4e 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
* 5	Monitor All AC Busses - BUSSES ENERGIZED BY OFFSITE POWER o Normal feed breakers to all 480 volt busses - CLOSED o 480 bus voltage - GREATER THAN 420 VOLTS o Emergency D/G output breakers - OPEN	Perform the following: a. IF any AC emergency bus normal feed breaker open, THEN ensure associated D/G breaker closed. b. Perform the following, as necessary: 1) Close non-safeguards bus tie breakers: • Bus 13 to Bus 14 tie • Bus 15 to Bus 16 tie 2) Place the following pumps in PULL STOP: • EH pumps • Turning gear oil pump • HP seal oil backup pump 3) Restore power to MCCs. • A from Bus 13 • B from Bus 15 • E from Bus 15 • F from Bus 15 4) WHEN bus 15 restored, THEN reset control room lighting. 5) Refer to Attachment SI/UV for other equipment lost with loss of offsite power. c. Try to restore offsite power to all AC busses (Refer to ER-ELEC.1, RESTORATION OF OFFSITE POWER).

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
* 6	Monitor If CNMT Spray Should Be Stopped:	
	a. CNMT spray pumps - ANY RUNNING	a. Go to Step 7.
	b. Check the following: o CNMT pressure - LESS THAN 4 PSIG o Sodium hydroxide tank level - LESS THAN 55%	b. Continue with Step 7. WHEN BOTH conditions satisfied, THEN do Steps 6c through f.
	c. Reset CNMT spray	
	d. Check NaOH tank outlet valves - CLOSED • AOV-836A • AOV-836B	d. Place NaOH tank outlet valve controllers to MANUAL and close valves.
	e. Stop CNMT spray pumps and place in AUTO	
	f. Close CNMT spray pump discharge valves • MOV-860A • MOV-860B • MOV-860C • MOV-860D	

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED

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CAUTION

RCS PRESSURE SHOULD BE MONITORED. IF RCS PRESSURE DECREASES TO LESS THAN 250 PSIG [465 PSIG ADVERSE CNMT], THEN THE RHR PUMPS MUST BE MANUALLY RESTARTED TO SUPPLY WATER TO THE RCS.

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7 Check If RHR Pumps Should Be Stopped:

a. Check RCS pressure:

- Pressure - GREATER THAN 250 psig [465 psig adverse CNMT]
- Pressure - STABLE OR INCREASING

a. Go to Step 8.

b. Stop RHR pumps and place in AUTO

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED

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CAUTION

IF ANY RUPTURED S/G IS FAULTED, FEED FLOW TO THAT S/G SHOULD REMAIN ISOLATED DURING SUBSEQUENT RECOVERY ACTIONS UNLESS NEEDED FOR RCS COOLDOWN.

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* 8	Monitor Ruptured S/G Level:	
	a. Narrow range level - GREATER THAN 5% [25% adverse CNMT]	a. IF ruptured S/G NOT faulted, THEN perform the following: 1) Maintain feed flow to ruptured S/G until level greater than 5% [25% adverse CNMT]. 2) Continue with Step 9. WHEN ruptured S/G level greater than 5% [25% adverse CNMT], THEN do Steps 8b through e.
	b. Close MDAFW pump discharge valve to ruptured S/G • S/G A, MOV-4007 • S/G B, MOV-4008	b. Dispatch AO to locally close valve.
	c. Pull stop MDAFW pump for ruptured S/G	
	d. Close TDAFW pump flow control valve to ruptured S/G • S/G A, AOV-4297 • S/G B, AOV-4298	d. Dispatch AO with locked valve key to locally close TDAFW pump manual feedwater isolation valve to ruptured S/G. • S/G A, V-4005 • S/G B, V-4006
	e. Verify MDAFW pump crosstie valves - CLOSED • MOV-4000A • MOV-4000B	e. Manually close valves.

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
9	Evaluate Plant Status:	
	a. Check auxiliary building radiation - NORMAL • Plant vent iodine (R-10B) • Plant vent particulate (R-13) • Plant vent gas (R-14) • CCW liquid monitor (R-17) • Letdown line monitor (R-9) • CHG pump room (R-4)	a. Notify HP and refer to appropriate AR-RMS procedure.
	b. Direct HP to obtain following samples: • RCS boron • RCS activity • CNMT hydrogen • CNMT sump boron • BASTs boron	
	c. Verify adequate Rx head cooling:	
	1) Check IA to CNMT - AVAILABLE	1) Go to Step 10.
	2) Verify at least one control rod shroud fan - RUNNING	2) Manually start one fan as power supply permits (45 kw).
	3) Verify one Rx compartment cooling fan - RUNNING	3) Perform the following: o Dispatch AO to reset UV relays at MCC C and MCC D. o Manually start one fan as power supply permits (23 kw).

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
10	Establish 75 GPM Charging Flow:	
	a. Charging pumps - ANY RUNNING	a. Perform the following: 1) IF CCW flow is lost to any RCP thermal barrier OR any RCP #1 seal outlet temperature offscale high, THEN dispatch AO with RWST area key to locally isolate seal injection to affected RCP. • RCP A, V-300A • RCP B, V-300B 2) Ensure HCV-142 open.
	b. Align charging pump suction to RWST: o LCV-112B - OPEN o LCV-112C - CLOSED	b. IF LCV-112B can NOT be opened, THEN perform the following: 1) Verify charging pump A NOT 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) WHEN V-358 open, THEN 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 establish 75 gpm total charging flow • Charging line flow • Seal injection	

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
11	Check If S/G Secondary Side Is Intact: o Pressure in both S/Gs - STABLE OR INCREASING o Pressure in both S/Gs - GREATER THAN 100 PSIG	IF any S/G pressure decreasing in an uncontrolled manner OR completely depressurized, THEN verify faulted S/G isolated unless needed for RCS cooldown: • Steamlines • Feedlines IF NOT, THEN go to E-2, FAULTED STEAM GENERATOR ISOLATION, Step 1.

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CAUTION

IF CST LEVEL DECREASES TO LESS THAN 5 FEET, THEN ALTERNATE WATER SOURCES FOR AFW PUMPS WILL BE NECESSARY (REFER TO ER-AFW.1, ALTERNATE WATER SUPPLY TO AFW PUMPS).

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NOTE: TDAFW pump flow control valves fail open on loss of IA.

*12	Monitor Intact S/G Levels: a. Narrow range level - GREATER THAN 5% [25% adverse CNMT] b. Control feed flow to maintain narrow range level between 17% [25% adverse CNMT] and 50%	a. Maintain total feed flow greater than 200 gpm until narrow range level greater than 5% [25% adverse CNMT] in intact S/G. b. IF narrow range level in the intact S/G continues to increase in an uncontrolled manner, THEN consider isolating unnecessary release paths: • TDAFW pump steam supply valves • S/G blowdown valves • Refer to Attachment RUPTURED S/G

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED

NOTE: Shutdown margin should be monitored during RCS cooldown (Refer to Figure SDM).

13	Initiate RCS Cooldown To Cold Shutdown:	
	a. Establish and maintain cooldown rate in RCS cold legs - LESS THAN 100°F/HR	
	b. Use RHR system if in service	
	c. Dump steam to condenser from intact S/G	c. Manually or locally dump steam using intact S/G ARV. IF no intact S/G available, THEN perform the following: o Use faulted S/G. -OR- o IF RHR system NOT in service, THEN use ruptured S/G.
14	Check RCS Subcooling Based On Core Exit T/Cs - GREATER THAN 0°F USING FIGURE MIN SUBCOOLING	Go to Step 28.
*15	Monitor Conditions For Subcooled Recovery:	
	a. Check RWST level - GREATER THAN 50%	a. IF CNMT sump B level is less than 113 inches, THEN go to ECA-3.2, SGTR WITH LOSS OF REACTOR COOLANT - SATURATED RECOVERY DESIRED, Step 1.
	b. Check ruptured S/G narrow level - LESS THAN 90% [85% adverse CNMT]	b. Consult TSC to determine if recovery should be completed using ECA-3.2, SGTR WITH LOSS OF REACTOR COOLANT - SATURATED RECOVERY DESIRED.

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
16	Check Safeguards Pump Status o SI pumps - ANY RUNNING -OR- o RHR pumps - ANY RUNNING IN INJECTION MODE	Go to Step 24.
17	Place PRZR Heater Switches In The Following Positions: o PRZR heater control group - PULL STOP o PRZR heater backup group - OFF	
18	Check PRZR level - LESS THAN 13% [40% adverse CNMT]	Go to Step 20.

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED

* *

CAUTION

VOIDING MAY OCCUR IN THE RCS DURING RCS DEPRESSURIZATION. THIS WILL RESULT IN A RAPIDLY INCREASING PRZR LEVEL.

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NOTE: o When using PRZR PORV, select one with an operable block valve.

o If auxiliary spray is in use, then spray flow may be increased by closing normal charging valve AOV-294 and normal PRZR spray valves.

19	Depressurize RCS To Refill PRZR:	
	a. Use normal PRZR spray valve associated with running RCP • RCP A, PCV-431A • RCP B, PCV-431B	a. Use one PRZR PORV. IF IA NOT available, THEN refer to Attachment N2 PORVS. IF no PORV available, THEN use auxiliary spray valve.
	b. PRZR level - GREATER THAN 13% [40% adverse CNMT]	b. Continue with Step 20. WHEN level greater than 13% [40% adverse CNMT], THEN stop RCS depressurization.
	c. Stop RCS depressurization	

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED

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CAUTION

IF RCP SEAL COOLING HAD PREVIOUSLY BEEN LOST, THEN THE AFFECTED RCP SHOULD NOT BE STARTED PRIOR TO A STATUS EVALUATION.

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20 Check If An RCP Should Be Started:

a. Both RCPs - STOPPED

a. Stop all but one RCP and go to Step 21.

b. RCS subcooling based on core exit T/Cs - GREATER THAN 0°F USING FIGURE MIN SUBCOOLING

b. Go to Step 28.

c. PRZR level - GREATER THAN 13% [40% adverse CNMT]

c. Return to Step 18.

d. Try to start an RCP

1) Establish conditions for starting an RCP

- o Bus 11A or 11B energized
- o Refer to Attachment RCP START

2) Start one RCP

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
21	Check If One Of Three SI Pumps Should Be Stopped:	
	a. Three SI pumps - RUNNING	a. Go to Step 22.
	b. RCS subcooling based on core exit T/Cs - GREATER THAN 35°F [90°F adverse CNMT] USING FIGURE MIN SUBCOOLING	b. IF RCS hot leg temperatures greater than 320°F [310°F adverse CNMT], OR IF RHR normal cooling in service, THEN go to Step 28. IF RHR normal cooling NOT in service AND RCS hot leg temperatures less than 320°F [310°F adverse CNMT], THEN ensure at least one RHR pump running in injection mode and go to Step 21c. IF no RHR pump can be operated in injection mode, THEN go to Step 28.
	c. Check PRZR level - GREATER THAN 13% [40% adverse CNMT]	c. Do NOT stop SI pump. Return to Step 18.
	d. Stop one SI pump	

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED

22 Check If One Of Two SI Pumps Should Be Stopped:

a. Two SI pumps - RUNNING

a. Go to Step 23.

b. Determine required RCS subcooling from table:

Charging Pump Availability	RCS Subcooling Criteria
NONE	120°F [200°F adverse CNMT]
ONE	115°F [190°F adverse CNMT]
TWO	105°F [180°F adverse CNMT]
THREE	100°F [175°F adverse CNMT]

c. RCS subcooling based on core exit T/Cs - GREATER THAN VALUE FROM TABLE ABOVE USING FIGURE MIN SUBCOOLING

c. IF RCS hot leg temperatures greater than 320°F [310°F adverse CNMT], OR IF RHR normal cooling in service, THEN go to Step 28.

IF RHR normal cooling NOT in service AND RCS hot leg temperatures less than 320°F [310°F adverse CNMT], THEN ensure at least one RHR pump running in injection mode and go to Step 22d. IF no RHR pump can be operated in injection mode, THEN go to Step 28.

d. PRZR level - GREATER THAN 13% [40% adverse CNMT]

d. Do NOT stop SI pump. Return to Step 18.

e. Stop one SI pump

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED

23 Check If Last SI Pump Should Be Stopped:

a. One SI pump - RUNNING

a. IF any RHR pump running in injection mode, THEN go to Step 28. IF NOT, THEN go to Step 24.

b. Determine required RCS subcooling from table:

Charging Pump Availability	RCS Subcooling Criteria
NONE	Insufficient subcooling to stop SI pump.
ONE	255°F [295°F adverse CNMT]
TWO	235°F [285°F adverse CNMT]
THREE	210°F [270°F adverse CNMT]

c. RCS subcooling based on core exit T/Cs - GREATER THAN VALUE FROM TABLE ABOVE USING FIGURE MIN SUBCOOLING

c. IF RCS hot leg temperatures greater than 320°F [310°F adverse CNMT] OR IF RHR normal cooling in service, THEN go to Step 28.

IF RHR normal cooling NOT in service AND RCS hot leg temperatures less than 320°F [310°F adverse CNMT], THEN ensure at least one RHR pump running in injection mode and go to Step 23d. IF no RHR pump can be operated in injection mode, THEN go to Step 28.

d. PRZR level - GREATER THAN 13% [40% adverse CNMT]

d. Do NOT stop SI pump. Return to Step 18.

e. Stop running SI pump

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED

24 Check If Charging Flow Should Be Controlled To Maintain PRZR Level:

a. Check RHR pumps - RUNNING IN INJECTION MODE

a. Start charging pumps and control charging flow to maintain PRZR level and go to Step 25.

b. Go to Step 28

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CAUTION

IF RCP SEAL COOLING HAD PREVIOUSLY BEEN LOST, THEN THE AFFECTED RCP SHOULD NOT BE STARTED PRIOR TO A STATUS EVALUATION.

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25 Check RCP Status:

a. RCPs - AT LEAST ONE RUNNING

a. Perform the following:

1) Establish conditions for starting an RCP:

- o Verify bus 11A or 11B energized.
- o Refer to Attachment RCP START.

2) Start one RCP.

IF an RCP can NOT be started, THEN verify natural circulation (Refer to Attachment NC).

IF natural circulation NOT verified, THEN increase dumping steam.

b. Stop all but one RCP

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED

* *

CAUTION

VOIDING MAY OCCUR IN THE RCS DURING RCS DEPRESSURIZATION. THIS WILL RESULT IN A RAPIDLY INCREASING PRZR LEVEL.

* *

NOTE: o WHEN using a PRZR PORV, THEN select one with an operable block valve.

o If auxiliary spray is in use, then spray flow may be increased by closing normal charging valve AOV-294 and normal PRZR spray valves.

26 Depressurize RCS To Minimize RCS Subcooling:

a. Depressurize using normal PRZR spray if available

a. Depressurize using one PRZR PORV. IF IA NOT available, THEN refer to Attachment N2 PORVS.

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

b. Energize PRZR heaters as necessary

c. 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 75% [65% adverse CNMT]

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED

NOTE: Leakage from ruptured S/G into RCS will dilute RCS boron concentration.

27 Verify Adequate Shutdown Margin

a. Direct HP to sample RCS and ruptured S/G for boron concentration

b. Verify boron concentration - GREATER THAN REQUIREMENTS OF FIGURE SDM

b. Borate as necessary.

*28 Monitor SI Reinitiation Criteria:

a. RCS subcooling based on core exit T/Cs - GREATER THAN 0°F USING FIGURE MIN SUBCOOLING

a. Manually operate SI pumps as necessary and go to Step 29.

b. PRZR level - GREATER THAN 5% [30% adverse CNMT]

b. Manually operate SI pumps as necessary and return to Step 18.

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
29	Check If SI ACCUMs Should Be Isolated:	
	a. RCS subcooling based on core exit T/Cs - GREATER THAN 0°F USING FIGURE MIN SUBCOOLING	a. IF both RCS hot leg temperatures less than 400°F, THEN go to Step 29c. IF NOT, THEN go to Step 30.
	b. PRZR level - GREATER THAN 5% [30% adverse CNMT]	b. Return to Step 18.
	c. 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	
	d. Close SI ACCUM discharge valves • MOV-841 • MOV-865	d. Vent any unisolated ACCUMs: 1) Open vent valves for unisolated SI ACCUMs. • ACCUM A, AOV-834A • ACCUM B, AOV-834B 2) Open HCV-945.
	e. Locally reopen breakers for MOV-841 and MOV-865	

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
30	Check If Emergency D/Gs Should Be Stopped:	
	a. Verify AC emergency busses energized by offsite power: o Emergency D/G output breakers - OPEN o AC emergency bus voltage - GREATER THAN 420 VOLTS o AC emergency bus normal feed breakers - CLOSED	a. Try to restore offsite power (Refer to ER-ELEC.1, RESTORATION OF OFFSITE POWER).
	b. Stop any unloaded emergency D/G and place in standby (Refer to Attachment D/G STOP)	
31	Minimize Secondary System Contamination:	
	a. Isolate reject from hotwell to CST: o Place hotwell level controller (HC-107) in MANUAL at 50% o Verify hotwell level - STABLE	a. IF hotwell level increasing, THEN direct HP to sample hotwells for activity.
	b. Verify local actions to complete isolation of ruptured S/G (Refer to Attachment RUPTURED S/G)	

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
32	Verify Adequate SW Flow To CCW Hx:	
	a. Verify at least two SW pumps - RUNNING	a. Manually start pumps as power supply permits (258 kw per pump). IF less than two SW pumps can be operated, THEN go to Step 33.
	b. Verify AUX BLDG SW isolation valves - OPEN • MOV-4615 and MOV-4734 • MOV-4616 and MOV-4735	b. Establish SW to AUX BLDG (Refer to Attachment AUX BLDG SW).
	c. Verify CNMT RECIRC fan annunciator C-2, HIGH TEMPERATURE ALARM - EXTINGUISHED	c. Dispatch AO to locally throttle flow to CCW Hx to between 5000 gpm and 6000 gpm total flow.
33	Check RCP Cooling	Establish normal cooling to RCPs (Refer to Attachment SEAL COOLING).
	a. Check CCW to RCPs o Annunciator A-7, RCP 1A CCW RETURN HIGH TEMP OR LOW FLOW - EXTINGUISHED o Annunciator A-15, RCP 1B CCW RETURN HIGH TEMP OR LOW FLOW - EXTINGUISHED	
	b. Check RCP seal injection o Labyrinth seal D/Ps - GREATER THAN 15 INCHES OF WATER -OR- o RCP seal injection flow to each RCP - GREATER THAN 6 GPM	

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
34	Check If Seal Return Flow Should Be Established:	
	a. Verify instrument bus D - ENERGIZED	a. Perform the following: 1) Ensure steam dump mode control in MANUAL. 2) Restore power to instrument bus D from MCC B or MCC A (maintenance supply).
	b. Verify RCP #1 seal outlet temperature - LESS THAN 235°F	b. Go to Step 35.
	c. Verify RCP seal outlet valves - OPEN • AOV-270A • AOV-270B	c. Manually open valves as necessary.
	d. Reset both trains of XY relays for RCP seal return isolation valve MOV-313	
	e. Open RCP seal return isolation valve MOV-313	e. Perform the following: 1) Place MOV-313 switch to OPEN. 2) Dispatch AO with key to RWST gate to locally open MOV-313.
	f. Verify RCP #1 seal leakoff flow - LESS THAN 5.5 GPM	f. IF any RCP seal leakoff flow greater than 5.5 gpm THEN: o Close the affected RCP seal discharge valve • RCP A, AOV-270A • RCP B, AOV-270B o Trip the affected RCP IF both RCP seal discharge valves are shut, THEN go to Step 35.
	g. Verify RCP #1 seal leakoff flow - GREATER THAN 0.25 GPM	g. Refer to AP-RCP.1, RCP SEAL MALFUNCTION.

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED

NOTE: Adverse CNMT conditions or loss of forced air cooling may result in failure of NIS detectors.

35 Check If Source Range Detectors Should Be Energized:

a. Source range channels - DEENERGIZED

a. Go to Step 35e.

b. Check intermediate range flux - EITHER CHANNEL LESS THAN 10^{-10} AMPS

b. Perform the following:

1) IF neither intermediate range channel is decreasing, THEN initiate boration.

2) Continue with Step 36. WHEN flux is LESS THAN 10^{-10} amps on any operable channel, THEN do Steps 35c, d and e.

c. Check the following:

- Both intermediate range channels - LESS THAN 10^{-10} AMPS

-OR-

- Greater than 20 minutes since reactor trip

c. Continue with Step 36. WHEN either condition met, THEN do Steps 35d and e.

d. Verify source range detectors - ENERGIZED

d. Manually energize source range detectors by depressing P-6 permissive defeat pushbuttons (2 of 2).

IF source ranges can NOT be restored, THEN refer to ER-NIS.1, SR MALFUNCTION and go to Step 36.

e. Transfer Rk-45 recorder to one source range and one intermediate range channel

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
36	Establish Normal Shutdown Alignment:	
	a. Check condenser - AVAILABLE	a. Dispatch AO to perform Attachment SD-2.
	b. Perform the following: o Open generator disconnects • 1G13A71 • 9X13A73 o Place voltage regulator to OFF o Open turbine drain valves o Rotate reheater steam supply controller cam to close valves o Place reheater dump valve switches to HAND o Stop all but one condensate pump	
	c. Verify Attachment SD-1 - COMPLETE	

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED

* *

CAUTION

FEED FLOW SHOULD NOT BE ESTABLISHED TO ANY RUPTURED S/G WHICH IS ALSO FAULTED UNLESS IT IS NEEDED FOR RCS COOLDOWN.

* *

*37 Monitor Ruptured S/G(s) Narrow Range Level - GREATER THAN 17% [25% adverse CNMT]

Refill ruptured S/G to 67% [55% adverse CNMT] using feed flow.

IF either of the following conditions occurs, THEN stop feed flow to ruptured S/G unless needed for RCS cooldown:

- o Ruptured S/G pressure decreases in an uncontrolled manner.

-OR-

- o Ruptured S/G pressure increases to 1020 psig.

*38 Monitor RCP Operation:

a. RCPs - ANY RUNNING

a. Go to Step 39.

b. Check the following:

b. Go to Step 39.

- o RCP #1 seal D/P - LESS THAN 220 PSID

-OR-

- o Check RCP seal leakage - LESS THAN 0.25 GPM

c. Stop affected RCP(s)

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
39	Check Condenser Steam Dump Available - CONDENSER VACUUM GREATER THAN 20 INCHES HG	Manually or locally dump steam using intact S/G ARV. IF no intact S/G available, THEN: o Use faulted S/G. -OR- o IF RHR system NOT in service, THEN use ruptured S/G.

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
40	Check If RHR Normal Cooling Can Be Established:	
	a. RCS cold leg temperature - LESS THAN 350°F	a. Go to Step 41.
	b. RCS pressure - LESS THAN 400 psig [300 psig adverse CNMT]	b. Go to Step 41.
	c. Place letdown pressure controller in MANUAL CLOSED	
	d. Check following valves - OPEN • AOV-371, letdown isolation valve • AOV-427, loop B cold leg to REGEN Hx • At least one letdown orifice valve (AOV-200A, AOV-200B, or AOV-202)	d. Perform the following: 1) Reset both trains of XY relays for AOV-371 and AOV-427. 2) Open AOV-371 and AOV-427. 3) Open one letdown orifice valve.
	e. Verify pressure on PI-135 - LESS THAN 400 PSIG	e. Go to Step 41.
	f. Place RCS overpressure protection system in service (Refer to O-7, ALIGNMENT AND OPERATION OF THE REACTOR VESSEL OVERPRESSURE PROTECTION SYSTEM)	
	g. Consult TSC to determine if RHR normal cooling should be established using Attachment RHR COOL	

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED

NOTE: This procedure should be continued while obtaining CNMT hydrogen sample in Step 41.

41 Check CNMT Hydrogen Concentration:

a. Direct HP to start CNMT hydrogen monitors as necessary

b. Hydrogen concentration - LESS THAN 0.5%

b. Consult TSC to determine if hydrogen recombiners should be placed in service.

42 Check Core Exit T/Cs - LESS THAN 200°F

Return to Step 7.

43 Evaluate Long Term Plant Status:

a. Maintain cold shutdown conditions

b. Consult TSC

-END-

ECA-3.1 APPENDIX LIST

RED PATH SUMMARY

a. SUBCRITICALITY - Nuclear power greater than 5%

b. CORE COOLING - Core exit T/Cs greater than 1200°F
-OR-
Core exit T/Cs greater than 700°F AND RVLIS level (no RCPs) less than 43% [46% adverse CNMT]

c. HEAT SINK - Narrow range level in all S/Gs less than 5% [25% adverse CNMT] AND total feedwater flow less than 200 gpm

d. INTEGRITY - Cold leg temperatures decrease greater than 100°F in last 60 minutes AND RCS cold leg temperature less than 285°F

e. CONTAINMENT - CNMT pressure greater than 60 psig

FIGURE MIN SUBCOOLING

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

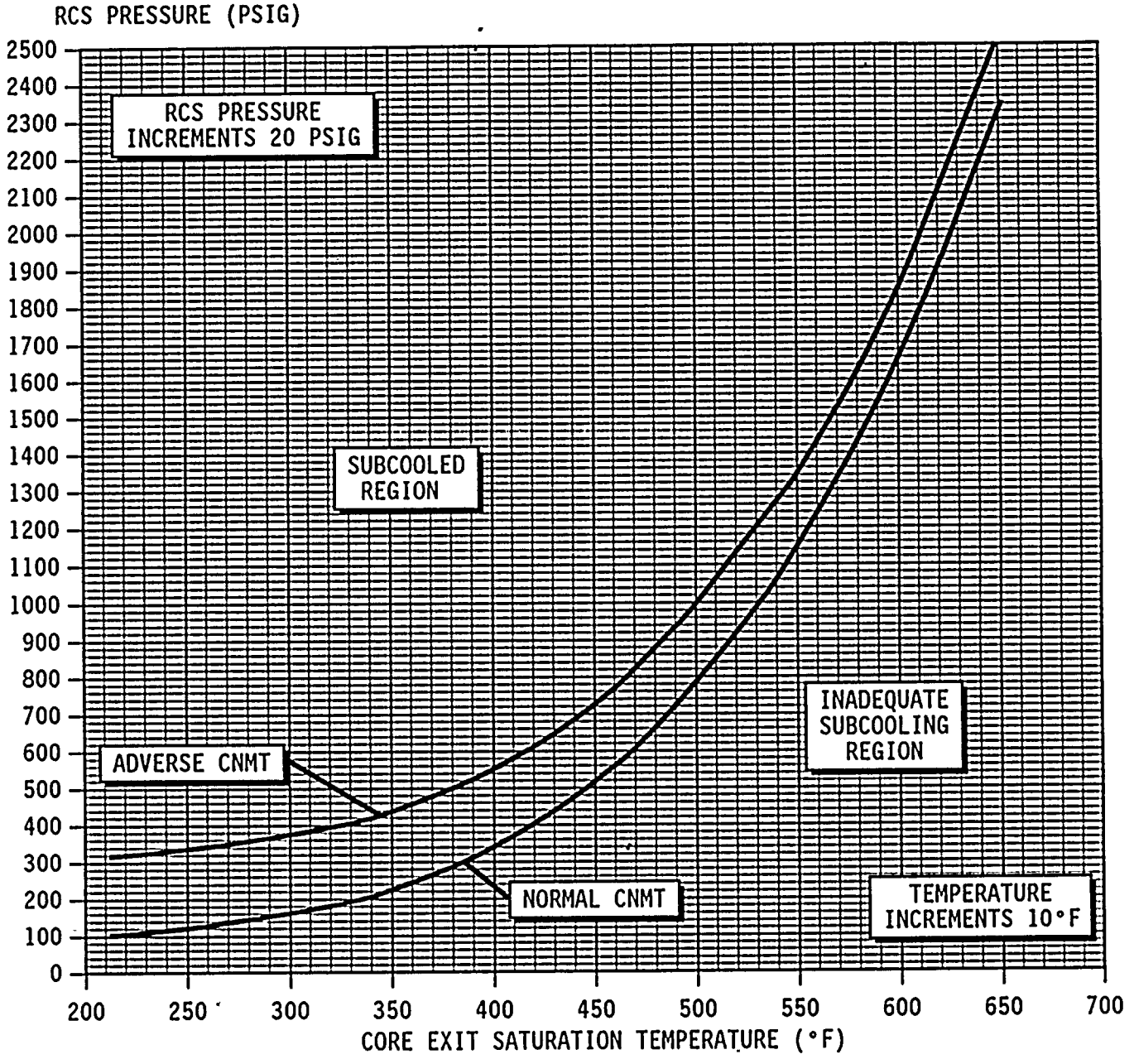
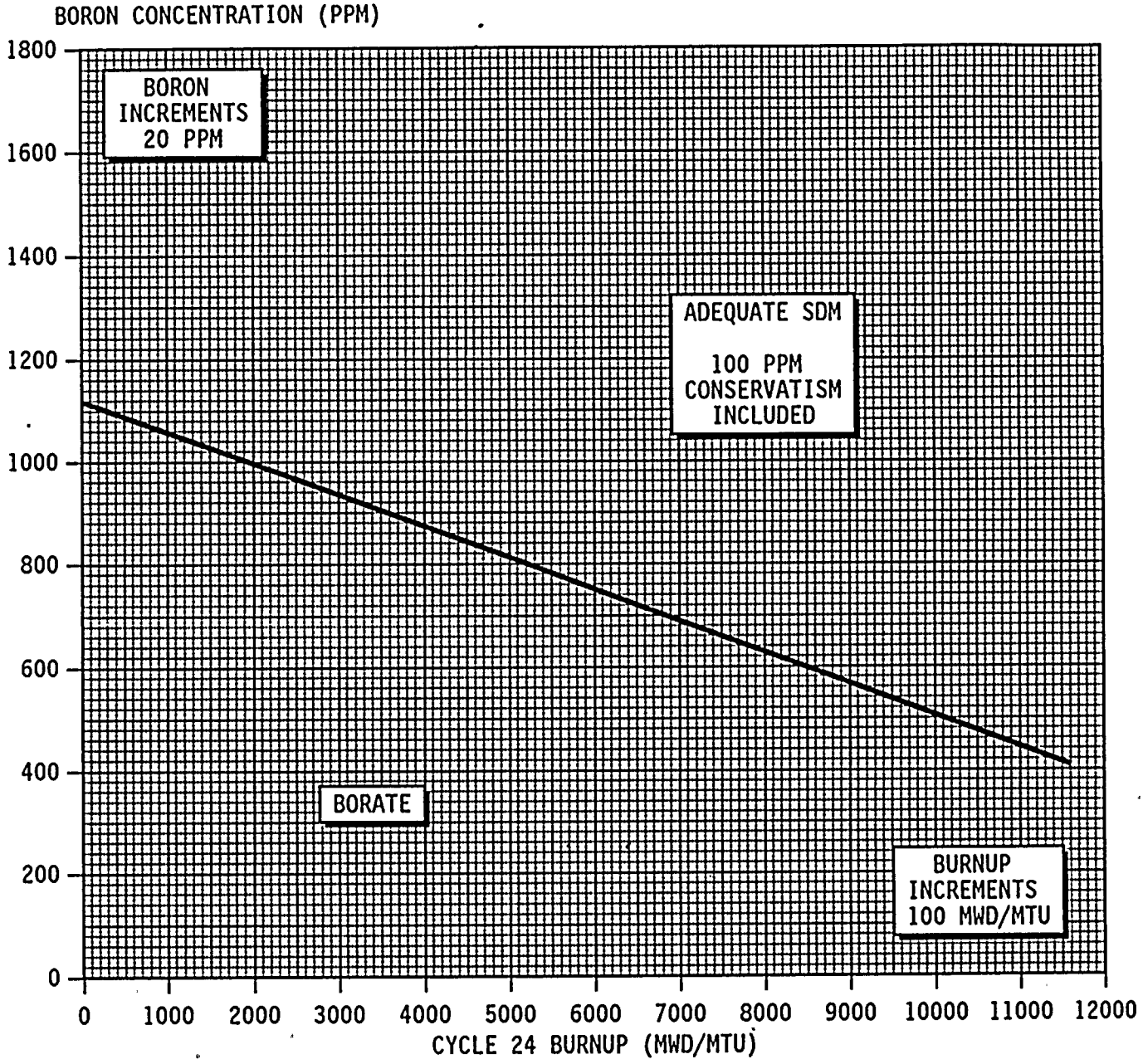


FIGURE SDM

NOTE: o Curve includes allowance for one stuck rod. Add 100 ppm for each additional stuck rod.
o To obtain core burnup, use PPCS turn on code BURNUP.



FOLDOUT PAGE

1. SI REINITIATION CRITERIA

IF EITHER condition listed below occurs, THEN manually operate SI pumps as necessary:

- o RCS subcooling based on core exit TCs - LESS THAN 0°F USING REQUIREMENTS OF FIGURE MIN SUBCOOLING
- o PRZR level - CHARGING CAN NOT CONTROL LEVEL GREATER THAN 5% [30% adverse CNMT]

2. SATURATED RECOVERY CRITERIA

IF ruptured S/G narrow range level increases to greater than 90% [85% adverse CNMT], THEN consult TSC to determine if recovery should be completed using ECA-3.2, SGTR WITH LOSS OF REACTOR COOLANT - SATURATED RECOVERY DESIRED.

3. SECONDARY INTEGRITY CRITERIA

IF any S/G pressure is decreasing in an uncontrolled manner or is completely depressurized AND has not been isolated, THEN go to E-2, FAULTED S/G ISOLATION, Step 1, unless faulted S/G needed for RCS cooldown.

4. COLD LEG RECIRCULATION SWITCHOVER CRITERION

IF RWST level decreases to less than 28%, THEN go to ES-1.3, TRANSFER TO COLD LEG RECIRCULATION, Step 1.

5. AFW SUPPLY SWITCHOVER CRITERION

IF CST level decreases to less than 5 feet, THEN switch to alternate AFW water supply (Refer to ER-AFW.1, ALTERNATE WATER SUPPLY TO AFW PUMPS)

ROCHESTER GAS AND ELECTRIC CORPORATION

GINNA STATION

CONTROLLED COPY NUMBER 23

TECHNICAL REVIEW

PORC REVIEW DATE 7-28-93

PLANT SUPERINTENDENT

7-29-93

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) 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 7. WHEN IA restored, THEN 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	

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED

* *

CAUTION

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

* *

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. WHEN IA restored, THEN do Steps 4 through 6.
	b. CCW pumps - ANY RUNNING	b. Perform the following: 1) IF any RCP #1 seal outlet temperature offscale high, THEN 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. IF MCC B NOT available, THEN 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. IF any RCP seal leakoff flow greater than 5.5 gpm THEN: o Close the affected RCP seal discharge valve • RCP A, AOV-270A • RCP B, AOV-270B o Trip the affected RCP IF both RCP seal discharge valves are shut, THEN 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) IF CCW flow is lost to any RCP thermal barrier OR any RCP #1 seal outlet temperature offscale high, THEN 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. IF LCV-112B can NOT be opened, THEN perform the following: 1) Verify charging pump A NOT 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) WHEN V-358 open, THEN 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 25% 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. WHEN normal letdown in service, THEN 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.
15	Return To Procedure And Step In Effect	

-END-

FR-I.1 APPENDIX LIST

ROCHESTER GAS AND ELECTRIC CORPORATION

GINNA STATION

CONTROLLED COPY NUMBER 23

TECHNICAL REVIEW

PORC REVIEW DATE 4/1/92

Thomas A. Marlow
for PLANT SUPERINTENDENT

4/4/92
EFFECTIVE DATE

CATEGORY 1.0

REVIEWED BY:_____

A. PURPOSE - This procedure provides actions to respond to voids in the reactor vessel head.

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

* *

CAUTION

IF A CONTROLLED NATURAL CIRCULATION COOLDOWN IS IN PROGRESS AND A VOID IN THE REACTOR VESSEL UPPER HEAD IS EXPECTED, THIS PROCEDURE SHOULD NOT BE PERFORMED.

* *

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	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.

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
2	Verify Adequate SW Flow To CCW Hx:	
	a. Verify at least two SW pumps - RUNNING	a. Perform the following: 1) Verify adequate power to operate two SW pumps (258 kw per pump). <u>IF NOT</u>, <u>THEN</u> shed sufficient non-essential loads. • CNMT RECIRC fans • Charging pumps • IA compressors • PRZR heaters • Rx compartment cooling fans • Control rod shroud fans 2) Ensure two SW pumps running.
	b. Verify AUX BLDG SW isolation valves - OPEN • MOV-4615 and MOV-4734 • MOV-4616 and MOV-4735	b. Establish SW to AUX BLDG (Refer to Attachment AUX BLDG SW).
	c. Verify CNMT RECIRC fans annunciator C-2, HIGH TEMPERATURE ALARM - EXTINGUISHED	c. 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) 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. Perform the following: 1) Manually open valves. 2) Dispatch AO to reset air compressors as required.
	c. Verify at least two air compressors - RUNNING	c. Manually start air compressors as power supply permits (75 kw each).
	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 4. WHEN IA restored, THEN do Steps 3e and f.
	e. Reset both trains of XY relays for IA to CI valve AOV-5392	
	f. Open IA AOV-5392	

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
4	Check If Charging Flow Has Been Established:	
	a. Charging pumps - ANY RUNNING	a. Perform the following: 1) IF CCW flow is lost to any RCP thermal barrier OR any RCP #1 seal outlet temperature offscale high, THEN dispatch AO with key to RWST gate to 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. IF LCV-112B can NOT be opened, THEN perform the following: 1) Verify charging pump A NOT 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) WHEN V-358 open, THEN 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 control PRZR level	c. Continue with Step 8. WHEN charging can be established, THEN do Steps 5, 6 and 7.

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
5	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 8. WHEN IA restored, THEN do Steps 5 through 7.
	b. CCW pumps - ANY RUNNING	b. Perform the following: 1) IF any RCP #1 seal outlet temperature offscale high, THEN 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. IF MCC B NOT available, THEN perform the following: 1) Verify MCC A energized. 2) Place instrument bus D on maintenance supply.
6	Verify PRZR Level - GREATER THAN 13% [40% adverse CNMT]	Continue with Step 8. WHEN PRZR level increases to greater than 13% [40% adverse CNMT], THEN do Step 7.

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED

7 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 25% 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

IF RCP seal return has been established, THEN 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.

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

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
8	Establish Stable RCS Conditions:	
	a. PRZR level - STABLE AND BETWEEN 40% AND 60%	a. Control charging and letdown as necessary.
	b. RCS pressure - STABLE	b. Energize PRZR heaters and use normal PRZR spray as necessary. IF normal spray NOT available and letdown in service, THEN use auxiliary spray valve (AOV-296).
	c. RCS hot leg temperatures - STABLE	c. Control steam dump and total feed flow as necessary to stabilize RCS temperature.
9	Check RCPs - BOTH STOPPED	Go to Step 15.

* *

CAUTION

IF RHR NORMAL COOLING IN SERVICE, THEN RCS PRESSUE SHOULD BE MAINTAINED LESS THAN THE RCS OVERPRESSURE PROTECTION SETPOINT (410 PSIG).

* *

10	Check If RCS Pressure Should Be Increased:	
	a. Pressure - AT LEAST 100 PSI BELOW LIMIT ON FIGURE TECH SPEC C/D (100°F/HR)	a. Go to Step 13.
	b. Energize PRZR heaters to increase RCS pressure by 50 psi	

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED

11 Control Charging And Letdown As Necessary To Maintain PRZR Level Greater Than 13% [40% adverse CNMT]

12 Check RVLIS Indication:

a. Level (no RCPs) - INCREASING — a. Go to Step 13.

b. Level (no RCPs) - GREATER THAN 95% — b. Return to Step 10.

c. Turn off PRZR heaters to stabilize RCS pressure

d. Return to procedure and step in effect

* *

CAUTION

IF RCP SEAL COOLING HAD PREVIOUSLY BEEN LOST, THEN THE AFFECTED RCP SHOULD NOT BE STARTED PRIOR TO A STATUS EVALUATION.

* *

13 Try To Start One RCP:

a. Establish the following conditions prior to RCP start: — a. IF conditions can NOT be established, THEN go to Step 15.

- o PRZR level - GREATER THAN 65% [80% adverse CNMT]
- o RCS subcooling based on core exit T/Cs - GREATER THAN 20°F USING FIGURE MIN SUBCOOLING
- o Bus 11A or 11B - ENERGIZED
- o Refer to Attachment RCP START

b. Start one RCP

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
14	Check RVLIS Fluid Fraction (any RCP running) - LESS THAN 97%	Go to Step 24.
15	Direct HP To Start CNMT Hydrogen Monitors	

* *

CAUTION

FOLLOWING BLOCK OF AUTOMATIC SI ACTUATION, MANUAL SI ACTUATION MAY BE REQUIRED IF CONDITIONS DEGRADE.

* *

16	Check If SI Should Be Blocked:	
	a. PRZR pressure - GREATER THAN 1750 PSIG	a. Go to Step 17.
	b. PRZR pressure - LESS THAN 1950 PSIG	b. Decrease PRZR pressure to less than 1950 psig using normal PRZR spray. IF normal spray NOT available and letdown in service, THEN use auxiliary spray (AOV-296). IF NOT; THEN use one PRZR PORV.
	c. Block SI	
17	Record RCS Pressure and CNMT Hydrogen Concentration on Attachment VENT TIME	

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
18	Establish Following RCS Conditions:	
	a. PRZR level - STABLE AND BETWEEN 40% AND 60%	a. Control charging and letdown as necessary.
	b. RCS pressure - STABLE	b. Energize PRZR heaters and use normal PRZR spray as necessary. IF normal spray NOT available and letdown in service, THEN use auxiliary spray (AOV-296).
	c. RCS subcooling based on core exit T/Cs - GREATER THAN 50°F USING FIGURE MIN SUBCOOLING	c. Dump steam as necessary.
	d. RCS hot leg temperatures - STABLE	d. Control steam dump and total feed flow as necessary to stabilize RCS temperature.
19	Prepare CNMT For Reactor Vessel Venting:	
	a. Verify CNMT ventilation isolation valves - CLOSED • CNMT MINI PURGE EXH VLVs (AOV-7970, AOV-7971) • CNMT MINI PURGE SPLY VLVs (AOV-7445, AOV-7448) • CNMT AIR SAMPLE ISO VLVs (AOV-1597, AOV-1598, AOV-1599)	a. Manually close valves.
	b. Verify the following CNMT ventilation equipment in service: • All CNMT RECIRC fans • One reactor compartment cooling fan • One control rod shroud fan	b. Manually start fans as power supply permits.

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
20	Determine Maximum Allowable Venting Time: a. CNMT hydrogen concentration - LESS THAN 3% b. Determine maximum venting time (Refer to Attachment VENT TIME)	a. Consult TSC to evaluate methods to reduce hydrogen concentration to less than 3%.
21	Review Reactor Vessel Venting Termination Criteria: o RCS subcooling based on core exit T/Cs -LESS THAN 10°F USING FIGURE MIN SUBCOOLING -OR- o PRZR level - LESS THAN 13% [40% adverse CNMT] -OR- o RCS pressure - DECREASES BY 200 PSI -OR- o Venting time - GREATER THAN MAXIMUM TIME CALCULATED IN STEP 20 -OR- o RVLIS level (no RCPs) - GREATER THAN 95% -OR- o RVLIS fluid fraction (any RCP running) - GREATER THAN 97%	

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED

* *

CAUTION

VENTING SHOULD BE STOPPED IF ANY VENTING TERMINATION CRITERION IN STEP 21 IS EXCEEDED.

* *

NOTE: The reactor vessel head vents should not be opened unless specifically directed by PORC.

22 Vent Reactor Vessel:

a. Open train A Rx vessel head vent valves

- SOV-590
- SOV-592

a. IF either valve fails to open, THEN close both valves and open train B valves.

- SOV-591
- SOV-593

b. Any venting termination criterion - EXCEEDED

b. Continue venting. WHEN any venting termination criterion is exceeded, THEN do Steps 22c, 23, 24 and 25.

c. Close all vent valves

23 Check RVLIS Indication -

o Level (no RCPs) - GREATER THAN 95%

-OR-

o Fluid fraction (any RCP running) - GREATER THAN 97%

Increase RCS pressure to value recorded in Step 17. Return to Step 15.

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
24	Check PRZR Level - STABLE	Control charging and letdown as necessary to stabilize PRZR level.
25	Return To Procedure And Step In Effect	

-END-

FR-I.3 APPENDIX LIST

FIGURE MIN SUBCOOLING

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

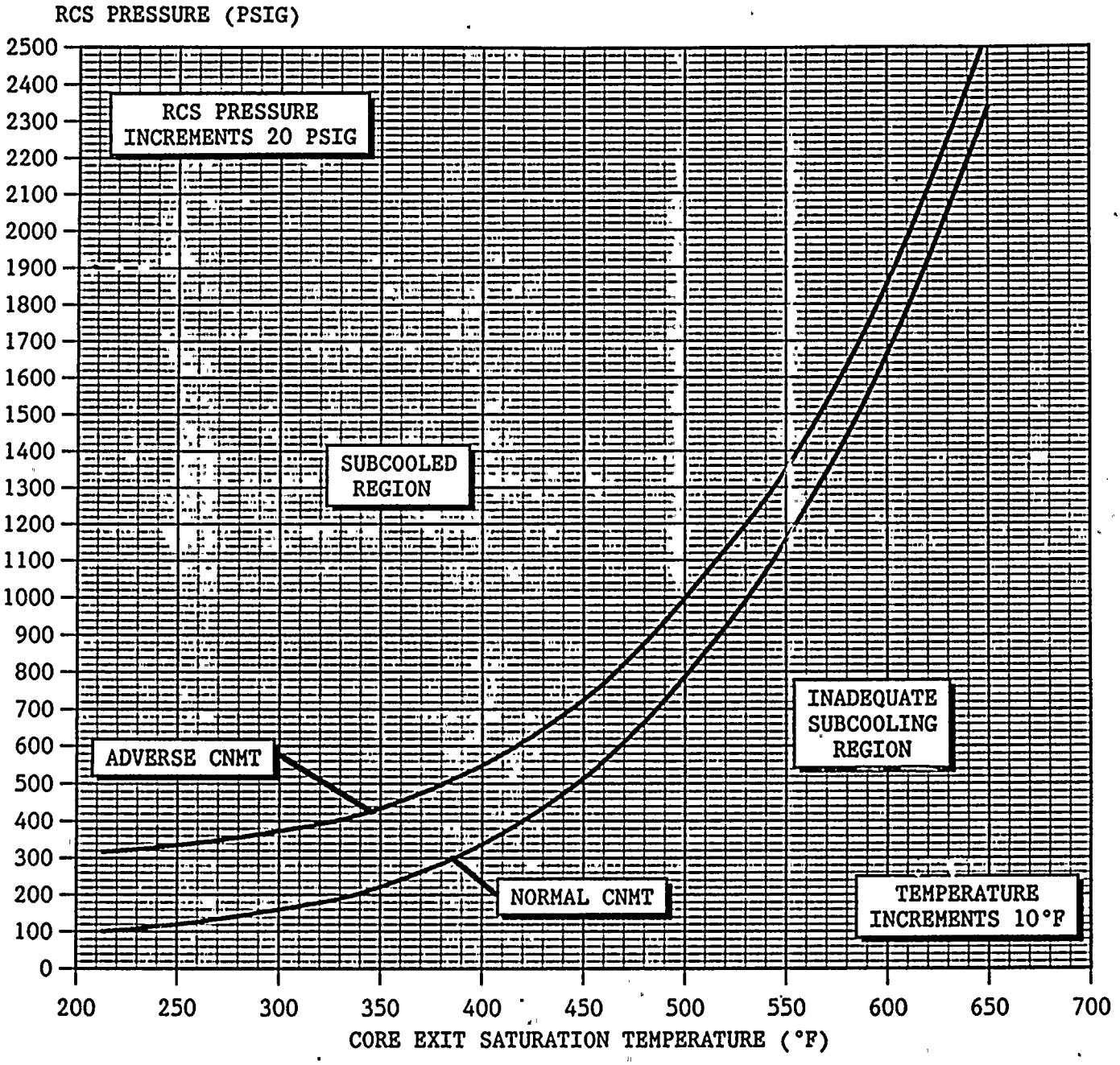


FIGURE TECH SPEC C/D

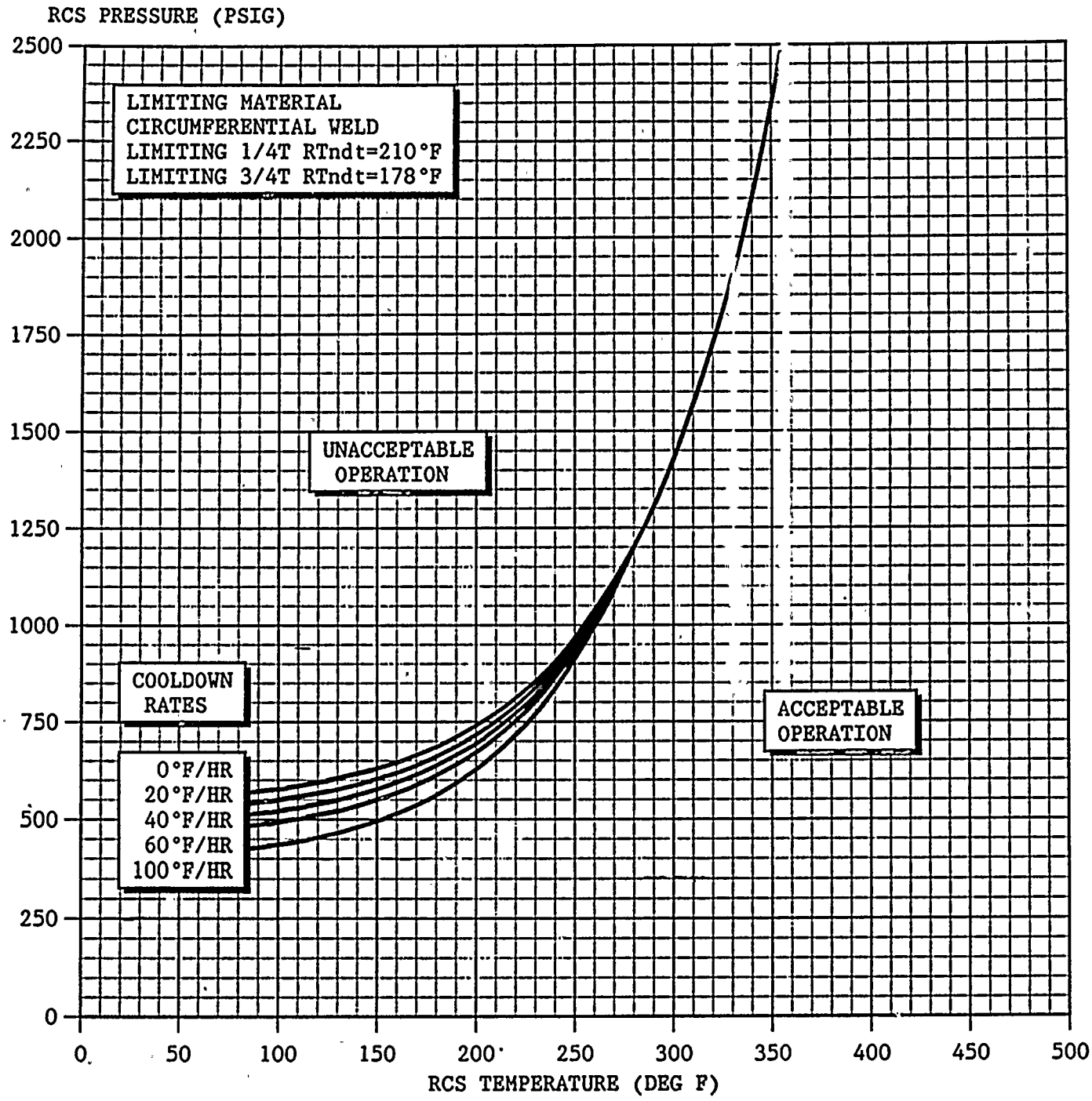


Figure 3.1-2: Ginna Reactor Vessel Cooldown Limitations Applicable for the first 21 EFPY using Reg Guide 1.99, Rev 2.

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