ROCHESTER GAS AND ELECTRIC CORPORATION

GINNA STATION

CONTROLLED COPY NUMBER 23

TECHNICAL REVIEW

PORC REVIEW DATE 5/6/92

Thomas A. Marlow
PLANT SUPERINTENDENT

5/8/92
EFFECTIVE DATE

CATEGORY 1.0

REVIEWED BY:_____

9206160382 920605
PDR ADOCK 05000244
P PDR

A. PURPOSE - This procedure provides actions to use normal operational systems to stabilize plant conditions following restoration of AC emergency power.

B. ENTRY CONDITIONS/SYMPTOMS

1. ENTRY CONDITIONS - This procedure is entered from:

a. ECA-0.0, LOSS OF ALL AC POWER, when AC emergency power is restored and SI is not required.

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED

NOTE: o CSFSTs should be monitored for information only. FR procedures should not be implemented prior to completion of Step 11.

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 Check RCP Seal Isolation Status:

a. RCP seal injection needle valves - CLOSED

- V-300A
- V-300B

a. Dispatch AO with key to RWST gate to locally close valves before starting charging pump.

b. RCP CCW return valves - CLOSED

- MOV-759A
- MOV-759B

b. IF valves open or position not known, THEN check CCW pump status:

1) IF pump running, THEN go to Step 2.

2) IF pump NOT running, THEN manually close valves.

IF valve(s) can NOT be closed, THEN place switches for RCP thermal barrier CCW outlet valves to CLOSE.

- AOV-754A
- AOV-754B

2 Check CI Annunciator A-26, CONTAINMENT ISOLATION - EXTINGUISHED

Perform the following:

a. Depress CI reset pushbutton

b. Verify annunciator A-26, CONTAINMENT ISOLATION, extinguished.

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
	b. Check at least two SW pumps - RUNNING	b. Manually start SW pumps as power supply permits (258 kw each). IF less than two SW pumps running, THEN go to Step 4.
	c. Verify turbine building SW isolation valves - OPEN • MOV-4613 and MOV-4670 • MOV-4614 and MOV-4664	c. Manually align valves.
	d. Start at least two air compressors (75 kw each)	d. IF air compressors can NOT be started, THEN dispatch AO to locally reset compressors as necessary.
	e. Check IA supply: o Pressure - GREATER THAN 60 PSIG o Pressure - STABLE OR INCREASING	e. Perform the following: 1) Continue attempts to restore IA (Refer to AP-IA.1, LOSS OF INSTRUMENT AIR). 2) Continue with Step 6. WHEN IA restored, THEN do Steps 3f through 5.
	f. Reset both trains of XY relays for IA to CNMT (AOV-5392) if necessary	
	g. Verify IA to CNMT AOV-5392 - OPEN	

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED

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CAUTION

THE LOADS PLACED ON THE ENERGIZED AC EMERGENCY BUS SHOULD NOT EXCEED THE CAPACITY OF THE POWER SOURCE.

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4	Manually Load Following Equipment On AC Emergency Busses:	
	a. Start one CCW pump (124 kw)	
	b. Energize MCCs as power supply permits • MCC A from Bus 13 • MCC B from Bus 15 • MCC E from Bus 15 • MCC F from Bus 15	
	c. Verify instrument bus D - ENERGIZED	c. Restore power to instrument bus D from MCC B or MCC A (maintenance supply).
	d. <u>WHEN</u> bus 15 restored, <u>THEN</u> reset control room lighting	
	e. Start at least one CNMT RECIRC fan	
	f. Restore Rx head cooling as power supply permits:	
	1) Check IA to CNMT - AVAILABLE	1) Go to Step 5.
	2) Start one Rx compartment cooling fan (23 kw each)	2) 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)
	3) Start both control rod shroud fans (45 kw each)	3) Manually start at least one fan (45 kw)
	g. Dispatch AO to establish normal shutdown alignment (Refer to Attachment SD-1)	

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
5	Check If Charging Flow Has Been Established:	
	a. Charging pumps - ANY RUNNING	a. Perform the following: 1) Ensure seal injection needle valves to both RCPs isolated: • 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 (75 kw each) as necessary and adjust charging flow to restore PRZR level	

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
6	Verify SI Flow Not Required:	
	a. RCS subcooling based on core exit T/Cs - GREATER THAN 0°F USING FIGURE MIN SUBCOOLING	a. Go to ECA-0.2, LOSS OF ALL AC POWER RECOVERY WITH SI REQUIRED, Step 1.
	b. PRZR level - GREATER THAN 5% [30% adverse CNMT]	b. Control charging flow to maintain PRZR level. IF PRZR level can NOT be maintained, THEN go to ECA-0.2, LOSS OF ALL AC POWER RECOVERY WITH SI REQUIRED, Step 1.
7	Check PRZR Level - GREATER THAN 13% [40% FOR ADVERSE CONTAINMENT]	Control charging flow as necessary.

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED

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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).
- IF S/G NR LEVEL DECREASES TO LESS THAN 5% [25% ADVERSE CNMT] AND FEED FLOW IS LESS THAN 200 GPM, THEN THE MDAFW PUMPS SHOULD BE MANUALLY LOADED ON AC EMERGENCY BUS TO SUPPLY WATER TO THE S/G(S).

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NOTE:
- If MDAFW pump operation is not required, pump switches should be maintained in PULL-STOP to prevent automatic start.
- TDAFW pump flow control valves fail open on loss of IA.

8 Check Intact S/G Levels:

a. Narrow range level - GREATER THAN 5% [25% adverse CNMT]

a. Maintain total feed flow greater than 200 gpm until narrow range level greater than 5% [25% adverse CNMT] in at least one S/G.

IF feed flow less than 200 gpm, THEN perform the following:

1) Verify MDAFW pump discharge valves open.
   - MOV-4007
   - MOV-4008

2) Manually start MDAFW pumps as necessary (228 KW each).

b. Control feed flow to maintain narrow range level between 17% [25% adverse CNMT] and 50%

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED

9 Establish S/G Pressure Control:

a. Adjust S/G ARV controllers to maintain existing S/G pressure

b. Verify S/G ARV controllers in AUTO

c. Dispatch AO to perform Attachment SD-2

NOTE: If any heat tracing or BAST temperatures are low, flowpaths from the BASTs should be evaluated before being used.

10 Check BAST Temperature:

- o Annunciator B-31, BAST TEMP OR LO N2 PRESS - EXTINGUISHED
- o Annunciator K-22, HEAT TRACING SYSTEM - EXTINGUISHED

Perform the following:

a. Verify SI pump suction valves from BASTs closed.

- MOV-826A or MOV-826B
- MOV-826C or MOV-826D

b. Open at least one SI pump suction valve from RWST.

- o MOV-825A

-OR-

- o MOV-825B

c. Dispatch AO to locally check BAST and heat tracing temperatures.

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED

NOTE: Safeguards pump switches should be placed in AUTO only if associated bus is energized.

11 Place Following Pump Switches In AUTO:

- SI pumps
- RHR pumps
- CNMT spray pumps

NOTE: FR procedures may now be implemented as necessary.

12 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 each). IF less than two SW pumps can be operated, THEN go to Step 19.

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).

Continue with Step 19. WHEN SW restored to AUX BLDG, THEN do Steps 12c through 18.

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.

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
13	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 19. WHEN IA restored, THEN do Steps 13 through 18.
	b. Charging pump - ANY RUNNING	b. Continue with Step 19. WHEN any charging pump running, THEN do Steps 14 through 18.

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
14	Check If Seal Return Flow Should Be Established:	
	a. Verify RCP #1 seal outlet temperature - LESS THAN 235°F	a. Go to Step 15.
	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 if necessary	
	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 close the affected RCP seal discharge valve: • RCP A, AOV-270A • RCP B, AOV-270B IF both RCP seal discharge valves are shut, THEN go to Step 15.
	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
15	Verify PRZR Level - GREATER THAN 13% [40% adverse CNMT]	Continue with Step 19. WHEN PRZR level increases to greater than 13% [40% adverse CNMT], THEN do Steps 16 through 18.
16	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 if necessary 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
17	Check VCT Makeup System:	
	a. Verify the following: 1) Boric acid flow control valve - SET FOR REQUIRED CSD CONCENTRATION (Refer to Figure SDM) 2) At least one BA and RMW pump in AUTO 3) RMW mode selector switch in AUTO 4) RMW control armed - RED LIGHT LIT	a. IF VCT auto makeup can NOT be established, THEN manually control VCT level (Refer to ER-CVCS.1, REACTOR MAKEUP CONTROL MALFUNCTION).
	b. Check VCT level o Level - GREATER THAN 20% -OR- o Level - STABLE OR INCREASING	b. Manually increase VCT makeup flow as follows: 1) Ensure BA transfer pumps and RMW pumps running. IF NOT, THEN dispatch AO to 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. IF VCT level can NOT be restored, THEN go to Step 19.

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
18	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 19. WHEN VCT level greater than 40%, THEN do Step 18b.
	b. Verify charging pumps aligned to VCT o LCV-112C - OPEN o LCV-112B - CLOSED	b. Manually align valves as necessary.
19	Control PRZR Level:	
	a. Check letdown - IN SERVICE	a. Stop and start charging pumps as necessary to control PRZR level.
	b. Maintain PRZR level between 13% [40% adverse CNMT] and 50%	

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED

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.

20 Establish PRZR Pressure Control:

a. Check letdown - IN SERVICE

a. Perform the following:

1) Use PRZR heaters and one PRZR PORV to maintain RCS pressure.

IF IA NOT available, THEN Refer to Attachment N2 PORVS to operate PORV.

2) Go to Step 21.

b. Use PRZR heaters and auxiliary spray valve (AOV-296) to maintain RCS pressure

21 Verify Natural Circulation:

Increase dumping steam from intact S/Gs.

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

o S/G pressures - STABLE OR DECREASING

o RCS hot leg temperatures - STABLE OR DECREASING

o Core exit T/Cs - STABLE OR DECREASING

o RCS cold leg temperatures - AT SATURATION TEMPERATURE FOR S/G PRESSURE

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED

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

22 Check If Source Range Detectors Should Be Energized:

a. Source range channels - DEENERGIZED

a. Go to Step 22e.

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 23. WHEN flux is LESS THAN 10^{-10} amps on any operable channel, THEN do Steps 22c through 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 23. WHEN either condition met, THEN do Steps 22d 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 23.

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

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED

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CAUTION

- RCP THERMAL BARRIER COOLING SHOULD BE ESTABLISHED SLOWLY TO MINIMIZE POTENTIAL INTRODUCTION OF STEAM INTO THE CCW SYSTEM AND THERMAL SHOCK TO RCP.
- RCP SEAL INJECTION SHOULD BE ESTABLISHED SLOWLY TO MINIMIZE RCP THERMAL STRESSES AND POTENTIAL SEAL FAILURES.
- AS PART OF SUBSEQUENT RECOVERY ACTIONS, RCP(S) SHOULD NOT BE STARTED PRIOR TO A STATUS EVALUATION UNLESS REQUIRED BY AN INADEQUATE CORE COOLING SITUATION.

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NOTE: SW should be aligned to CCW Hxs before restoring RCP seal cooling.

23 Check RCP Cooling:

Establish normal cooling to RCPs (Refer to Attachment SEAL COOLING).

a. Check CCW to RCPs:

- Annunciator A-7, RCP 1A CCW RETURN HIGH TEMP OR LOW FLOW - EXTINGUISHED
- Annunciator A-15, RCP 1B CCW RETURN HIGH TEMP OR LOW FLOW - EXTINGUISHED

b. Check RCP seal injection:

- Labyrinth seal D/Ps - GREATER THAN 15 INCHES OF WATER

-OR-

- RCP seal injection flow to each RCP - GREATER THAN 6 GPM

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
24	Verify Adequate Shutdown Margin:	
	a. Direct HP to sample RCS and PRZR liquid for boron concentration	
	b. Verify boron concentration - GREATER THAN REQUIREMENTS OF FIGURE SDM	b. Borate as necessary.
25	Maintain Stable Plant Conditions	
	a. RCS pressure - STABLE	a. Control PRZR heaters and auxiliary spray if available.
	b. RCS temperature - STABLE	b. Control dumping steam as necessary.
	c. PRZR level - BETWEEN 13% [40% adverse CNMT] and 50%	c. Control charging as necessary.
	d. Intact S/G level - BETWEEN 17% [25% adverse CNMT] and 50%	d. Control S/G feed flow as necessary.
26	Verify SI Flow Not Required:	
	a. RCS subcooling based on core exit T/Cs - GREATER THAN 0°F USING FIGURE MIN SUBCOOLING	a. Go to ECA-0.2, LOSS OF ALL AC POWER RECOVERY WITH SI REQUIRED, Step 1.
	b. PRZR level - GREATER THAN 5% [30% adverse CNMT]	b. Control charging flow to maintain PRZR level. IF PRZR level can NOT be maintained, THEN go to ECA-0.2, LOSS OF ALL AC POWER RECOVERY WITH SI REQUIRED, Step 1.

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
27	Try To Restore Offsite Power To All AC Busses (Refer to ER-ELEC.1, RESTORATION OF OFFSITE POWER)	Maintain plant condition stable using AC emergency power.
28	Determine If Natural Circulation Cooldown Is Required:	
	a. Consult plant staff to determine if RCS cooldown is necessary	a. IF cooldown NOT required, THEN go to O-3, HOT SHUTDOWN WITH XENON PRESENT.
	b. At least one RCP - OPERABLE	b. Go to ES-0.2, NATURAL CIRCULATION COOLDOWN.
	c. Go to O-2.2, PLANT SHUTDOWN FROM HOT SHUTDOWN TO COLD SHUTDOWN	

-END-

ECA-0.1 APPENDIX LIST

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1)	FIGURE MIN SUBCOOLING	1
2)	FIGURE SDM	1
3)	ATTACHMENT SD-1	1
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7)	ATTACHMENT AUX BLDG SW	1

FIGURE MIN SUBCOOLING

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

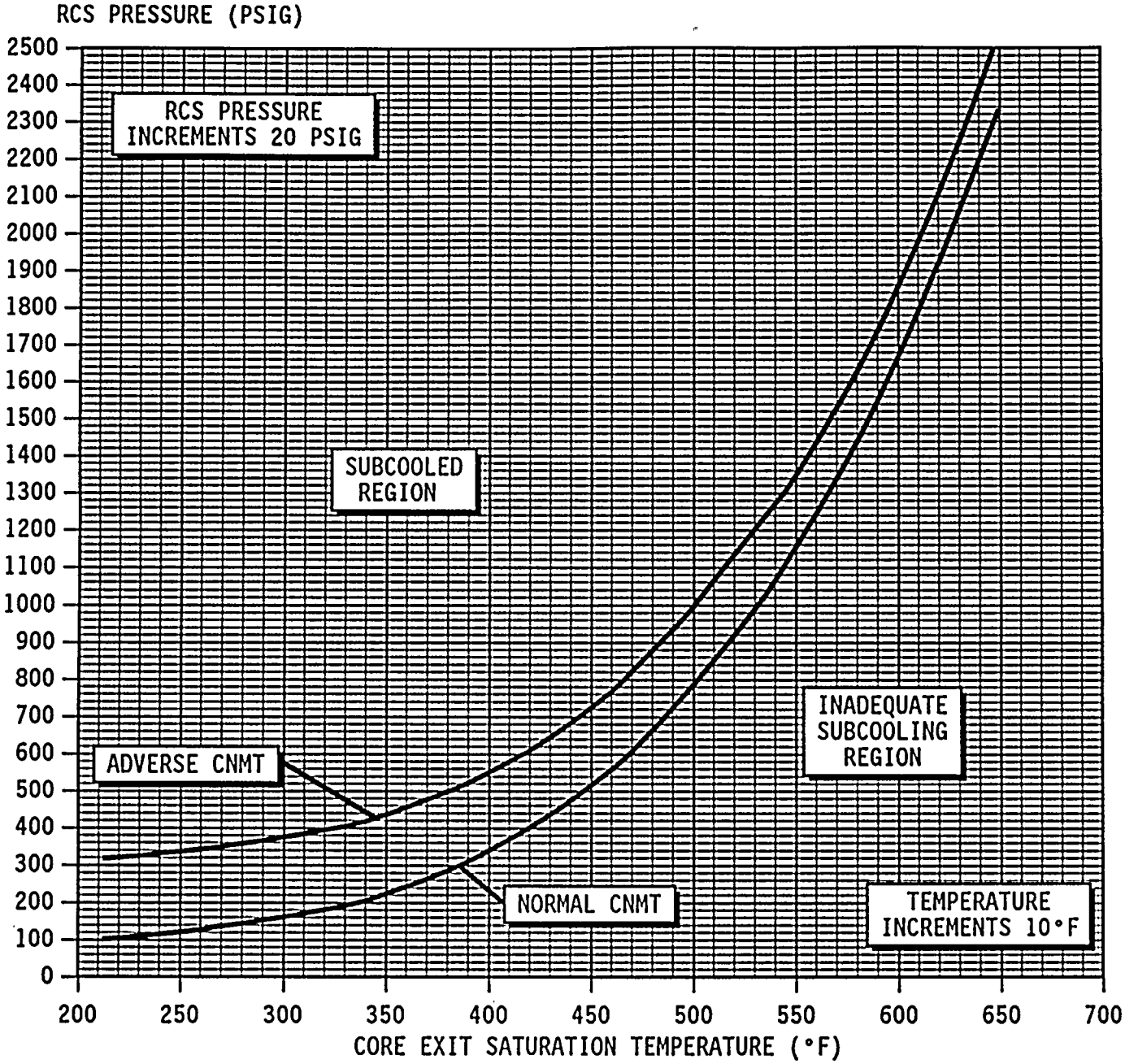
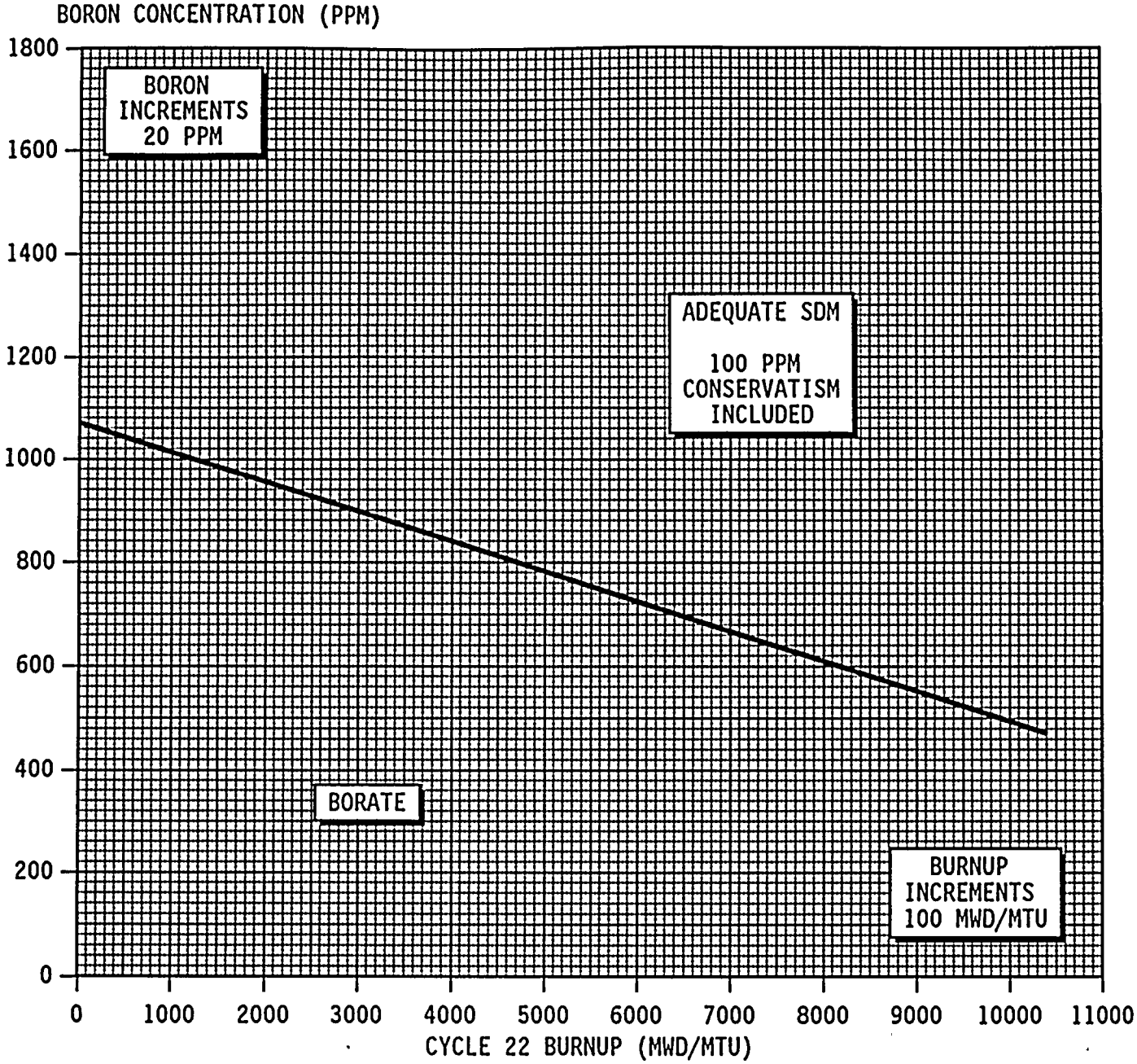


FIGURE SDM



NOTE: To obtain core burnup, use PPCS turn on code BURNUP.