ROCHESTER GAS AND ELECTRIC CORPORATION

GINNA STATION

CONTROLLED COPY NUMBER 23

TECHNICAL REVIEW

PORC REVIEW DATE 4/4/90

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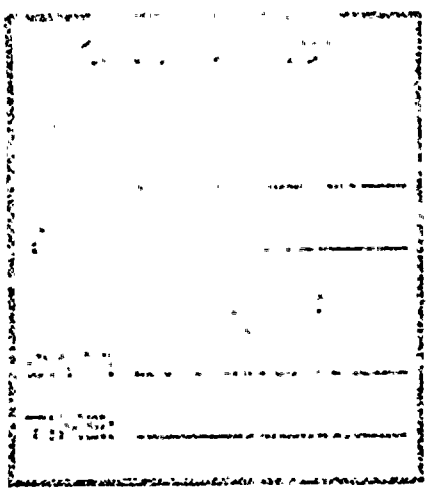
PLANT SUPERINTENDENT

4/9/90
EFFECTIVE DATE

QA X NON-QA _____ CATEGORY 1.0

REVIEWED BY: _____



A. PURPOSE - This procedure provides actions to respond to a loss of all AC power.

B. ENTRY CONDITIONS/SYMPTOMS

1. ENTRY CONDITIONS - This procedure may be entered directly or from:

   a. E-0, REACTOR TRIP OR SAFETY INJECTION, on the indication that neither train of AC emergency busses is energized.

2. SYMPTOMS - Which indicate a loss of all AC power are:

   a. Neither train of 480 volt AC emergency busses available.

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED

NOTE: o Steps 1 through 4 are IMMEDIATE ACTION steps.

o CSFSTs should be monitored for information only. FR procedures should not be implemented.

o Local actions may require portable lighting and communication devices.

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) Verify Reactor Trip: — Manually trip reactor.

- At least one train of reactor trip breakers - OPEN
- Neutron flux - DECREASING
- MRPI indicates - ALL CONTROL AND SHUTDOWN RODS ON BOTTOM

(2) Verify MSIVs - CLOSED — Manually close MSIVs.

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
3	Check If RCS Is Isolated:	
	a. PRZR PORVs - CLOSED	a. IF PRZR pressure less than 2335 psig, THEN manually close PORVs.
	b. Verify RCS isolation valves closed:	
	1) Place letdown orifice valve switches to CLOSE • AOV-200A • AOV-200B • AOV-202	
	2) Place letdown isolation valve switches to CLOSE • AOV-371 • AOV-427	
	3) Place excess letdown isolation valve switch to CLOSE (AOV-310)	

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
4	Verify Adequate TDAFW Flow:	
	a. Verify TDAFW pump - RUNNING	a. Perform the following: 1) Verify governor valve, V-3652, latched. <u>IF</u> governor valve tripped, <u>THEN</u> dispatch AO to locally reset valve. 2) Manually or locally open TDAFW pump steam supply valves. • MOV-3505A • MOV-3504A
	b. Verify TDAFW pump flow - GREATER THAN 200 GPM	b. Verify proper TDAFW valve alignment: 1) TDAFW pump discharge valve (MOV-3996) open. 2) Intact S/G TDAFW pump flow control valves open. <u>IF NOT</u>, <u>THEN</u> manually align valves as necessary.

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED

NOTE: o Conditions should be evaluated for Site Contingency Reporting (Refer to SC-100, GINNA STATION EVENT EVALUATION AND CLASSIFICATION).

o AO should increase surveillance of TDAFW pump until AC power is restored.

5	Try To Restore Power to Any Train Of AC Emergency Busses:	
	a. Verify emergency D/G aligned for unit operation o Mode switch in UNIT o Voltage control selector in AUTO	a. Manually align switches on rear of MCB.
	b. Reset and start available emergency D/Gs - ANY D/G RUNNING	b. Dispatch AO to locally start emergency D/Gs. IF no emergency D/G available, THEN perform the following: 1) Direct AO to attempt to restore emergency D/G (Refer to ER-D/G.1, RESTORING D/G) 2) Go to Step 6.
	c. Verify at least one SW pump running for each running D/G	c. Manually start pumps. IF adequate cooling can NOT be supplied to a running D/G, THEN trip affected D/G.
	d. Verify at least one train of AC emergency busses - ENERGIZED • Bus 14 and Bus 18 • Bus 16 and Bus 17	d. Manually energize AC emergency busses. IF at least one train of AC emergency busses can NOT be energized, THEN go to Step 6.
	e. Return to procedure and step in effect	

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED

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CAUTION

- o WHEN POWER IS RESTORED TO ANY TRAIN OF AC EMERGENCY BUSSES, RECOVERY ACTIONS SHOULD CONTINUE STARTING WITH STEP 24.
- o IF AN SI SIGNAL EXISTS OR IF AN SI SIGNAL IS ACTUATED DURING THIS PROCEDURE, IT SHOULD BE RESET TO PERMIT MANUAL LOADING OF EQUIPMENT ON AN AC EMERGENCY BUS.

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6 Establish The Following Equipment Alignment:

a. Pull stop AC emergency bus loads

- RHR pumps
- CNMT RECIRC fans
- CNMT spray pumps
- SI pumps
- CCW pumps
- Charging pumps
- MDAFW pumps

b. Evaluate non-vital loads (Refer to Attachment NON-VITAL)

c. Place SW pump switches to STOP, then return to AUTO

d. Place switches for SI pump suction from BAST to CLOSE

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

e. Place switch for MOV-313, RCP seal return isolation valve, to CLOSE

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
7	Try To Restore Offsite Power:	
	a. Consult Power Control to determine if either normal offsite power supply - AVAILABLE o 12B transformer via breaker 76702 -OR- o 12A transformer via breaker 75112	a. IF normal offsite power supply NOT readily available, THEN perform the following: 1) Evaluate the following temporary power supplies and direct personnel to perform desired procedures: o Security D/G to power an IA compressor (Refer to ER-ELEC.5, SECURITY DIESEL FEED TO BUS 13). o TSC D/G to power a charging pump (Refer to ER-ELEC.4, TSC D/G FEED TO BUS 16 TO SUPPLY CHARGING PUMP). o Main transformer backfeed for long term concerns (Refer to ER-ELEC.3, EMERGENCY OFFSITE BACKFEED VIA UNIT AUX TRANSFORMER). 2) Go to Step 8.
	b. Reset SI, if necessary	
	c. Restore offsite power (Refer to ER-ELEC.1, RESTORATION OF OFFSITE POWER)	
8	Dispatch AO To Locally Isolate RCP Seals And BASTs (Refer to ATTACHMENT RCS ISOLATION)	

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
9	Isolate Makeup And Reject From Hotwell To CST By Placing Hotwell Level Controller (LC-107) In Manual AT 50%	IF valves can NOT be manually closed, THEN dispatch AO to locally isolate makeup and reject lines as necessary. • Makeup isolation V-4058 • Reject isolation V-4055
10	Check S/G Status: a. MFW flow control valves - CLOSED • MFW regulating valves • MFW bypass valves b. S/G blowdown and sample valves - CLOSED	Manually close valves. IF valves can NOT be manually closed, THEN dispatch AO to locally isolate the affected flow path.

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED

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CAUTION

A FAULTED OR RUPTURED S/G THAT IS ISOLATED SHOULD REMAIN ISOLATED. STEAM SUPPLY TO THE TDAFW PUMP MUST BE MAINTAINED FROM AT LEAST ONE S/G.

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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

Perform the following:

a. IF any S/G pressure decreasing in an uncontrolled manner OR completely depressurized, THEN isolate faulted S/G unless needed for RCS cooldown:

1) Close faulted S/G MDAFW pump discharge valve.

- S/G A, MOV-4007
- S/G B, MOV-4008

2) Close faulted S/G TDAFW flow control valve.

- S/G A, AOV-4297
- S/G B, AOV-4298

3) Verify faulted S/G ARV closed.

- S/G A, AOV-3411
- S/G B, AOV-3410

4) Pull stop faulted S/G TDAFW pump steam supply valve.

- S/G A, MOV-3505A
- S/G B, MOV-3504A

IF valves can NOT be closed manually, THEN dispatch AO to locally close valves, as necessary, to isolate flow.

b. Dispatch AO to complete faulted S/G isolation (Refer to Attachment FAULTED S/G).

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
12	Check If S/G Tubes Are Intact: o Steamline radiation monitors (R-31 and R-32) - NORMAL o S/G blowdown liquid monitor (R-19) - NORMAL o Dispatch HP technician to locally check steamline radiation - NORMAL	Try to identify ruptured S/G. Continue with Step 13. WHEN ruptured S/G identified, THEN perform the following: a. Isolate ruptured S/G unless needed for RCS cooldown: 1) Close ruptured S/G MDAFW pump discharge valve. • S/G A, MOV-4007 • S/G B, MOV-4008 2) Pull stop ruptured S/G MDAFW pump. 3) Close ruptured S/G TDAFW flow control valve. • S/G A, AOV-4297 • S/G B, AOV-4298 4) WHEN S/G pressure less than 1050 psig, THEN verify ruptured S/G ARV closed. • S/G A, AOV-3411 • S/G B, AOV-3410 5) Pull stop ruptured S/G TDAFW pump steam supply valve. • S/G A, MOV-3505A • S/G B, MOV-3504A IF valves can NOT be closed manually, THEN dispatch AO to locally close valves, as necessary, to isolate flow. b. Dispatch AO to complete ruptured S/G isolation (Refer to Attachment RUPTURED S/G).

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED

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

13 Check Intact S/G Levels:

a. Narrow range level - GREATER THAN 5% [25% adverse CNMT]	a. Maintain maximum AFW flow until narrow range level greater than 5% [25% adverse CNMT] in at least one S/G.
b. Dispatch AO to locally control AFW flow by throttling TDAFW flow control valves • S/G A, AOV-4297 • S/G B, AOV-4298	b. IF valves can NOT be throttled, THEN control AFW flow by starting and stopping TDAFW pump.
c. Control AFW flow to maintain narrow range level between 17% [25% adverse CNMT] and 50%	c. IF narrow range level in any intact S/G continues to increase in an uncontrolled manner, THEN return to Step 12.

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED

NOTE: Degassing of main generator should commence as soon as possible to allow the air side seal oil backup pump to be stopped within 4 hours.

14 Check DC Bus Loads:

a. Pull stop all large non-essential DC loads

- o MFW pump DC oil pumps
- o WHEN turbine is stopped, THEN stop turbine DC lube oil pump (within 1 hour)
- o Evaluate other DC loads (Refer to Attachment DC LOADS)

b. Perform the following:

1) Dispatch AO to locally degas main generator (Refer to Attachment GEN DEGAS)

2) WHEN generator has been degassed, THEN stop air side seal oil backup pump (within 4 hours)

c. Check DC bus voltage - GREATER THAN 105 VOLTS DC

- Bus A
- Bus B

c. IF either DC bus less than 105 volts DC, THEN refer to ER-ELEC.2, RECOVERY FROM LOSS OF A or B DC BUS.

d. Direct electricians to locally monitor DC power supply

e. Dispatch personnel with DC panel key to deenergize CNMT emergency lights (DC panel turbine building basement west, switch #2)

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED

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CAUTION

WHEN POWER IS RESTORED TO ANY TRAIN OF AC EMERGENCY BUSSES, RECOVERY ACTIONS SHOULD CONTINUE STARTING WITH STEP 24.

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15	Check CST Level - GREATER THAN 5 FEET	Switch to alternate AFW pump suction supply. (Refer to ER-AFW.1, ALTERNATE WATER SUPPLY TO AFW PUMPS).

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED

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CAUTION

- o S/G PRESSURES SHOULD BE MAINTAINED GREATER THAN 200 PSIG TO PREVENT INJECTION OF SI ACCUM NITROGEN INTO THE RCS.
- o S/G NARROW RANGE LEVEL SHOULD BE MAINTAINED GREATER THAN 5% [25% ADVERSE CNMT] IN AT LEAST ONE INTACT S/G. IF LEVEL CANNOT BE MAINTAINED, S/G DEPRESSURIZATION SHOULD BE STOPPED UNTIL LEVEL IS RESTORED IN AT LEAST ONE S/G.

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NOTE:
- o The S/Gs should be depressurized at maximum rate to minimize RCS inventory loss.
- o PRZR level may be lost and reactor vessel upper head voiding may occur due to depressurization of S/Gs. Depressurization should not be stopped to prevent these occurrences.
- o S/G ARV nitrogen pressure should be monitored and nitrogen supply bottles changed as necessary.

16	Initiate Depressurization Of Intact S/Gs To 300 PSIG:	
	a. Check S/G narrow range levels - GREATER THAN 17% [25% adverse CNMT] IN AT LEAST ONE S/G	a. Perform the following: 1) Maintain maximum AFW flow until narrow range level greater than 17% [25% adverse CNMT] in at least one S/G. 2) Continue with Step 17. WHEN narrow range level greater than 17% [25% adverse CNMT] in at least one S/G, THEN do Steps 16b and 17.
	b. Manually dump steam from intact S/Gs at maximum rate using S/G ARVs	b. Locally dump steam from intact S/Gs at maximum rate using S/G ARV.

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED

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

17 Check Reactor Subcritical:

a. Verify source range detector N-31 - ENERGIZED

a. Dispatch personnel with relay rack key to turn off 120 VDC power switches in REACTOR PROTECTION racks RLTR-1 and RLTR-2 to deenergize source range block relays.

b. Monitor Reactor power:

- o Intermediate range, N-35 - STABLE OR DECREASING
- o Source range, N-31 - STABLE OR DECREASING

b. Control S/G ARVs to stop S/G depressurization and allow RCS to heat up.

NOTE: Depressurization of S/Gs will result in a SI actuation. SI should be reset to permit manual loading of equipment on emergency busses.

18 Check SI Signal Status:

a. Any SI annunciator - LIT

a. Go to Step 22.

WHEN SI actuated, THEN do Steps 18b, 19, 20 and 21.

b. Reset SI

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
19	Verify CI And CVI:	
	a. CI and CVI annunciators - LIT • Annunciator A-26, CNMT ISOLATION • Annunciator A-25, CONTAINMENT VENTILATION ISOLATION	a. Depress manual CI pushbutton.
	b. Verify CI and CVI valve status lights - BRIGHT	b. Manually close CI and CVI valves. IF valves can NOT be closed, THEN dispatch AO to locally close valves (Refer to Attachment CI/CVI).
	c. CNMT RECIRC fan coolers SW outlet valve status lights - BRIGHT • AOV-4561 • AOV-4562	c. Dispatch AO to locally fail open valves.
20	Check If S/G Depressurization Should Be Stopped:	
	a. Check RCS cold leg temperatures - GREATER THAN 315°F	a. Perform the following: 1) Control S/G ARVs to stop S/G depressurization. 2) Go to Step 21.
	b. Check S/G pressures - LESS THAN 300 PSIG	b. Continue with Step 21. WHEN S/G pressure decreases to less than 300 psig, THEN do Step 20c.
	c. Manually control S/G ARVs to maintain S/G pressures at 300 psig	c. Locally control S/G ARVs to maintain S/G pressures at 300 psig.

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
21	Check CNMT Pressure - HAS REMAINED LESS THAN 28 PSIG o Annunciator A-27, CNMT SPRAY - EXTINGUISHED o CNMT pressure indicators - LESS THAN 28 PSIG	IF CNMT spray has actuated, THEN perform the following: a. Reset CNMT spray. b. Place CNMT spray pump discharge valve switches to CLOSE to deenergize open contactor.
22	Check CNMT Radiation - LESS THAN 100 R/HR	Dispatch AO to locally close following valves, as necessary: • MDAFW pump discharge valves • MOV-813 and MOV-814, CCW to and from CNMT
23	Check If AC Emergency Power Is Restored - AT LEAST ONE TRAIN OF AC EMERGENCY BUSSES ENERGIZED • Bus 14 and Bus 18 • Bus 16 and Bus 17	Continue to control RCS conditions and monitor plant status: a. Check status of desired actions: o AC power restoration o ARV nitrogen pressure o RCP seal isolation o DC power supply b. Dispatch AO to locally check BAST temperature. IF temperature less than 155°F, THEN dispatch personnel to dilute BASTs (Refer to ER-BA.1, BAST TEMPERATURE CONCERN - LOSS OF ALL AC). c. Return to Step 11.

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
24	Manually Control S/G ARVs To Stabilize S/G Pressures	Locally control S/G ARVs.

NOTE: SW isolation may occur when power is restored to AC emergency busses.

25	Verify SW System Operation:	
	a. Check normal power available to SW pumps o Bus 17 normal feed breaker - CLOSED -OR- o Bus 18 normal feed breaker - CLOSED	a. IF both D/Gs operating, THEN ensure one SW pump running for each D/G. IF only one D/G operating, THEN perform the following: 1) Ensure at least one SW pump running. 2) Manually perform SW isolation. 3) Go to Step 26.
	b. Verify two SW pumps - RUNNING	b. IF normal power available, THEN manually start SW pumps as necessary. IF adequate cooling can NOT be supplied to a running D/G, THEN trip affected D/G and refer to ER-D/G.1.

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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26 Verify Following Equipment Loaded On Available AC Emergency Busses:

Manually load equipment as power supply permits.

- o 480 volt MCCs - ENERGIZED
  - • MCC C from Bus 14
  - • MCC D from Bus 16
- o Verify instrument busses - ENERGIZED
  - • Bus A from MCC C (A battery)
  - • Bus B from MCC C
  - • Bus C from MCC D (B battery)
- o Dispatch personnel to verify proper operation of battery chargers

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
27	Select Recovery Procedure:	
	a. Check 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. Check PRZR level - GREATER THAN 5% [30% adverse CNMT]	b. Go to ECA-0.2, LOSS OF ALL AC POWER RECOVERY WITH SI REQUIRED, Step 1.
	c. Check SI annunciators - EXTINGUISHED • D-19, PRESSURIZER LO PRESS 1750 PSIG • D-21, STEAM LINE LOOP A LO LO PRESS 514 PSIG • D-22, STEAM LINE LOOP B LO LO PRESS 514 PSIG • D-28, CONTAINMENT PRESSURE 4 PSIG	c. IF SI signal is present and was NOT previously reset, THEN go to ECA-0.2, LOSS OF ALL AC POWER RECOVERY WITH SI REQUIRED, Step 1.
	d. Go to ECA-0.1, LOSS OF ALL AC POWER RECOVERY WITHOUT SI REQUIRED, Step 1	

-END-

ECA-0.0 APPENDIX LIST

FIGURE MIN SUBCOOLING

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

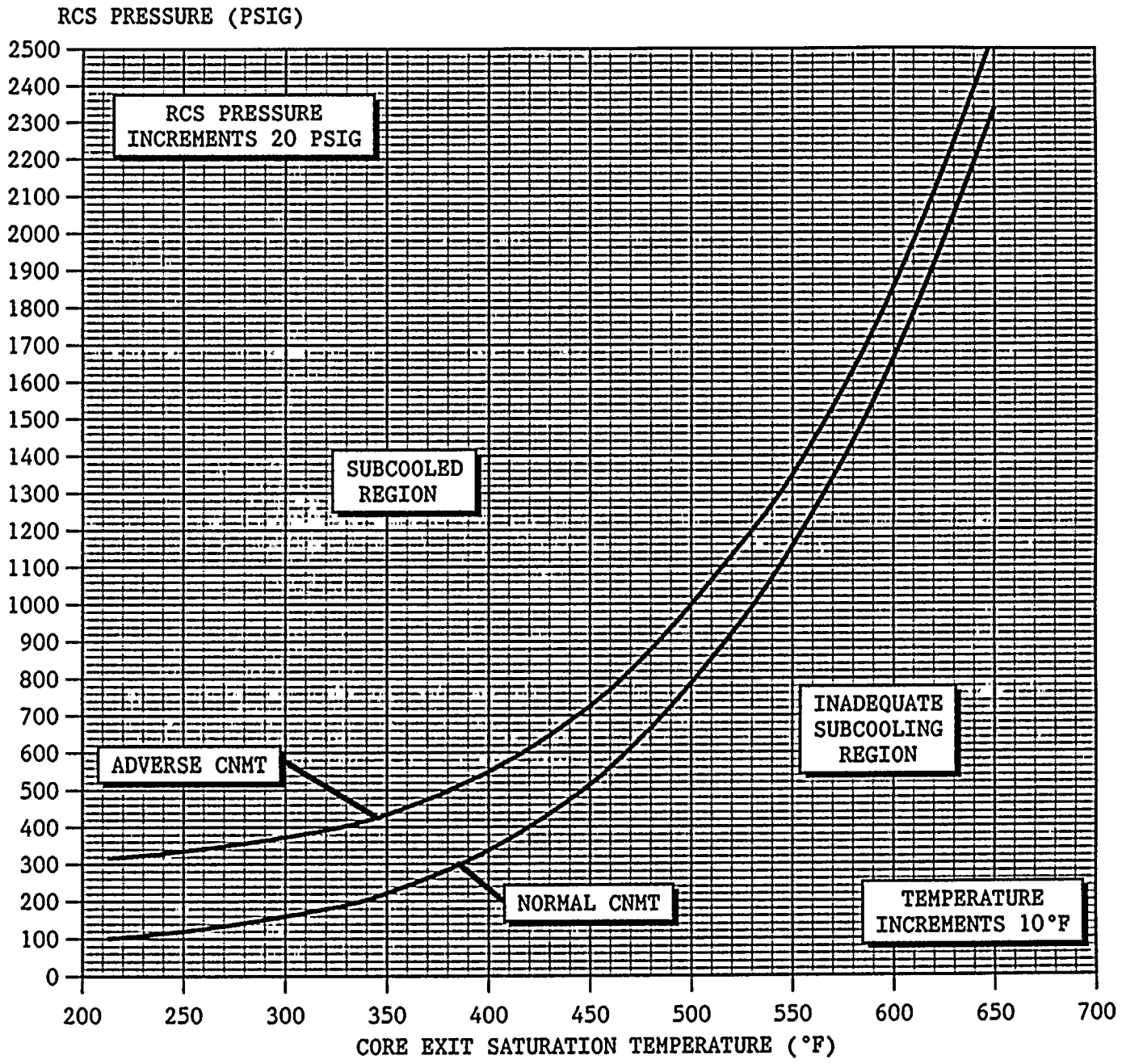
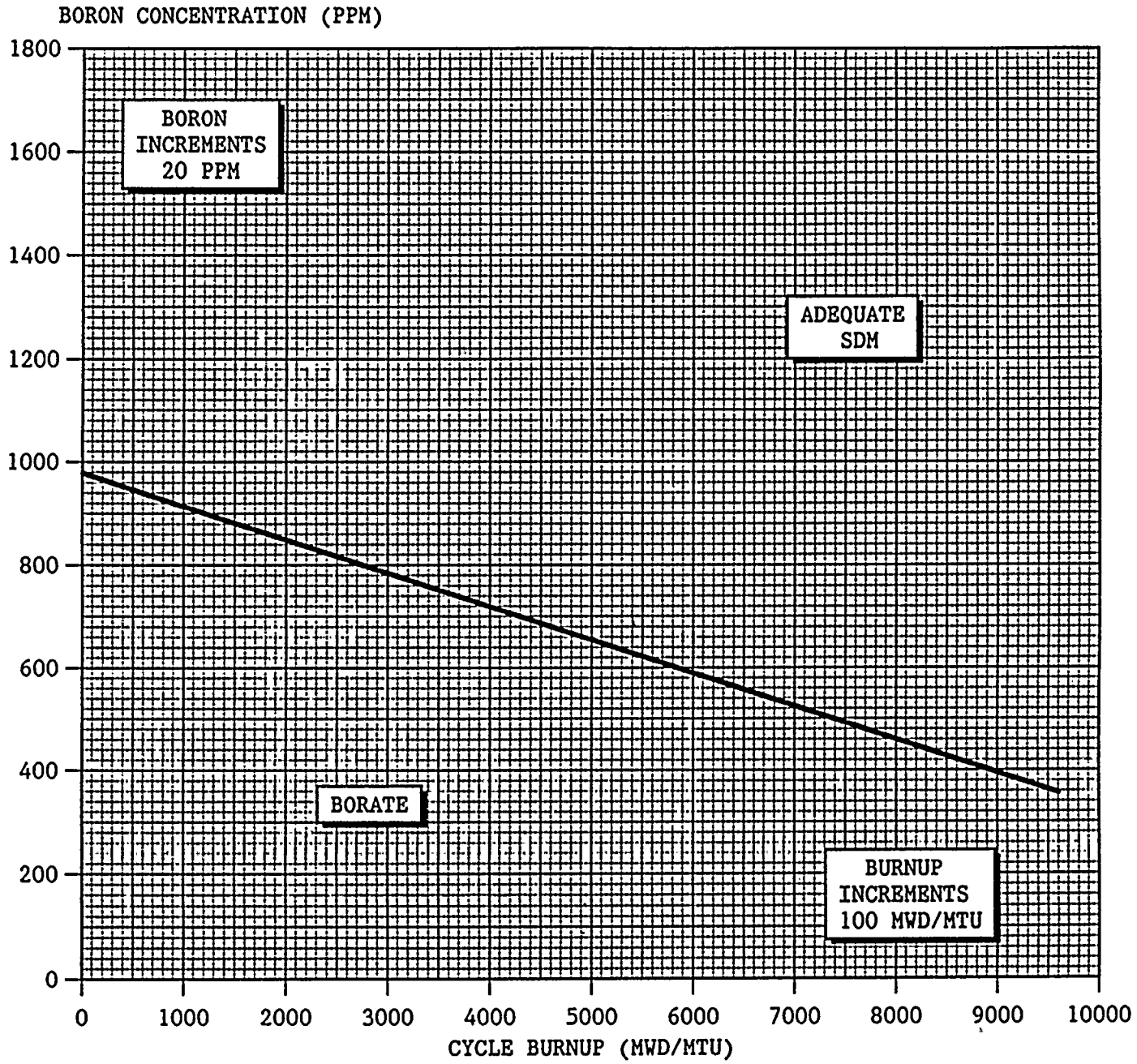


FIGURE SDM



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