ABNORMAL PROCEDURES INDEX

ISSUED: 01/08/92

PROCEDURE	TITLE	REV	EFFECTIVE DATE
AP-FW.1	PARTIAL OR COMPLETE LOSS OF MAIN FEEDWATER	8	91/05/10
AP-IA.1	LOSS OF INSTRUMENT AIR	4	89/12/19
AP-PRZR.1	ABNORMAL PRESSURIZER PRESSURE	5	91/11/01
AP-RCC.1	CONTINUOUS CONTROL ROD WITHDRAWAL/INSERTION	4	90/02/23
AP-RCC.2	RCC/RPI MALFUNCTION	4	90/04/09
AP-RCP.1	RCP SEAL MALFUNCTION	6	89/11/17
AP-RCS.1	REACTOR COOLANT LEAK	7	91/11/01
AP-RCS.2	LOSS OF REACTOR COOLANT FLOW	5	90/02/23
AP-RCS.3	HIGH REACTOR COOLANT ACTIVITY	5	90/11/20

ABNORMAL PROCEDURES INDEX

ISSUED: 01/08/92

PROCEDURE	TITLE	REV	EFFECTIVE DATE
AP-RHR.1	LOSS OF RHR	8	90/06/01
AP-RHR.2	LOSS OF RHR WHILE OPERATING AT RCS REDUCED INVENTORY CONDITIONS	3	90/04/20
AP-SW.1	SERVICE WATER LEAK	7	90/02/23
AP-TURB.1	TURBINE TRIP WITHOUT RX TRIP REQUIRED	4	90/02/23
AP-TURB.2	AUTOMATIC TURBINE RUNBACK	10	91/10/11
AP-TURB.3	TURBINE VIBRATIONS	5	90/02/23
AP-TURB.4	LOSS OF CONDENSER VACUUM	6	90/02/23

EQUIPMENT SUB-PROCEDURES INDEX

ISSUED: 01/08/92

PROCEDURE	TITLE	REV	EFFECTIVE DATE
ES-0.0	REDIAGNOSIS	7	90/04/09
ES-0.1	REACTOR TRIP RESPONSE	7	90/12/19
ES-0.2	NATURAL CIRCULATION COOLDOWN	2	91/05/03
ES-0.3	NATURAL CIRCULATION COOLDOWN WITH STEAM VOID IN VESSEL (WITH RVLIS)	1	90/04/30
ES-1.1	SI TERMINATION	7	91/05/03
ES-1.2	POST LOCA COOLDOWN AND DEPRESSURIZATION	8	91/06/24
ES-1.3	TRANSFER TO COLD LEG RECIRCULATION	13	91/10/28
ES-3.1	POST-SGTR COOLDOWN USING BACKFILL	4	91/05/03
ES-3.2	POST-SGTR COOLDOWN USING BLOWDOWN	5	91/05/03

EQUIPMENT SUB-PROCEDURES INDEX

ISSUED: 01/08/92

PROCEDURE	TITLE	REV	EFFECTIVE DATE
ES-3.3	POST-SGTR COOLDOWN USING STEAM DUMP	5	91/05/03

ROCHESTER GAS AND ELECTRIC CORPORATION

GINNA STATION

CONTROLLED COPY NUMBER 23

TECHNICAL REVIEW

PORC REVIEW DATE 5/1/91

Joseph A. Widay
PLANT SUPERINTENDENT

5/3/91
EFFECTIVE DATE

CATEGORY 1.0

REVIEWED BY:_____

A. PURPOSE

This procedure provides actions to perform a natural circulation RCS cooldown and depressurization to cold shutdown, with no accident in progress, under requirements that will preclude any upper head void formation.

B. SYMPTOMS AND OR ENTRY CONDITIONS

This procedure is entered from:

1) ES-0.1, REACTOR TRIP RESPONSE, when it has been determined that a natural circulation cooldown is required.

2) ECA-0.1, LOSS OF ALL AC POWER RECOVERY WITHOUT SI REQUIRED, when it has been determined that a natural circulation cooldown is required.

3) Other normal operating procedures when a natural circulation cooldown is required.

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED

* *

CAUTION

IF SI ACTUATION OCCURS DURING THIS PROCEDURE, E-0, REACTOR TRIP OR SAFETY INJECTION, SHOULD BE PERFORMED.

* *

NOTE: o Foldout page should be open and monitored periodically.

o If conditions can be established for starting an RCP during this procedure, Step 1 should be repeated.

1 Try To Restart An RCP:

a. Establish conditions for starting an RCP

o Bus 11A or 11B energized

o Refer to Attachment RCP START

a. Go to Step 2.

b. Start one RCP

b. Go to Step 2.

c. Go to O-2.2, PLANT SHUTDOWN FROM HOT SHUTDOWN TO COLD CONDITION

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED

2 Check VCT Makeup System:

a. Verify the following:

1) Boric acid flow control valve - SET FOR REQUIRED CSD CONCENTRATION

2) RMW mode selector switch in AUTO

3) RMW control armed - RED LIGHT LIT

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.

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
3	Check Charging Pump Suction Aligned To VCT:	
	a. Check VCT level: o Level - GREATER THAN 20% o VCT makeup system - AVAILABLE	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 4. WHEN VCT level greater than 40%, THEN do Step 3b.
	b. Verify the following: o LCV-112C - OPEN o LCV-112B - CLOSED	b. Manually align valves as necessary.
4	Borate RCS To Cold Shutdown Boron Concentration (Refer to Figure SDM)	
5	Establish Maximum Rx Vessel Head Cooling: o Check control rod shroud fans - BOTH RUNNING o Check one Rx compartment cooling fan - RUNNING	Start fans as necessary.

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
6	Verify Adequate Shutdown Margin	
	a. Direct HP to sample RCS for boron concentration	
	b. Verify boron concentration - GREATER THAN REQUIREMENTS OF FIGURE SDM	b. Perform the following: 1) Maintain RCS average temperature greater than 500°F until adequate SDM established. 2) Continue to borate as necessary.

* *

CAUTION

- IF CST LEVEL DECREASES TO LESS THAN 5 FEET, THEN ALTERNATE WATER SOURCES FOR AFW WILL BE NECESSARY (REFER TO ER-AFW.1, ALTERNATE WATER SUPPLY TO AFW PUMPS).
- SI MUST BE BLOCKED BEFORE S/G PRESSURE DECREASES TO 514 PSIG.

* *

7	Initiate RCS Cooldown To Cold Shutdown:	
	a. Dump steam to condenser	a. Manually or locally dump steam using S/G ARVs.
	b. Establish and maintain cooldown rate in RCS cold legs - LESS THAN 25°F/HR	
	c. Maintain S/G narrow range level - BETWEEN 17% AND 39%	c. Control feed flow as necessary.
	d. Plot RCS cold leg temperatures and PRZR temperature twice per hour	

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
8	Determine RCS Pressure And Temperature Limits:	
	a. Check control rod shroud fans - BOTH RUNNING	a. Perform the following: 1) Maintain RCS pressure within limits of Figure NAT CIRC C/D WITHOUT SHROUD FANS. 2) Go to Step 9.
	b. Maintain RCS pressure - WITHIN LIMITS OF FIGURE NAT CIRC C/D WITH SHROUD FANS	

* *

CAUTION

SI ACTUATION CIRCUITS WILL AUTOMATICALLY UNBLOCK IF PRZR PRESSURE INCREASES TO GREATER THAN 1992 PSIG.

* *

9	Check If SI Should Be Blocked:	
	a. Check the following: o PRZR pressure - LESS THAN 1950 PSIG -OR- o LOW PRZR PRESS BLOCK SAF INJEC status light - LIT	a. Continue with Step 10. WHEN either condition satisfied, THEN do Steps 9b and 9c.
	b. Place Train A and B SI block switches to BLOCK	
	c. Verify SAFETY INJECTION BLOCKED status light - LIT	c. Maintain PRZR pressure greater than 1750 psig and S/G pressure greater than 514 psig until SI blocked.

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED

NOTE:
- o If at any time it is determined that a natural circulation cooldown and depressurization must be performed at a rate that may form a steam void in the vessel, then procedure ES-0.3, NATURAL CIRCULATION COOLDOWN WITH STEAM VOID IN VESSEL, should be used.
- o If charging line to PRZR ΔT exceeds 320°F, then plant staff should be consulted before using auxiliary spray.
- o If auxiliary spray is in use, spray flow may be increased by closing normal charging valve AOV-294 and normal PRZR spray valves.

10 Initiate RCS Depressurization:

a. Check letdown - IN SERVICE

a. Try to establish letdown (Refer to Attachment LETDOWN).

IF letdown can NOT be established, THEN depressurize RCS using one PRZR PORV and go to Step 11.

b. Depressurize RCS using auxiliary spray valve (AOV-296)

b. IF auxiliary spray valve NOT available, THEN use one PRZR PORV.

c. Plot RCS temperature and pressure on curve selected in Step 8

11 Maintain PRZR Level Between 20% And 30%

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
12	Monitor RCS Cooldown: o Core exit T/Cs - DECREASING o RCS hot leg temperatures - DECREASING o RCS subcooling based on core exit T/Cs - INCREASING o Cooldown rate in RCS cold legs - LESS THAN 25°F/HR	
13	Establish Required RCS Hydrogen Concentration (Refer to S-3.3C, H2 OR O2 REMOVAL FROM PRIMARY SYSTEM BY BURPING VCT)	
14	Check For Steam Void In Reactor Vessel: o PRZR level - NO UNEXPECTED LARGE VARIATIONS o RVLIS level (no RCPs) - GREATER THAN 95%	Repressurize RCS within allowable limits and continue cooldown. IF RCS depressurization must continue, THEN go to ES-0.3, NATURAL CIRCULATION COOLDOWN WITH STEAM VOID IN VESSEL.

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
15	Check If SI ACCUMs Should Be Isolated:	
	a. RCS pressure - LESS THAN 1500 PSIG	a. Continue with Step 16. WHEN RCS pressure is less than 1500 psig, THEN do Step 15b.
	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 • ACCUM A, MOV-841 • ACCUM B, MOV-865	c. IF any valve can NOT be closed, THEN perform the following: 1) Dispatch personnel to locally close valves, as necessary. 2) Maintain RCS pressure greater than 1000 psig until both SI ACCUMs isolated. IF any SI ACCUM can NOT be isolated AND RCS depressurization to less than 1000 psig is required, THEN: 1) Open vent valves for unisolated SI ACCUMs. • ACCUM A, AOV-834A • ACCUM B, AOV-834B 2) Open HCV-945. 3) Maintain RCS pressure greater than SI ACCUM pressure.
	d. Locally open breakers for MOV-841 and MOV-865	

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
16	Check If SI System Normal Shutdown Alignment Should Be Established:	
	a. Verify the following: o RCS cold leg temperatures - LESS THAN 350°F o RCS pressure - LESS THAN 1500 PSIG	a. Do NOT lock out SI system. Continue with Step 17. WHEN requirements met, THEN do Step 16b.
	b. Lock out SI system as follows: 1) Place all SI pump switches in PULL STOP 2) Locally close breakers for SI pump discharge valves to cold legs • MOV-878B, MCC C position 8C • MOV-878D, MCC D position 8F 3) Close SI pump discharge to cold legs • MOV-878B • MOV-878D 4) Locally open breakers for MOV-878B and MOV-878D	
17	Maintain Letdown Flow:	
	a. Open letdown orifice valves as necessary	
	b. Adjust low pressure letdown control valve setpoint as necessary	

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
18	Maintain Required RCP Seal Injection Flow And Labyrinth Seal D/P: o Labyrinth seal D/P to each RCP - GREATER THAN 15 INCHES OF WATER o Seal injection flow to each RCP - GREATER THAN 6 GPM	Perform the following: o Adjust charging flow to REGEN Hx (HCV-142) as necessary. -OR- o Dispatch AO to adjust seal injection needle valves if necessary. • RCP A, V-300A • RCP B, V-300B
19	Check If RHR Normal Cooling Can Be Established: a. RCS cold leg temperature - LESS THAN 350°F b. RCS pressure - LESS THAN 400 PSIG c. Place RCS overpressure protection system in service (Refer to O-7, ALIGNMENT AND OPERATION OF THE REACTOR VESSEL OVERPRESSURE PROTECTION SYSTEM) d. Establish RHR normal cooling (Refer to Attachment RHR COOL)	a. Return to Step 7. b. Return to Step 7. c. IF RCS overpressure protection system can NOT be placed in service, THEN consult Plant staff to determine if RHR normal cooling should be established and go to Step 20.
20	Continue RCS Cooldown To Cold Shutdown	

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED

* *

CAUTION

DEPRESSURIZING THE RCS BEFORE THE ENTIRE RCS IS LESS THAN 200°F MAY RESULT IN ADDITIONAL VOID FORMATION IN THE RCS.

* *

21 Continue Cooldown Of Inactive Portion Of RCS:

a. Cool upper head region using control rod shroud fans

b. Cool S/G U-tubes by dumping steam from all S/Gs

* *

CAUTION

IF LESS THAN TWO CONTROL ROD SHROUD FANS ARE RUNNING, THE UPPER HEAD REGION MAY REMAIN ABOVE 200°F FOR UP TO 29 HOURS AFTER REACHING CSD.

* *

22 Determine If RCS Depressurization Is Permitted:

a. Entire RCS - LESS THAN 200°F

- Core exit T/Cs
- Upper head T/Cs
- RCS hot leg temperature
- RCS cold leg temperature

a. Do NOT depressurize RCS.

Return to Step 20.

b. Check control rod shroud fan status - BOTH RUNNING DURING COOLDOWN

b. Consult Plant staff to determine wait period for upper head cooling.

c. Maintain cold shutdown conditions (Refer to 0-2.3, PLANT AT COLD SHUTDOWN)

-END-

ES-0.2 APPENDIX LIST

	TITLE	PAGES
1)	RED PATH SUMMARY	1
2)	FIGURE MIN SUBCOOLING	1
3)	FIGURE SDM	1
4)	FIGURE NAT CIRC C/D WITHOUT SHROUD FANS	1
5)	FIGURE NAT CIRC C/D WITH SHROUD FANS	1
6)	ATTACHMENT RCP START	1
7)	ATTACHMENT LETDOWN	1
8)	ATTACHMENT RHR COOL	2
9)	FOLDOUT	1

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

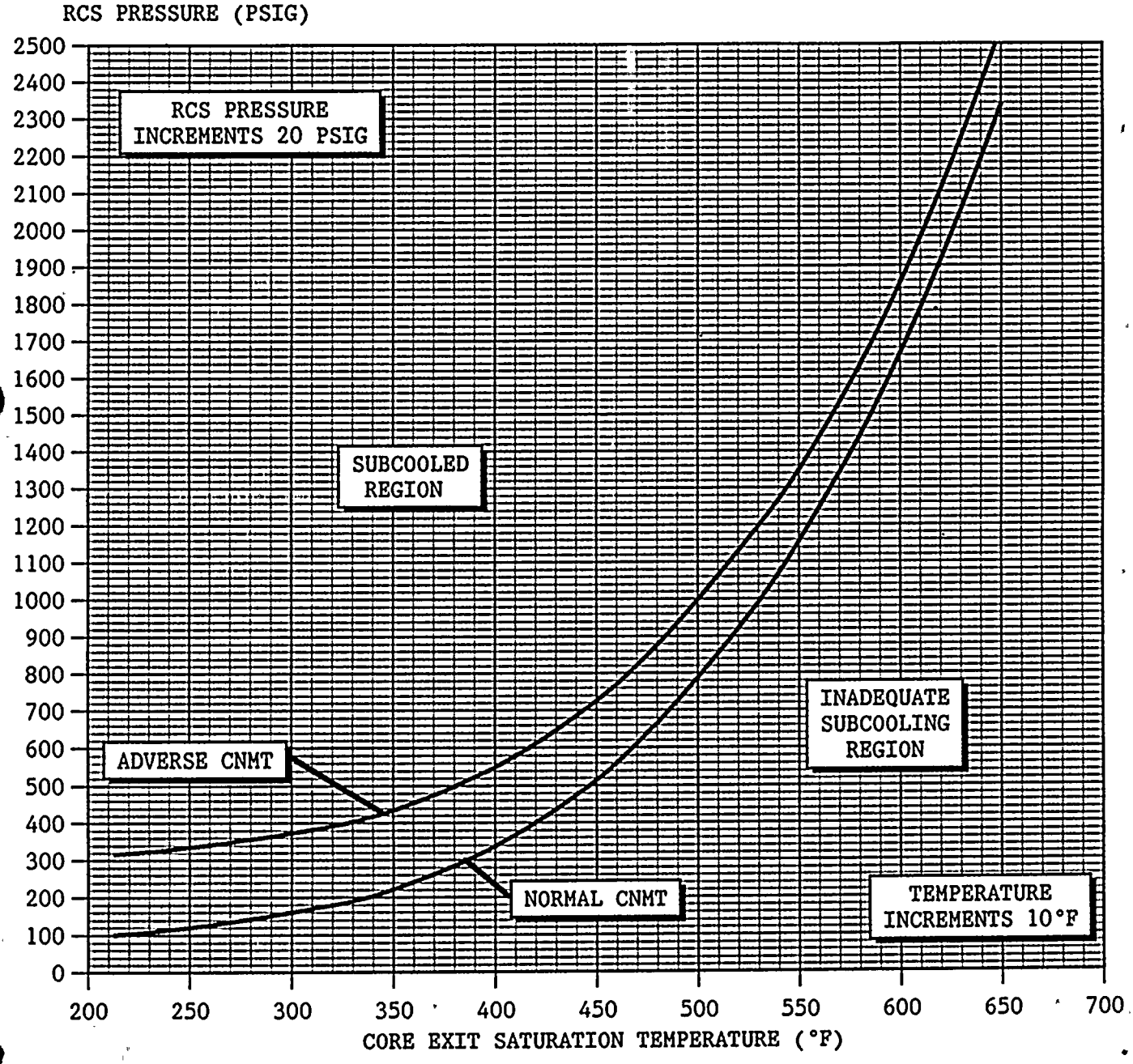
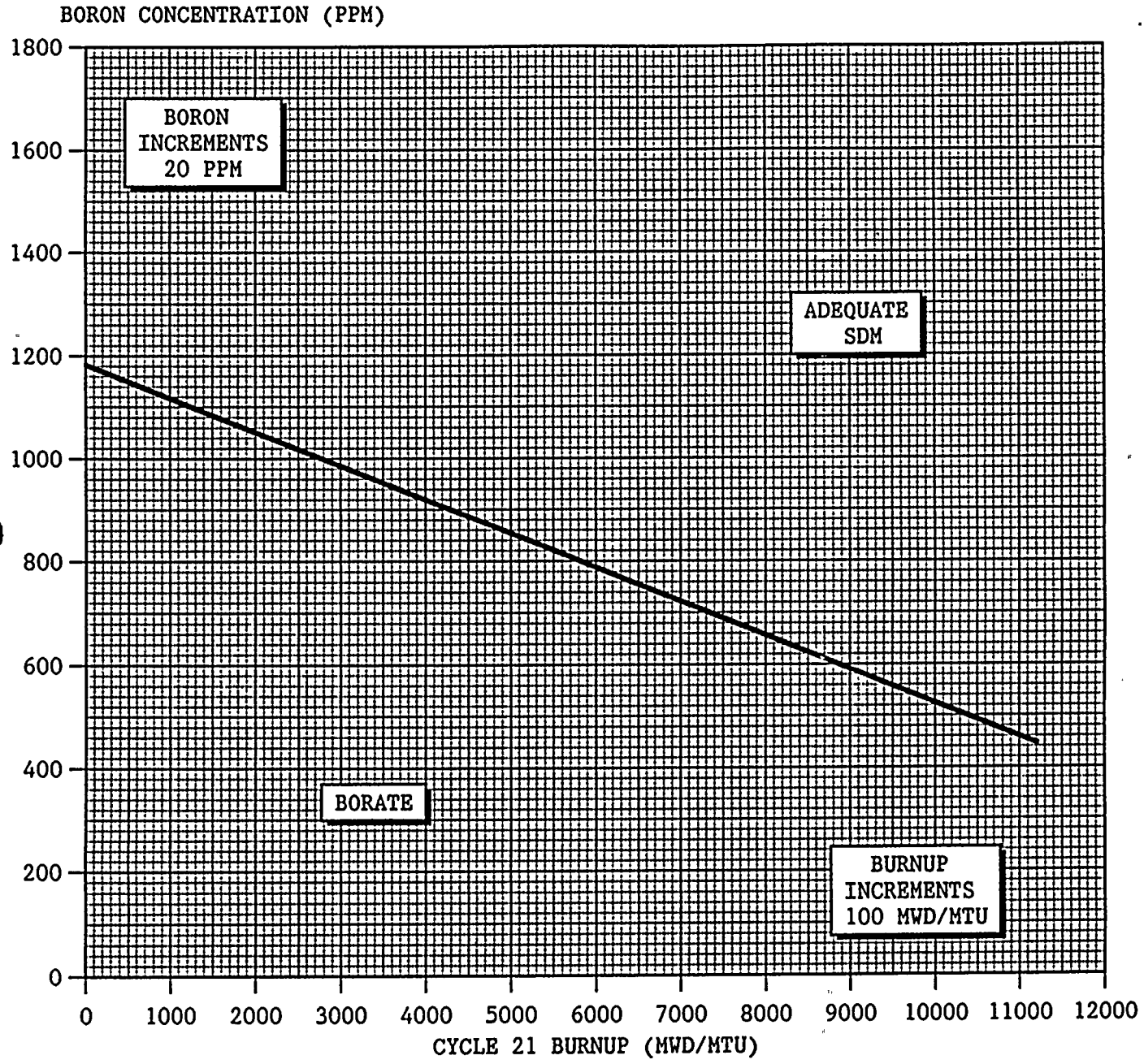
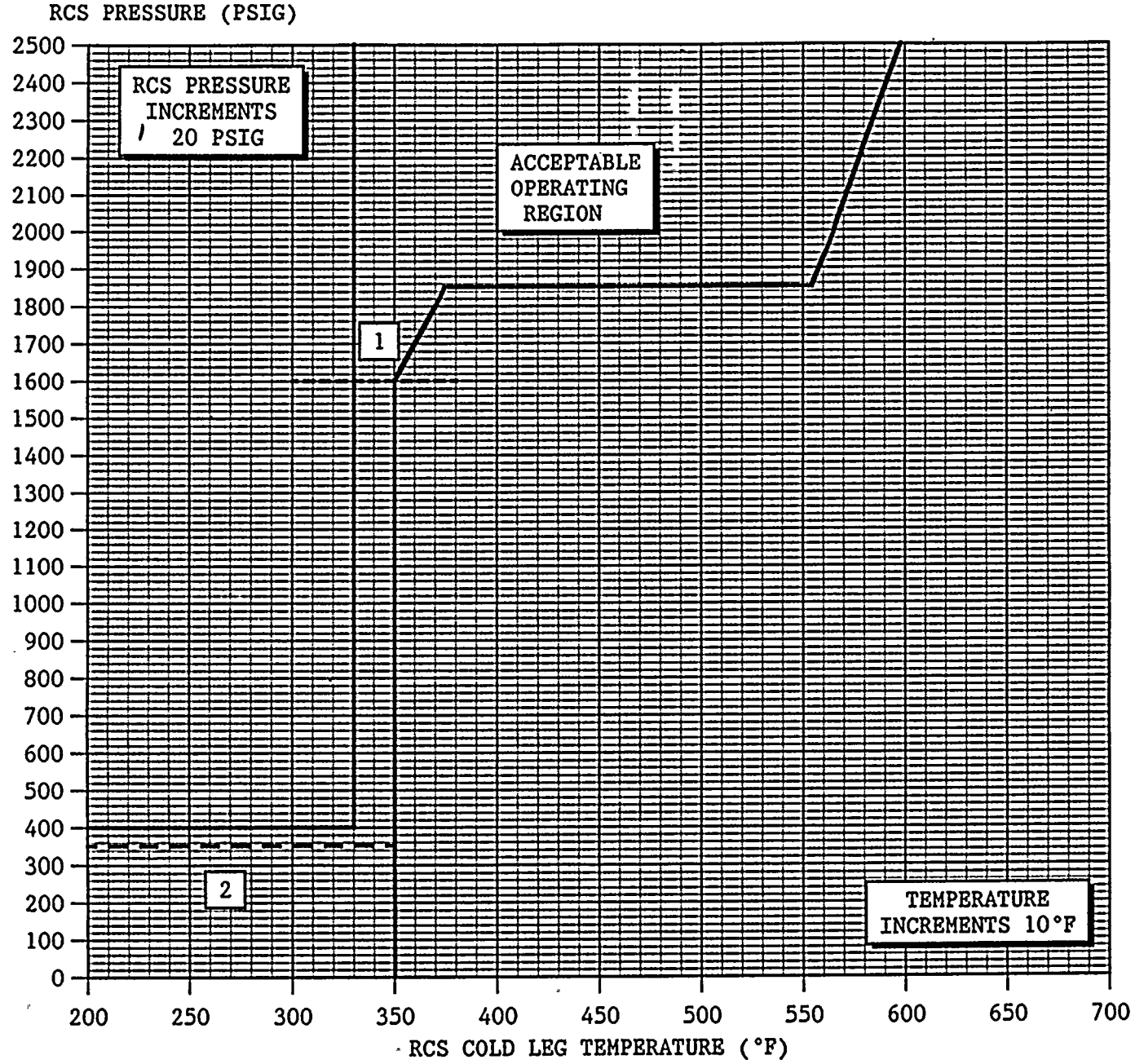


FIGURE SDM



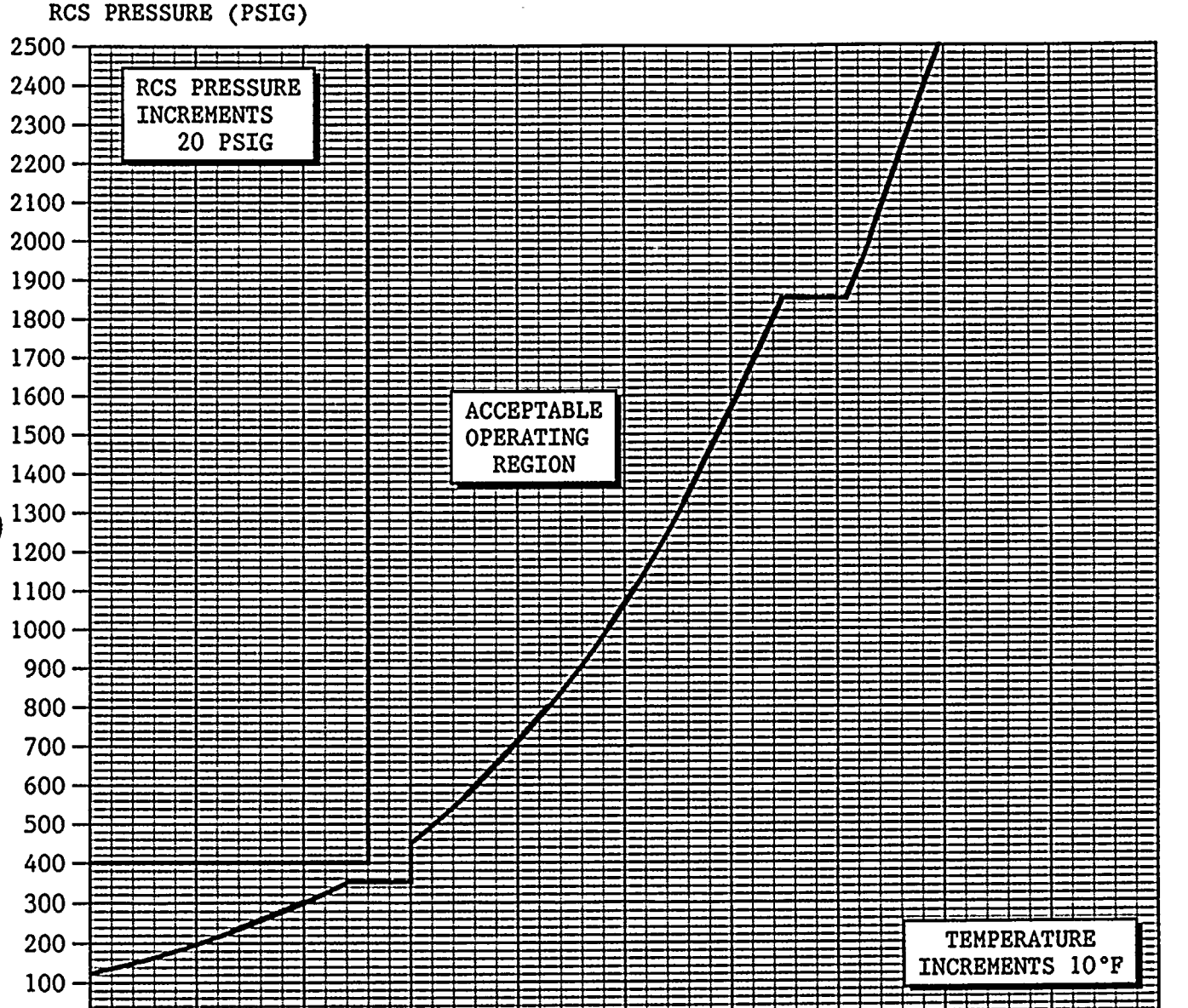
NOTE: To obtain core burnup, use PPCS turn on code BURNUP.

FIGURE NAT CIRC C/D WITHOUT SHROUD FANS



[1] Wait 11 Hours before decreasing RCS pressure less than 1600 psig
[2] RCS pressure should be maintained greater than 350 psig for 29 Hours to prevent voiding in the Rx vessel upper head.

FIGURE NAT CIRC C/D WITH SHROUD FANS



FOLDOUT PAGE

1. RCP TRIP CRITERIA

   IF BOTH conditions listed below occur, THEN trip both RCPs:

   a. SI pumps - AT LEAST TWO RUNNING

   b. RCS pressure minus maximum S/G pressure - LESS THAN 175 PSIG

2. SI PUMP AUTO SWITCHOVER CRITERION

   WHEN BAST level decreases to 10%, THEN ensure SI pump automatic switchover to RWST.

3. SI ACTUATION CRITERIA

   IF EITHER condition listed below occurs, THEN actuate SI and go to E-0, REACTOR TRIP OR SAFETY INJECTION, Step 1.

   - RCS subcooling based on core exit T/Cs - LESS THAN 0°F USING REQUIREMENTS OF FIGURE MIN SUBCOOLING

   - OR -

   - PRZR level - CHARGING CAN NOT CONTROL LEVEL GREATER THAN 5%

4. 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 7/12/89

Joseph A. Widay
PLANT SUPERINTENDENT

7/21/89
EFFECTIVE DATE

QA X NON-QA ____ CATEGORY 1.0

REVIEWED BY: ____

GINNA STATION
START:
DATE ____
TIME ____
COMPLETED:
DATE ____
TIME: ____

A. PURPOSE -

This procedure provides actions to continue plant cooldown and depressurization to cold shutdown, with no accident in progress, under conditions that allow for the potential formation of a void in the upper head region with a vessel level system available to monitor void growth.

B. SYMPTOMS AND OR ENTRY CONDITIONS

1. ENTRY CONDITIONS - This procedure is entered from:

   A) ES-0.2, NATURAL CIRCULATION COOLDOWN, after completing the first 9 steps, if rapid cooldown or depressurization is required.
   B) ES-0.2, NATURAL CIRCULATION COOLDOWN, Step 13, if depressurization is required which may result in upper head voiding.

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED

* *

CAUTION

- IF SI ACTUATION OCCURS DURING THIS PROCEDURE, E-0, REACTOR TRIP OR SAFETY INJECTION, SHOULD BE PERFORMED.
- THE FIRST 9 STEPS OF ES-0.2, NATURAL CIRCULATION COOLDOWN, SHOULD BE PERFORMED BEFORE CONTINUING WITH THIS PROCEDURE.

* *

NOTE: o Foldout page should be open and monitored periodically.

o If conditions can be established for starting an RCP during this procedure, then Step 1 should be repeated.

1 Try To Start An RCP:

a. Establish conditions for starting an RCP:
   - o Bus 11A or 11B energized
   - o Refer to Attachment RCP START

   a. Go to Step 2.

b. Check RVLIS level (no RCPs) - GREATER THAN 95%

   b. Perform the following:
   1) Increase PRZR level to 65% using charging and letdown.
   2) Dump steam to establish subcooling based on core exit T/Cs greater than 20°F using Figure MIN SUBCOOLING.

c. Start one RCP

   c. Go to Step 2.

d. Go to O-2.2, PLANT SHUTDOWN FROM HOT SHUTDOWN TO COLD CONDITION

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED

NOTE: Saturated conditions in the PRZR should be established before trying to decrease PRZR level.

2 Establish PRZR Level To Accommodate Void Growth:

a. Check PRZR level - BETWEEN 20% AND 30%

a. Control charging and letdown as necessary.

b. Place charging pump speed controllers in MANUAL

3 Continue RCS Cooldown And Depressurization:

a. Maintain cooldown rate in RCS cold legs - LESS THAN 100°F/HR

b. Maintain RCS pressure - WITHIN LIMITS OF FIGURE NAT CIRC C/D WITH RVLIS

c. Check letdown - IN SERVICE

c. Depressurize RCS using one PRZR PORV and go to Step 4.

d. Depressurize RCS using auxiliary spray valve (AOV-296)

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
4	Control PRZR Level:	
	a. Level - GREATER THAN 20%	a. Control charging and letdown to increase PRZR level to greater than 20%.
	b. Level - LESS THAN 90%	b. Perform the following: 1) Turn on PRZR heaters to maintain PRZR pressure stable. 2) Decrease PRZR level to less than 90% by one of the following: o Control charging as necessary. -OR- o Continue cooldown to shrink RCS inventory.
5	Check RVLIS Level (no RCPs) - GREATER THAN 95%	Perform the following: a. Repressurize RCS to maintain RVLIS level greater than 95%. b. Return to Step 3.

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
6	Check If SI ACCUMs Should Be Isolated:	
	a. RCS pressure - LESS THAN 1500 PSIG	a. Continue with Step 7. <u>WHEN</u> RCS pressure is less than 1500 psig, <u>THEN</u> do Step 6b.
	b. Dispatch AO 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 • ACCUM A, MOV-841 • ACCUM B, MOV-865	c. Perform the following: 1) Dispatch personnel to locally close valves, as necessary. 2) Maintain RCS pressure greater than 1000 psig until both SI ACCUMs isolated. <u>IF</u> any SI ACCUM can <u>NOT</u> be isolated <u>AND</u> RCS depressurization to less than 1000 psig is required, <u>THEN</u>: 1) Open vent valves for unisolated SI ACCUMs. • ACCUM A, AOV-834A • ACCUM B, AOV-834B 2) Open HCV-945. 3) Maintain RCS pressure greater than SI ACCUM pressure.
	d. Locally open breakers for MOV-841 and MOV-865	

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
7	Check If SI System Normal Shutdown Alignment Should Be Established: a. Verify the following: o RCS cold leg temperatures - LESS THAN 350°F o RCS pressure - LESS THAN 1500 PSIG b. Lock out SI system as follows: 1) Place all SI pump switches in - PULL STOP 2) Locally close breakers for SI pump discharge valves to cold legs • MOV-878B, MCC C position 8C • MOV-878D, MCC D position 8F 3) Close SI pump discharge to cold legs • MOV-878B • MOV-878D 4) Locally open breakers for MOV-878B and MOV-878D	a. Do NOT lock out SI system. Continue with Step 8. WHEN requirements met, THEN do Step 7b.
8	Maintain Letdown Flow: a. Open letdown orifice isolation valves as necessary b. Adjust low pressure letdown pressure controller as necessary	

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
9	Maintain Required RCP Seal Injection Flow And Labyrinth Seal D/P: o Labyrinth seal D/P to each RCP - GREATER THAN 15 INCHES OF WATER o Seal injection flow to each RCP - GREATER THAN 6 GPM	Perform the following: o Adjust charging flow to REGEN Hx (HCV-142) as necessary. -OR- o Dispatch AO to adjust seal injection needle valves if necessary. • RCP A, V-300A • RCP B, V-300B
10	Check If RHR Normal Cooling Can Be Established: a. RCS cold leg temperature - LESS THAN 350°F b. RCS pressure - LESS THAN 400 PSIG c. Place RCS overpressure protection system in service (Refer to 0-7, ALIGNMENT AND OPERATION OF THE REACTOR VESSEL OVERPRESSURE PROTECTION SYSTEM) d. Establish RHR normal cooling (Refer to Attachment RHR COOL)	a. Return to Step 3. b. Return to Step 3. c. IF RCS overpressure protection system can NOT be placed in service, THEN consult Plant staff to determine if RHR normal cooling should be established and go to Step 11.
11	Continue RCS Cooldown To Cold Shutdown	

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED

* *

CAUTION

DEPRESSURIZING THE RCS BEFORE THE ENTIRE RCS IS LESS THAN 200°F MAY RESULT IN ADDITIONAL VOID FORMATION IN THE RCS.

* *

12 Continue Cooldown Of Inactive Portion Of RCS:

a. Cool upper head region using control rod shroud fans

b. Cool S/G U-tubes by dumping steam from all S/Gs

c. RVLIS level (no RCPs) - GREATER THAN 95%

c. Return to Step 11.

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED

* *

CAUTION

IF NO CONTROL ROD SHROUD FANS ARE RUNNING, THE UPPER HEAD REGION MAY REMAIN ABOVE 200°F FOR UP TO 29 HOURS AFTER REACHING CSD.

* *

13	Determine If RCS Depressurization Is Permitted:	
	a. Entire RCS - LESS THAN 200°F • Core exit T/Cs • Upper head T/Cs • RCS hot leg temperature • RCS cold leg temperature	a. Do NOT depressurize RCS. Return to Step 11.
	b. Check control rod shroud fan status - BOTH RUNNING DURING COOLDOWN	b. Consult Plant staff to determine wait period for upper head cooling.
	c. Refer to 0-2.3, PLANT AT COLD SHUTDOWN	

-END-

ES-0.3 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

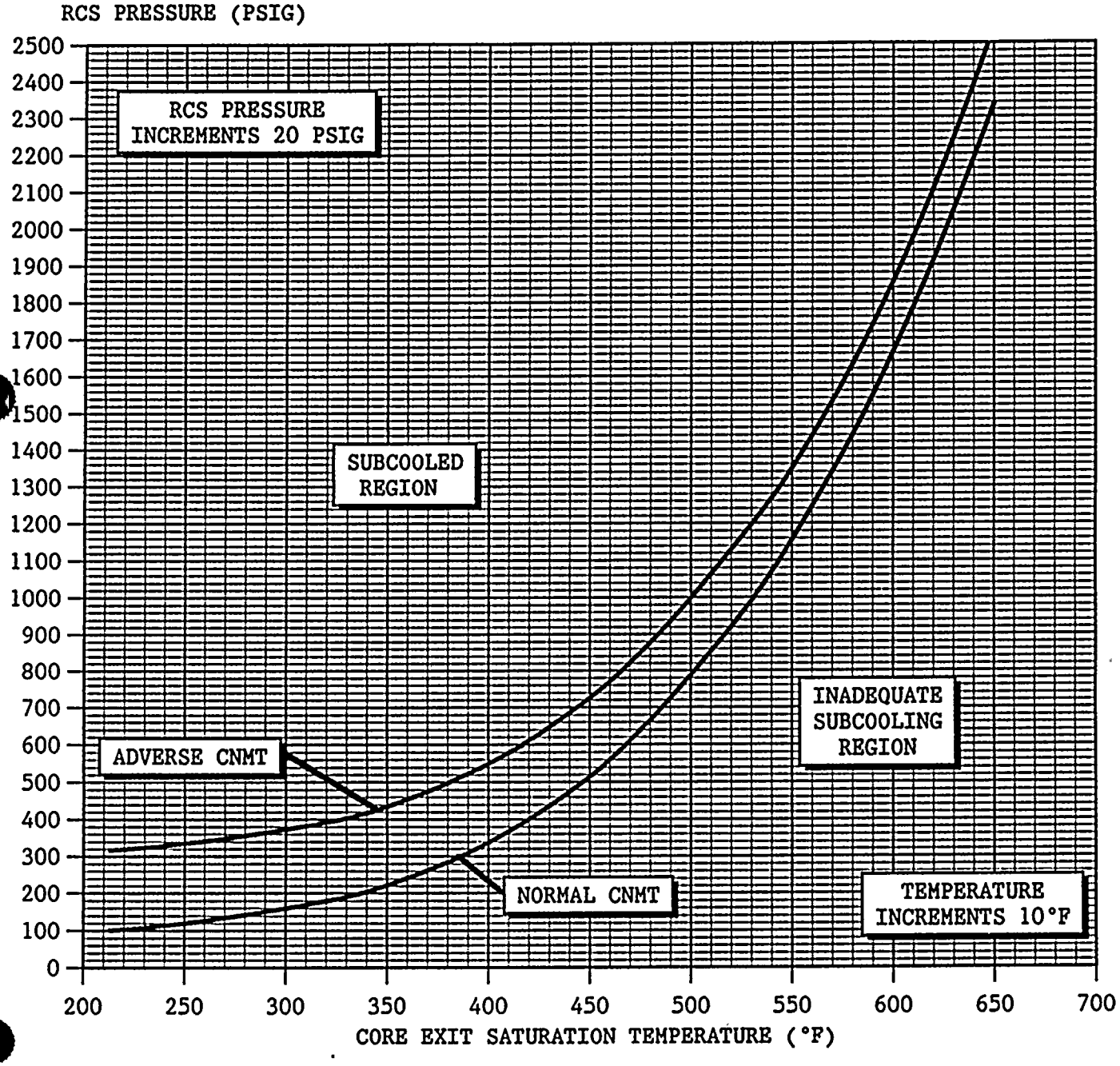
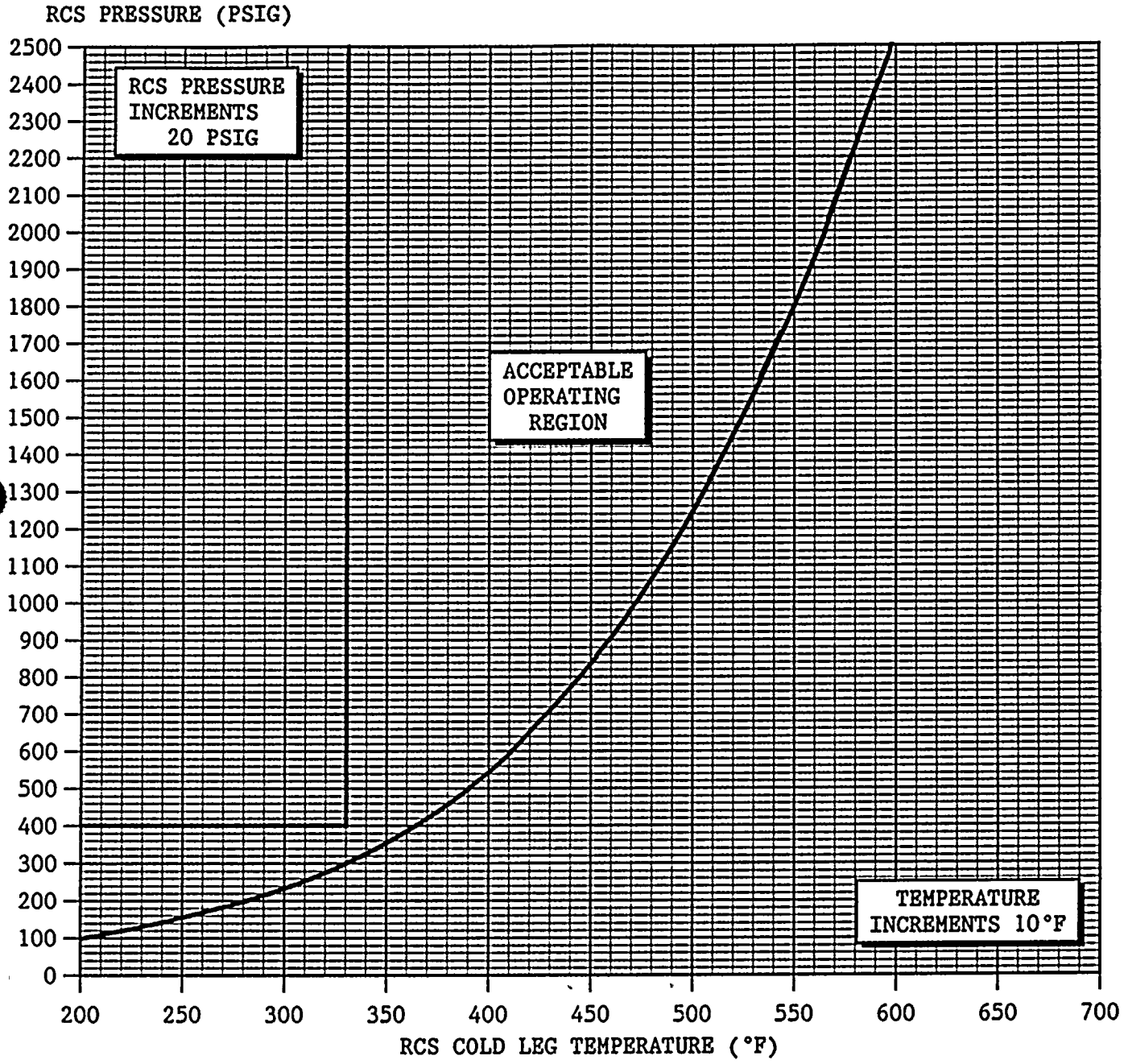


FIGURE NAT C/D WITH RVLIS



ATTACHMENT RCP START

A) The following are prerequisites for starting an RCP:
- o RCP oil lift pump running (2 minutes)
- o RCP oil lift pressure white light - LIT

B) In addition, the following conditions should be met prior to starting an RCP:

1) Both PRZR spray valves closed - DEMAND AT 0%

2) CCW in service and aligned to RCP

3) RCP temperatures normal:
   - o Seal inlet temperature - LESS THAN 135°F
   - o CCW temperature and flow alarms - EXTINGUISHED
   - o Motor bearing temperatures - NORMAL
     (PPCS - GD RCPS or recorder, if selected)

4) RCP seal injection in service
   - o Seal injection flow - GREATER THAN 6 gpm
   - o Labyrinth seal D/P - GREATER THAN 15 inches OF WATER

5) RCP #1 seal D/P - GREATER THAN 220 psid

6) RCP oil levels:
   - o Level alarms - EXTINGUISHED
   - o Level indicators - ON SCALE

7) RCP seal return:

   a) RCP #1 seal outlet valves open:
      - o AOV-270A for RCP A
      - o AOV-270B for RCP B

   b) IF MOV-313, seal return isolation, open, THEN verify the following:
      - o VCT pressure - GREATER THAN 15 psig
      - o RCP #1 seal leakoff flow - BETWEEN 0.25 gpm AND 5.5 gpm
      - o RCP #2 seal standpipe low level alarm - EXTINGUISHED

   c) IF MOV-313 closed, THEN verify other RCP #1 seal parameters normal prior to starting an RCP:
      - o RCP #1 seal inlet temperature
      - o RCP #1 seal D/P

NOTE: RCP oil lift pump should be stopped after RCP is running.

ATTACHMENT RHR COOL

Place the RHR system in service as follows:

1. Start second CCW pump as power supply permits (124 kw)

2. Dispatch AO with locked valve key and AUX BLDG sub-basement key to perform the following:
   - o Open V-712A and V-712B, RHR Hx Bypass.
   - o Open V-709C and V-709D, RHR pump discharge crosstie valves (AUX BLDG sub-basement).
   - o Close breaker for MOV-856, MCC C position 10C.

3. Close breakers for RHR valves
   - o MOV-700, MCC C position 7F
   - o MOV-701, MCC D position 7F
   - o MOV-720, MCC C position 7C
   - o MOV-721, MCC D position 7C

4. Close MOV-856, RHR suction from RWST.

5. Close RHR Hx outlet valves and bypass valve
   - o HCV-624
   - o HCV-625
   - o HCV-626

6. Open CCW to RHR Hxs
   - o MOV-738A
   - o MOV-738B

7. Set PCV-135 controller in auto at approximately RCS pressure.

8. Slowly open HCV-133, RHR letdown to CVCS, to equalize pressure between RHR and CVCS.

9. Open RHR pump suctions from loop A hot leg isolation valves
   - o MOV-700
   - o MOV-701

10. Start one RHR pump and maintain flow at minimum for 5 minutes to equalize temperature of the RHR system.

11. Adjust PCV-135 and HCV-133 as necessary to control letdown flow less than 70 gpm

12. Open RHR pump discharge to loop B cold leg isolation valves
    - o MOV-720
    - o MOV-721

ATTACHMENT RHR COOL (CONT.)

13. Start second RHR pump.

14. Crack open HCV-624 and HCV-625 to establish RHR cooling.

15. Check open HCV-133 and close all letdown orifice valves.

16. Adjust PCV-135 as necessary to control letdown flow.

NOTE: If needed, flow up to 3100 gpm using two RHR pumps is permissible.

17. Adjust HCV-626 for desired flowrate (less than 3100 gpm for 2 RHR pumps running).

18. Place HCV-626 in AUTO.

19. Establish desired cooldown rate using RHR Hx outlet valves:
    - o HCV-624
    - o HCV-625

20. Plot RCS and PRZR cooldown rates once every 30 min. (obtain O-2.2 RCS and PRZR temperature versus time plot).

21. Direct I&C Dept. to reset RHR low flow alarm to 400 gpm.

FOLDOUT PAGE

1. RCP TRIP CRITERIA

IF BOTH conditions listed below occur, THEN trip both RCPs:

a. SI pumps - AT LEAST TWO RUNNING

b. RCS pressure minus maximum S/G pressure - LESS THAN 175 psig

2. SI PUMP AUTO SWITCHOVER CRITERION

WHEN BAST level decreases to 10%, THEN ensure SI pump automatic switchover to RWST.

3. SI ACTUATION CRITERIA

IF EITHER condition listed below occurs, THEN actuate SI and go to E-0, REACTOR TRIP OR SAFETY INJECTION, Step 1.

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

- OR -

- o PRZR level - CHARGING CAN NOT CONTROL LEVEL GREATER THAN 5%

4. 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).

EOP:	TITLE:	REVISION:
ES-0.3	NATURAL CIRCULATION COOLDOWN WITH STEAM VOID IN VESSEL (WITH RVLIS)	1

EOP STEP		ERG STEP		DEVIATION/JUSTIFICATION
				ES-0.3 is designed to control the extent of voiding in the RCS during an expeditious natural circulation cooldown and depressurization such that natural circulation flow and RCS pressure/pressurizer level control are not maintained. The guidance contained therein is derived from the corresponding generic guidelines ES-0.3, NATURAL CIRCULATION COOLDOWN WITH STEAM VOID IN VESSEL (WITH RVLIS) and ES-0.4, NATURAL CIRCULATION COOLDOWN WITH STEAM VOID IN VESSEL (WITHOUT RVLIS). The salient features of each of these generic guidelines was examined and compared to the instructions contained in the proposed procedure.
1	C1	1	C1	No difference.
1	C2	1	C2	No significant difference.
1	N1	1	N1	No significant difference.
--		1	N2	Deleted note regarding priority of RCP start. Ginna is a 2-loop plant with a spray connection to each loop. The difference in driving head is not significant, and since other operational considerations may give priority to starting the RCP on the loop without the surge line, the note was deleted to minimize confusion.
1	N2	1	N3	No difference.
1		1	(1)	Rearranged substeps to check conditions for starting an RCP to allow bypassing remainder of step if 4 KV power is not available.
2	N	2	N	No difference.
2		2	(2)	No difference.
3	C1	--		Added a caution as a reminder to operator that boration to CSD must be complete prior to cooldown to <500°F.

EOP:	TITLE:	REVISION:
ES-0.3	NATURAL CIRCULATION COOLDOWN WITH STEAM VOID IN VESSEL (WITH RVLIS)	1

EOP STEP	ERG STEP	DEVIATION/JUSTIFICATION
3 C2	--	Added a caution to remind the operator that the ΔT between the PRZR and Thot should be maintained less than 200°F. This is to minimize the concern for thermal shock in the PRZR lower head due to possible insurge. This concern evolved from the surge line stratification issue.
3 N	--	Inserted note which appears in ES-0.4 before Step 5 since it is a good reminder for the operator.
3	--	Inserted ES-0.4 Step 3 as written in the ERG. This was done as a result of combining ES-0.3 and ES-0.4. Provided a range for RCS pressure control to facilitate operations.
4 C	--	Included caution from ES-0.2 SI block step to remind the operator that if pressure increases above the block setpoint, auto SI circuits are restored to operable.
4	--	Inserted a step to verify SI blocked. Add detail in the RNO on how to block SI and how to verify SI blocked. Include RNO that if SI cannot be blocked to maintain RCS and S/G pressures above SI setpoints. Ginna train A and train B block switches block both RCS and S/G pressure SI for each individual train while the reference plant has block switches for each signal.
5 C	--	Included caution from ES-0.4 to remind the operator to monitor for void growth. Void growth would be indicated by rapidly increasing PRZR level. This was done as part of the effort to eliminate ES-0.4.
5 N1	--	Added a note to remind the operator that the Tech Spec limit for charging line to PRZR ΔT is 320°F and that violating this limit should be carefully considered.
5 N2	--	Added a note to remind the operator to select a PORV with an operable block valve to allow isolation in case the PORV fails to close.
5 N3	--	Added a note to remind the operator that AUX spray may be enhanced by closing the normal charging valve to force all charging through the AUX spray line.

EOP:	TITLE:	REVISION:
ES-0.3	NATURAL CIRCULATION COOLDOWN WITH STEAM VOID IN VESSEL (WITH RVLIS)	1

EOP STEP	ERG STEP	DEVIATION/JUSTIFICATION
5	--	Inserted ES-0.4 Step 4 as written in the ERG to reduce RCS pressure to less than the Tech Spec pressure for isolating the SI ACCUMs. This was done as a result of combining ES-0.3 and ES-0.4.
6	6 (6)	Split ERG step into two steps; one for isolating SI accumulators, and one for establishing normal SI system shutdown alignment. This step includes Tech Spec criteria for removing accumulators from service and plant specific instructions for isolating accumulators. The RNO also provides guidance in the event that any accumulator isolation valve can NOT be closed including steps required for venting the accumulators to CNMT if necessary.
7	3 (3)	Deleted subcooling check because maintaining temperature/pressure relationship within limits of Figure Natural Circ C/D With Void In Upper Head will ensure that 20°F subcooling is met. Added a check to ensure RCS cold legs greater than minimum temperature for initiation of RCS overpressurization system. If not, then the operator is directed to stabilize RCS temperature.
8	4 (4)	No difference.
9	5 (5)	Added substep a to check any train of RVLIS operable. If neither train available, the RNO will transition to the next step.
10	7 (6)	No difference.
11	8 (6)	Included criteria for verifying adequate seal injection and means for establishing adequate seal injection if not available.
12	6 (6)	This step provides Tech Spec criteria which must be met prior to removing SI system from service. It also includes plant specific instructions for establishing SI system shutdown alignment.

EOP STEP	ERG STEP	DEVIATION/JUSTIFICATION
13	9 (7)	Inserted a substep to direct placing the low temperature overpressure protection system in service prior to establishing RHR. This is a Tech Spec requirement. Included a requirement to sample RHR prior to placing the system in service as is done in other normal cooldown procedures. Referenced an attachment to provide instructions for sampling. Also included a reference to an attachment for establishing RHR cooling.
14	10 (8)	No difference.
15 C	11 C	No difference.
15	11 (9)	CRDM fans called control rod shroud fans at Ginna.
16 C	--	Inserted caution to remind operator that upper head remain hot for a significant period of time with less than two control rod shroud fans running.
16	12 (10)	Added a substep to verify PRZR level sufficiently low to allow for displacement of water from the vessel during void growth to prevent water solid operation. Specifically, this level will provide effective indication of voiding in the vessel. Added a list of indications to check to ensure entire RCS is less than 200°F. Added a substep to determine if a soak time is required prior to depressurizing the RCS.

-END-