

EOP: FR-I.3	TITLE: RESPONSE TO VOIDS IN REACTOR VESSEL	REV: 4 PAGE 1 of 15
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ROCHESTER GAS AND ELECTRIC CORPORATION

GINNA STATION

CONTROLLED COPY NUMBER 23

TECHNICAL REVIEW

PORC REVIEW DATE 6/20/90

Joseph A. Widay  
PLANT SUPERINTENDENT

6/27/90  
EFFECTIVE DATE

CATEGORY 1.0

REVIEWED BY: \_\_\_\_\_

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PDR ADOCK 05000244  
P PDC

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- 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.

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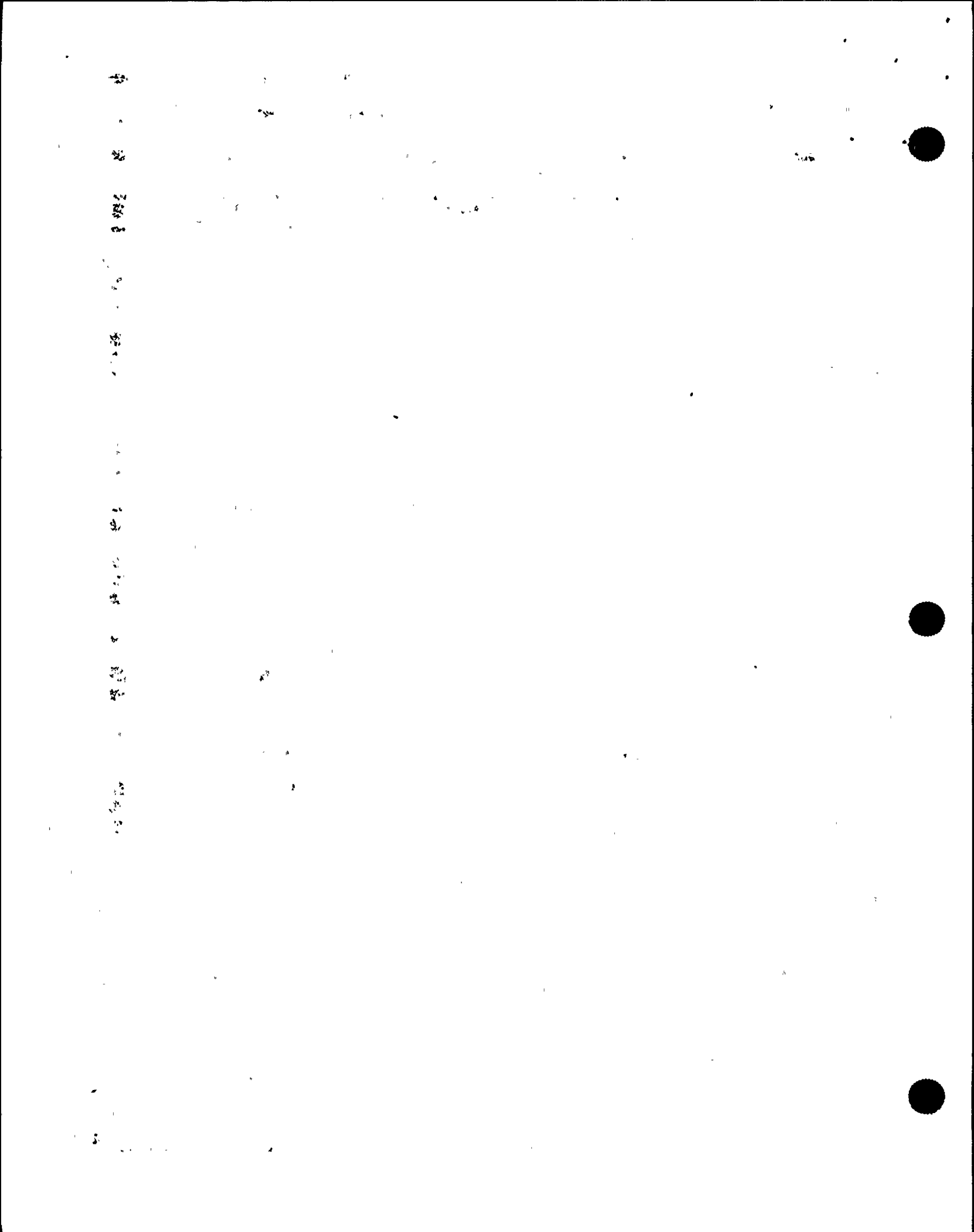
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STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
<p>*****</p> <p style="text-align: center;"><u>CAUTION</u></p> <p>IF A CONTROLLED NATURAL CIRCULATION COOLDOWN IS IN PROGRESS AND A VOID IN THE REACTOR VESSEL UPPER HEAD IS EXPECTED, THIS PROCEDURE SHOULD NOT BE PERFORMED.</p> <p>*****</p> <p><u>NOTE:</u> Adverse CNMT values should be used whenever CNMT pressure is greater than 4 psig or CNMT radiation is greater than 10<sup>-05</sup> R/hr.</p>		
1	Reset CI:	
	a. Operate CI reset key switch	
	b. Verify annunciator A-26, CNMT ISOLATION - EXTINGUISHED	
		b. Perform the following:
		1) Reset SI.
		2) Operate CI reset key switch.



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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, 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 A0 to locally throttle flow to CCW Hx to between 5000 gpm and 6000 gpm total flow.





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STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
3	Establish IA to CNMT:	
	<ul style="list-style-type: none"> <li>a. Verify non-safeguards busses energized from offsite power <ul style="list-style-type: none"> <li>o Bus 13 normal feed - CLOSED</li> <li>-OR-</li> <li>o Bus 15 normal feed - CLOSED</li> </ul> </li> <li>b. Verify SW isolation valves to turbine building - OPEN <ul style="list-style-type: none"> <li>• MOV-4613 and MOV-4670</li> <li>• MOV-4614 and MOV-4664</li> </ul> </li> <li>c. Verify at least two air compressors - RUNNING</li> <li>d. Check IA supply: <ul style="list-style-type: none"> <li>o Pressure - GREATER THAN 60 PSIG</li> <li>o Pressure - STABLE OR INCREASING</li> </ul> </li> <li>e. Reset both trains of XY relays for IA to CI valve AOV-5392</li> <li>f. Open IA AOV-5392</li> </ul>	<ul style="list-style-type: none"> <li>a. Perform the following: <ul style="list-style-type: none"> <li>1) Close non-safeguards bus tie breakers: <ul style="list-style-type: none"> <li>• Bus 13 to Bus 14 tie</li> <li>• Bus 15 to Bus 16 tie</li> </ul> </li> <li>2) <u>WHEN</u> bus 15 restored, <u>THEN</u> reset control room lighting.</li> </ul> </li> <li>b. Perform the following: <ul style="list-style-type: none"> <li>1) Manually open valves.</li> <li>2) Dispatch AO to reset air compressors as required.</li> </ul> </li> <li>c. Manually start air compressors as power supply permits (75 kw each).</li> <li>d. Perform the following: <ul style="list-style-type: none"> <li>1) Continue attempts to restore IA (Refer to AP-IA.1, LOSS OF INSTRUMENT AIR).</li> <li>2) Continue with Step 4. <u>WHEN</u> IA restored, <u>THEN</u> do Steps 3e and f.</li> </ul> </li> </ul>



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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:

b. Manually align valves as necessary.

- o LCV-112B - OPEN
- o LCV-112C - CLOSED

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.

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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

b. CCW pumps - ANY RUNNING

c. Verify instrument bus D -  
ENERGIZED

6 Verify PRZR Level - GREATER  
THAN 13% [40% adverse CNMT]

a. Continue with Step 8. WHEN IA restored, THEN do Steps 5 through 7.

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. 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.

Continue with Step 8. WHEN PRZR level increases to greater than 13% [40% adverse CNMT], THEN do Step 7.



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STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
7	<p>Establish Normal Letdown:</p> <ol style="list-style-type: none"> <li>Establish charging line flow to REGEN Hx - GREATER THAN 20 GPM</li> <li>Place the following switches to CLOSE: <ul style="list-style-type: none"> <li>Letdown orifice valves (AOV-200A, AOV-200B, and AOV-202)</li> <li>AOV-371, letdown isolation valve</li> <li>AOV-427, loop B cold leg to REGEN Hx</li> </ul> </li> <li>Place letdown controllers TCV-130 and PCV-135 in MANUAL at 25% open</li> <li>Reset both trains of XY relays for AOV-371 and AOV-427</li> <li>Open AOV-371 and AOV-427</li> <li>Open letdown orifice valves as necessary</li> <li>Place TCV-130 in AUTO at 105°F</li> <li>Place PCV-135 in AUTO at 250 psig.</li> <li>Adjust charging pump speed and HCV-142 as necessary</li> </ol>	<p><u>IF</u> RCP seal return has been established, <u>THEN</u> establish excess letdown as follows:</p> <ul style="list-style-type: none"> <li>Place excess letdown divert valve, AOV-312, to NORMAL.</li> <li>Ensure CCW from excess letdown open, (AOV-745).</li> <li>Open excess letdown isolation valve AOV-310.</li> <li>Slowly open HCV-123 to maintain excess letdown temperature less than 195°F and pressure less than 100 psig.</li> <li>Adjust charging pump speed as necessary.</li> </ul> <p><u>IF</u> RCP seal return <u>NOT</u> established, <u>THEN</u> consult TSC to determine if excess letdown should be placed in service.</p>

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STEP

ACTION/EXPECTED RESPONSE

RESPONSE NOT OBTAINED

8 Establish Stable RCS  
Conditions:

a. PRZR level - STABLE AND BETWEEN  
40% AND 60%

b. RCS pressure - STABLE

c. RCS hot leg temperatures -  
STABLE

a. Control charging and letdown as  
necessary.

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. Control steam dump and total  
feed flow as necessary to  
stabilize RCS temperature.

9 Check RCPS - BOTH STOPPED

Go to Step 15.

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)

b. Energize PRZR heaters to  
increase RCS pressure by 50 psi

a. Go to Step 13.

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

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STEP

ACTION/EXPECTED RESPONSE

RESPONSE NOT OBTAINED

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          |                       |

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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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13 Try To Start One RCP:

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|--|---|
| a. Establish the following conditions prior to RCP start:                                | a. <u>IF</u> conditions can <u>NOT</u> be established, <u>THEN</u> 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   |   |

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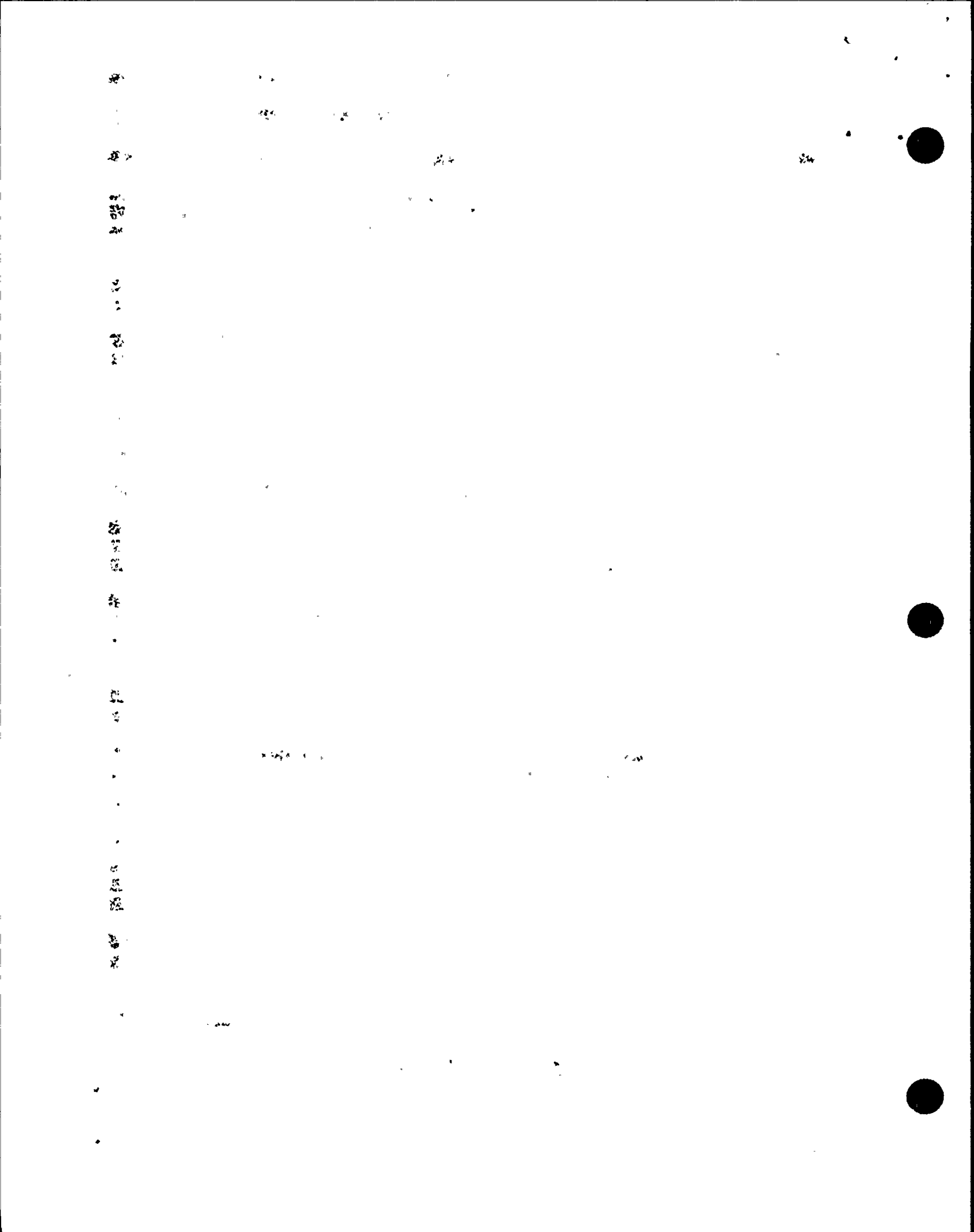
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STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
14	Check RVLIS Fluid Fraction (any RCP running) - LESS THAN 97%	Go to Step 24.
15	Direct HP To Start CNMT Hydrogen Monitors	
<p>*****</p> <p style="text-align: center;"><u>CAUTION</u></p> <p>FOLLOWING BLOCK OF AUTOMATIC SI ACTUATION, MANUAL SI ACTUATION MAY BE REQUIRED IF CONDITIONS DEGRADE.</p> <p>*****</p>		
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.
		<u>IF</u> normal spray <u>NOT</u> available and letdown in service, <u>THEN</u> use auxiliary spray (AOV-296). <u>IF</u> <u>NOT</u> , <u>THEN</u> 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%
- b. RCS pressure - STABLE

- c. RCS subcooling based on core exit T/Cs - GREATER THAN 50°F USING FIGURE MIN SUBCOOLING

- d. RCS hot leg temperatures - STABLE

- a. Control charging and letdown as necessary.
- 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. Dump steam as necessary.

- 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)

- b. Verify the following CNMT ventilation equipment in service:

- All CNMT RECIRC fans
- One reactor compartment cooling fan
- One control rod shroud fan

- a. Manually close valves.

- b. Manually start fans as power supply permits.

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STEP

ACTION/EXPECTED RESPONSE

RESPONSE NOT OBTAINED

20 Determine Maximum Allowable Venting Time:

a. CNMT hydrogen concentration - LESS THAN 3%

a. Consult TSC to evaluate methods to reduce hydrogen concentration to less than 3%.

b. Determine maximum venting time (Refer to Attachment VENT TIME)

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%



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STEP

ACTION/EXPECTED RESPONSE

RESPONSE NOT OBTAINED

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CAUTION

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

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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

- b. Any venting termination criterion - EXCEEDED

- c. Close all vent valves

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

- SOV-591
- SOV-593

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

## 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.

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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-		

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FR-I.3 APPENDIX LIST

<u>TITLE</u>	<u>PAGES</u>
1) FIGURE MIN SUBCOOLING	1
2) FIGURE TECH SPEC C/D	1
3) FIGURE HYDROGEN FLOW RATE	1
4) ATTACHMENT VENT TIME	1
5) ATTACHMENT RCP START	1
6) ATTACHMENT AUX BLDG	1





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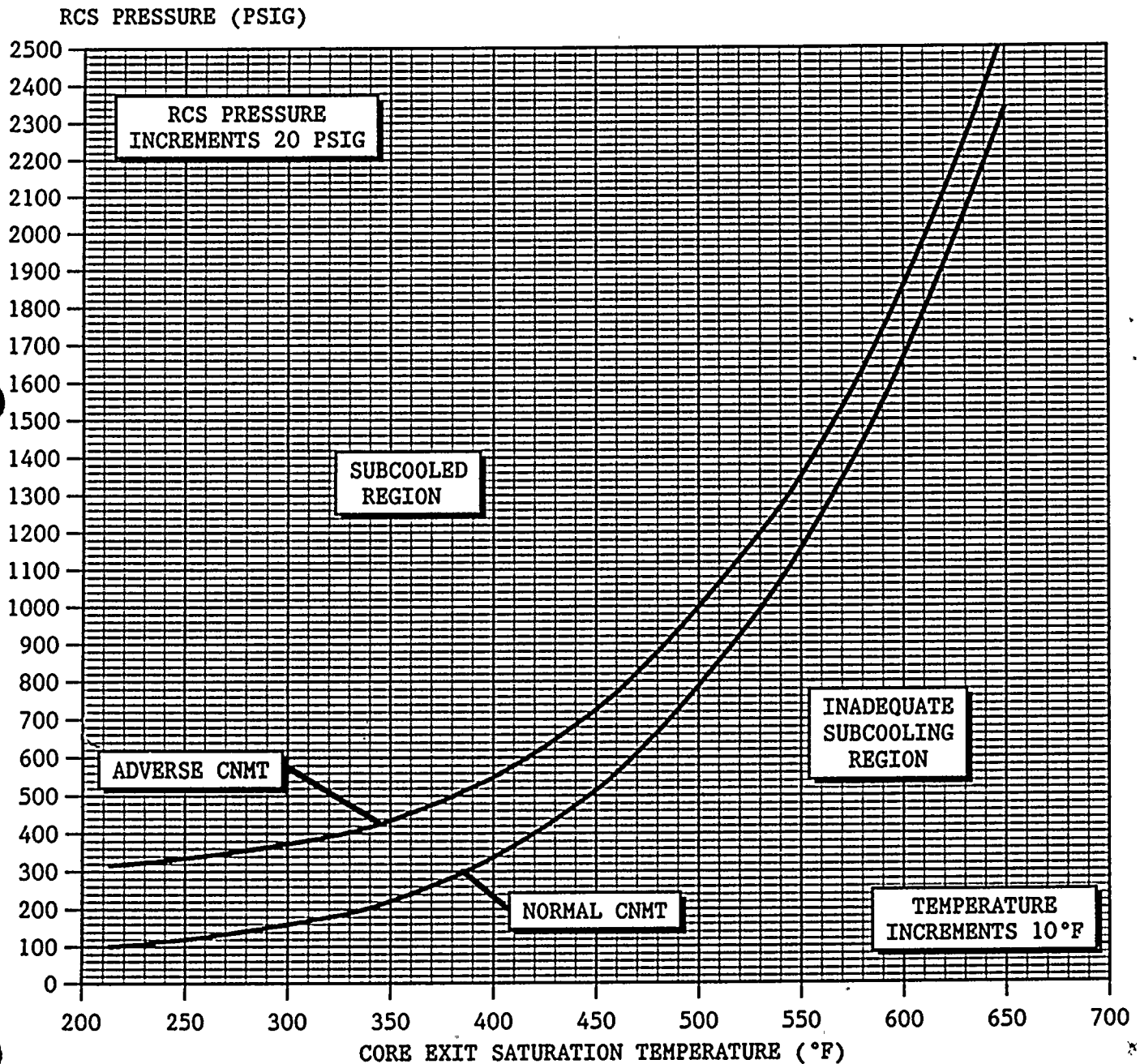
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FIGURE MIN SUBCOOLING

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



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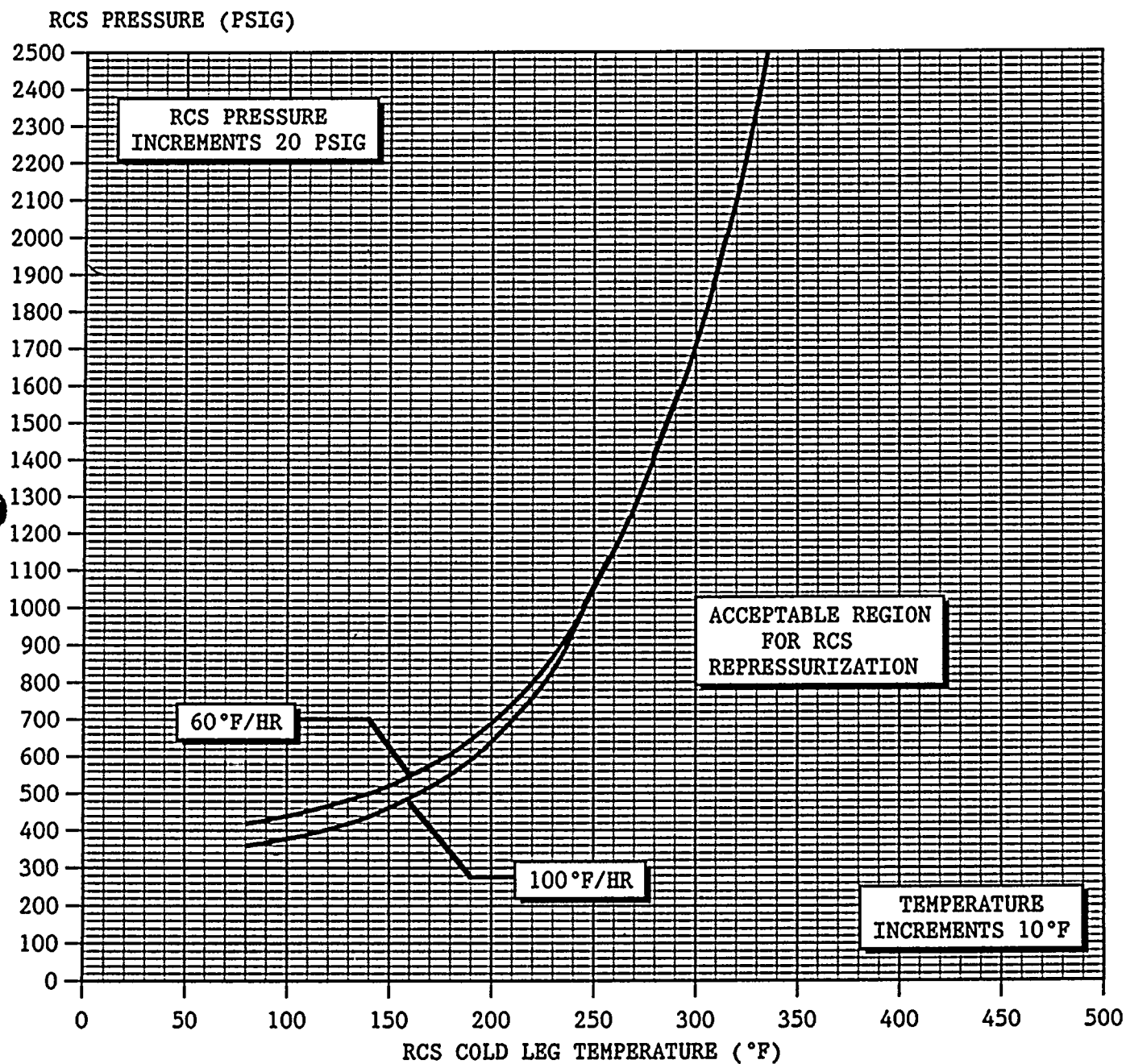
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FIGURE TECH SPEC C/D



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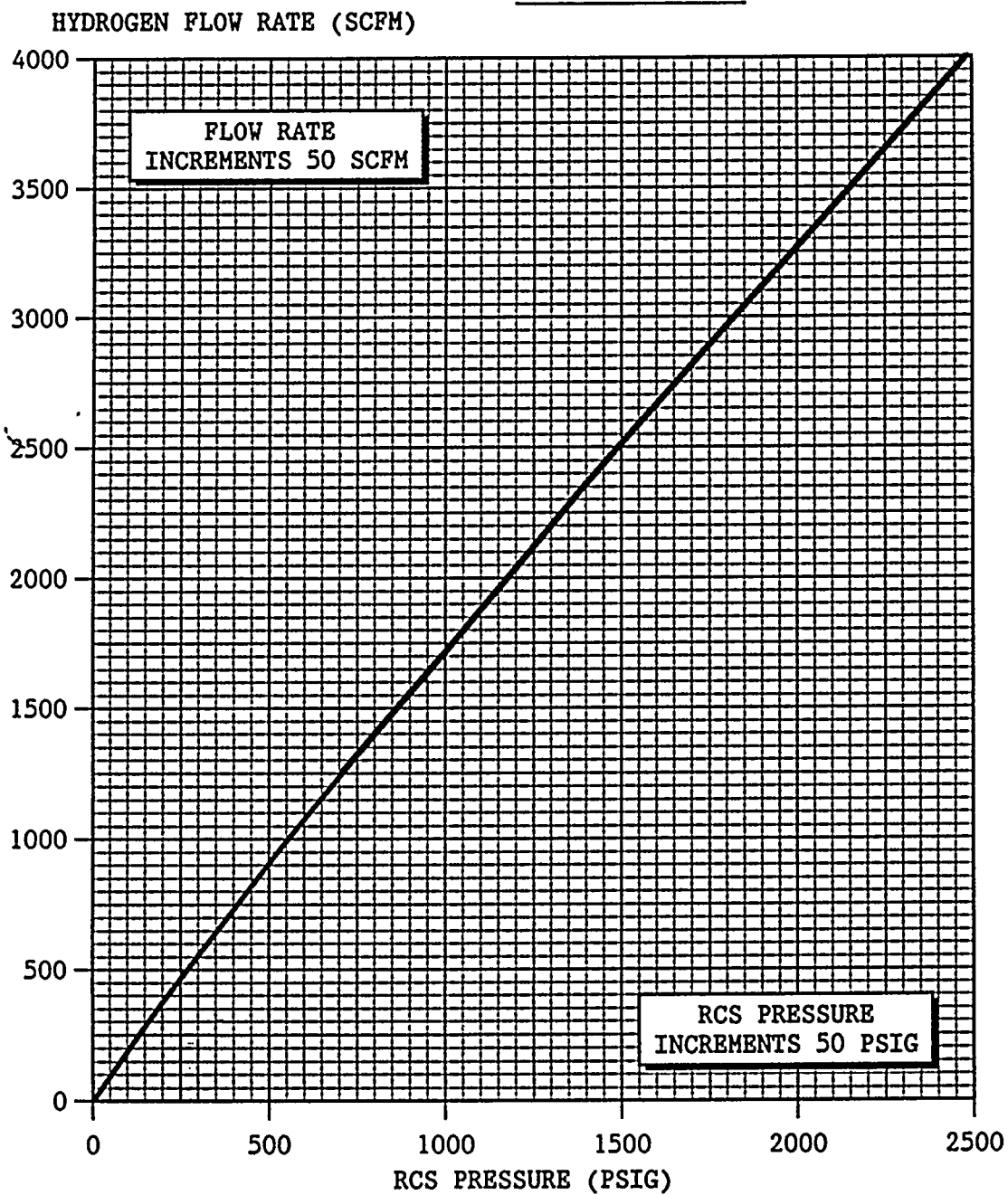
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CNMT HYDROGEN



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EOP: FR-P.2	TITLE: RESPONSE TO ANTICIPATED PRESSURIZED THERMAL SHOCK CONDITION	REV: 2 PAGE 2 of 5
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- A. PURPOSE - This procedure provides actions to respond to a limited overcooling condition or to an overpressure condition at low temperature.
- B. ENTRY CONDITIONS/SYMPTOMS
  - 1. ENTRY CONDITIONS - This procedure is entered from:
    - a. F-0.4, INTEGRITY Critical Safety Function Status Tree, on either branch YELLOW condition.





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STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
	(Step 1 continued from previous page)	
	h. Minimize cooldown from faulted S/G(s):	
	1) Close faulted S/G(s) TDAFW pump steam supply valve(s).	
	• S/G A, MOV-3505A • S/G B, MOV-3504A	
	2) <u>IF</u> both S/G(s) faulted, <u>THEN</u> control feed flow at 50 gpm to each S/G.	
	3) <u>IF</u> any S/G <u>NOT</u> faulted, <u>THEN</u> isolate all feedwater to faulted S/G(s) unless necessary for RCS temperature control. <u>IF</u> a faulted S/G is necessary for RCS temperature control, <u>THEN</u> control feed flow at 50 gpm to that S/G.	
2	Check If SI Has Been Terminated - NO SI PUMPS RUNNING	Go to Step 5.
3	Check RCS Pressure - WITHIN LIMITS OF FIGURE TECH SPEC C/D FOR 100°F/HR	Decrease RCS pressure to within limits of Figure TECH SPEC C/D using normal PRZR spray. <u>IF</u> normal spray <u>NOT</u> available and letdown is in service, <u>THEN</u> use auxiliary spray. <u>IF</u> auxiliary spray <u>NOT</u> available, <u>THEN</u> use one PRZR PORV. <u>IF</u> IA <u>NOT</u> available for PORV, <u>THEN</u> refer to Attachment N2 PORVS.

