

EOP: FR-C.2	TITLE: RESPONSE TO DEGRADED CORE COOLING	REV: 9 PAGE 1 of 14
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ROCHESTER GAS AND ELECTRIC CORPORATION
GINNA STATION
CONTROLLED COPY NUMBER 23

TECHNICAL REVIEW

PORC REVIEW DATE 3-30-94

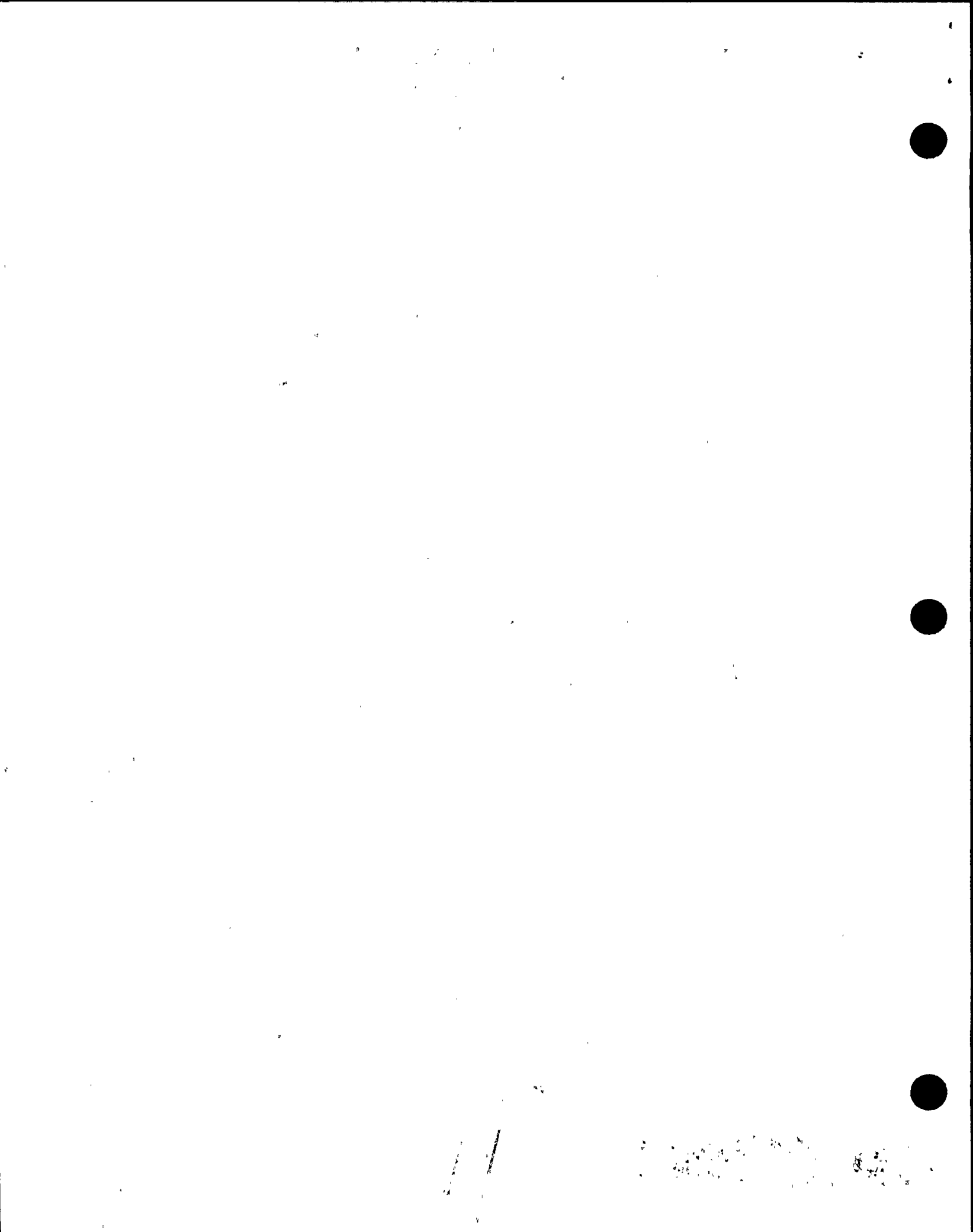

PLANT SUPERINTENDENT

4-7-94
EFFECTIVE DATE

CATEGORY 1.0

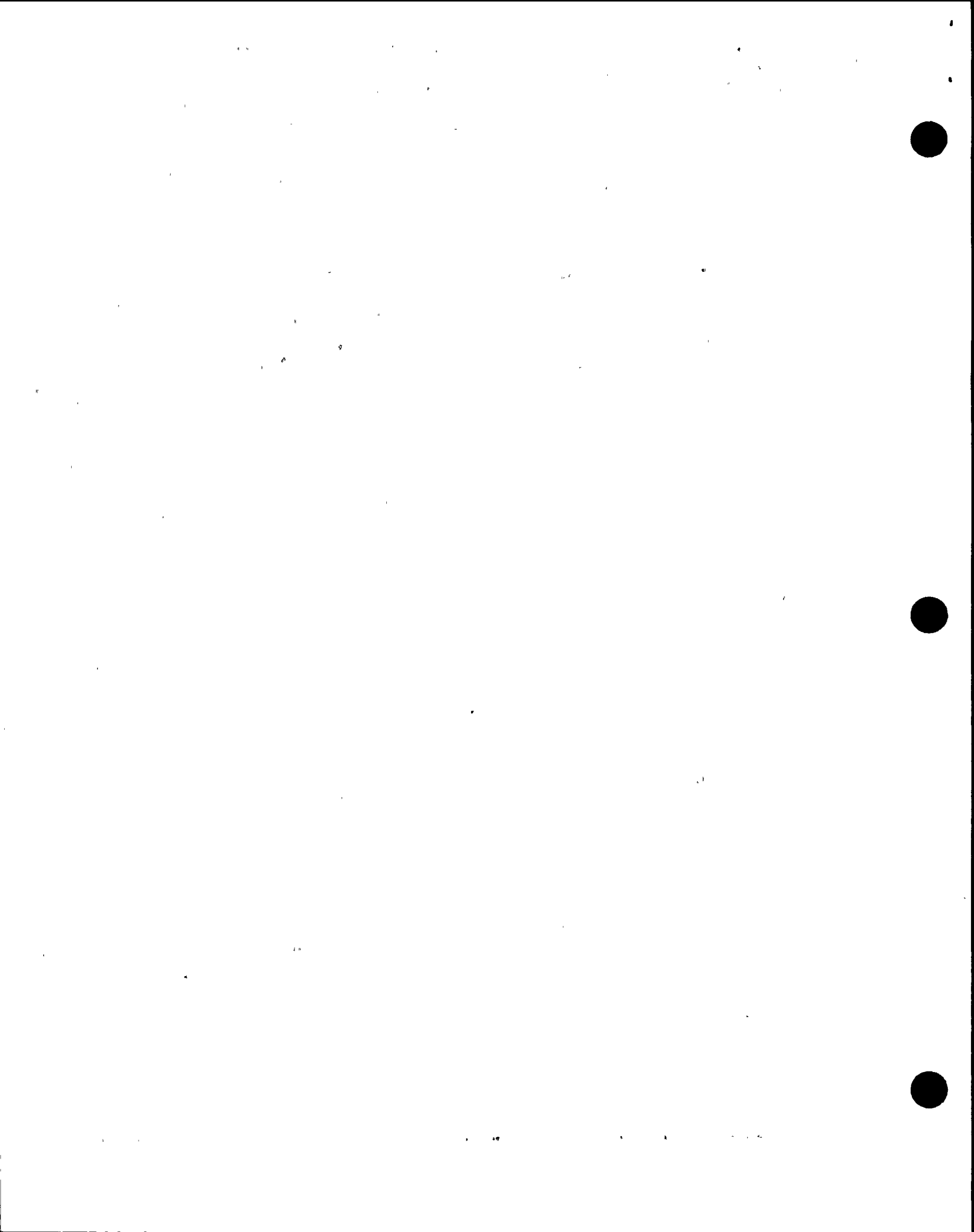
REVIEWED BY: _____

9404190168 940414
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PDR



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- A. PURPOSE - This procedure provides actions to restore adequate core cooling.
- B. ENTRY CONDITIONS/SYMPTOMS
 - 1. ENTRY CONDITIONS - This procedure is entered from:
 - a. F-0.2, CORE COOLING Critical Safety Function Status Tree, on any ORANGE condition.



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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 RWST Level - GREATER THAN 28%

Perform the following:

a. Ensure SI system aligned for cold leg recirculation using Steps 1 through 11 of ES-1.3, TRANSFER TO COLD LEG RECIRCULATION.

b. Go to Step 3.



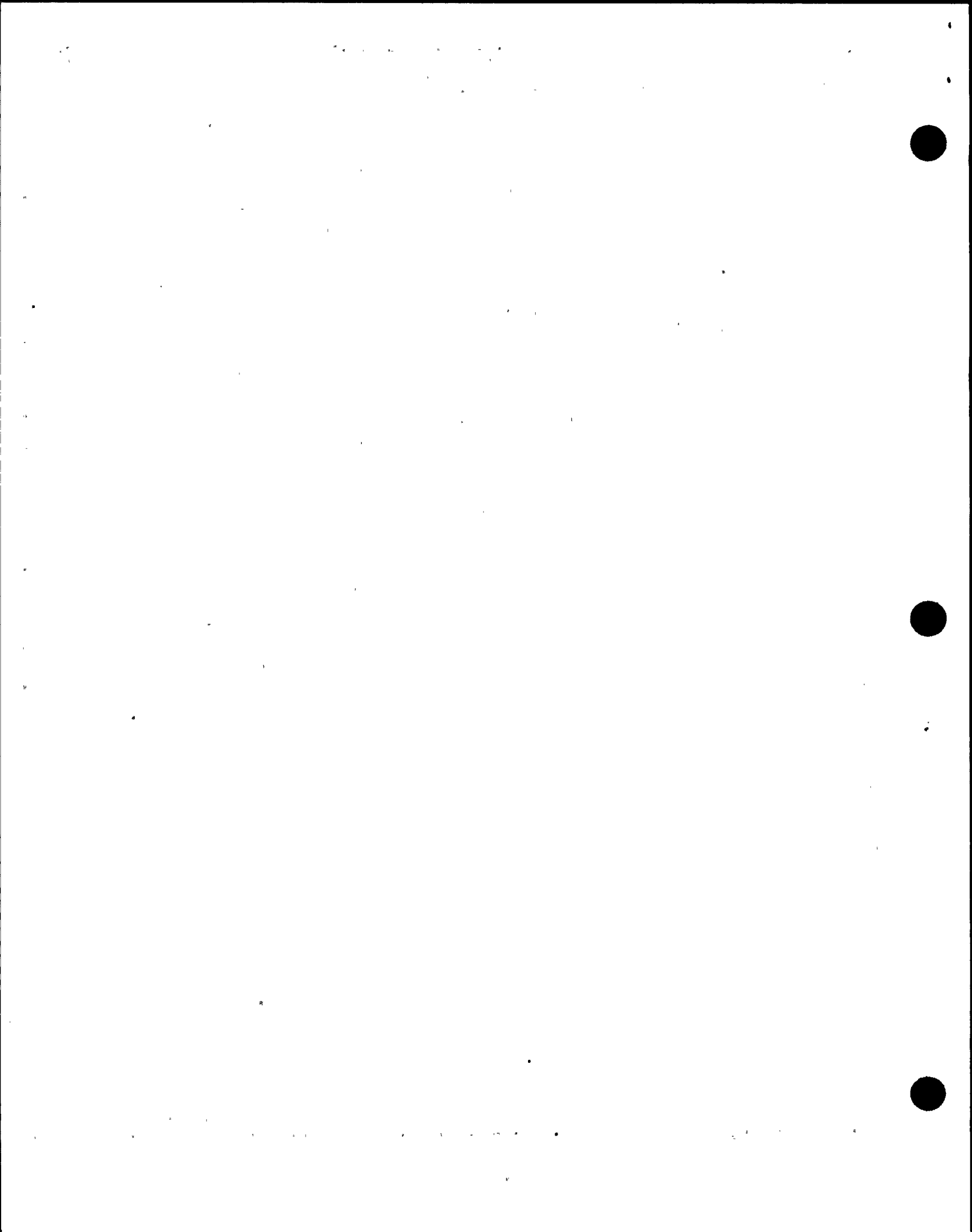
STEP

ACTION/EXPECTED RESPONSE

RESPONSE NOT OBTAINED

2 Verify SI Pump And RHR Pump
Emergency Alignment:

- | | |
|--|--|
| <p>a. RHR pump discharge to Rx vessel
deluge - OPEN</p> <ul style="list-style-type: none"> • MOV-852A • MOV-852B | <p>a. Ensure at least one valve open.</p> |
| <p>b. Verify SI pump C - RUNNING</p> | <p>b. Manually start pump on available
bus.</p> |
| <p>c. Verify SI pump A - RUNNING</p> | <p>c. Perform the following:</p> <ol style="list-style-type: none"> 1) Ensure SI pumps B and C
running. 2) Ensure SI pump C aligned to
discharge line A: <ul style="list-style-type: none"> o MOV-871B closed o MOV-871A open 3) Go to Step 3. |
| <p>d. Verify SI pump B - RUNNING</p> | <p>d. Perform the following:</p> <ol style="list-style-type: none"> 1) Ensure SI pumps A and C
running. 2) Ensure SI pump C aligned to
discharge line B: <ul style="list-style-type: none"> o MOV-871B open o MOV-871A closed 3) Go to Step 3. |
| <p>e. Verify both SI pump C discharge
valves - OPEN</p> <ul style="list-style-type: none"> • MOV-871A • MOV-871B | <p>e. Manually open valves as
necessary.</p> |



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STEP

ACTION/EXPECTED RESPONSE

RESPONSE NOT OBTAINED

3 Verify SI Pump Suction aligned to RWST:

a. SI pump suction valves from RWST
- OPEN

- MOV-825A
- MOV-825B

b. SI pump suction valve from BASTs
- CLOSED

- MOV-826A
- MOV-826B
- MOV-836C
- MOV-826D

a. Ensure at least one SI pump suction valve from RWST open

- MOV-825A
- MOV-825B

b. Ensure at least one valve in each SI pump suction line from BAST closed.

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

4 Verify SI Flow In Both Trains:

a. SI line loop A and B flow indicators - CHECK FOR FLOW

b. RCS pressure - LESS THAN 250 psig [465 psig adverse CNMT]

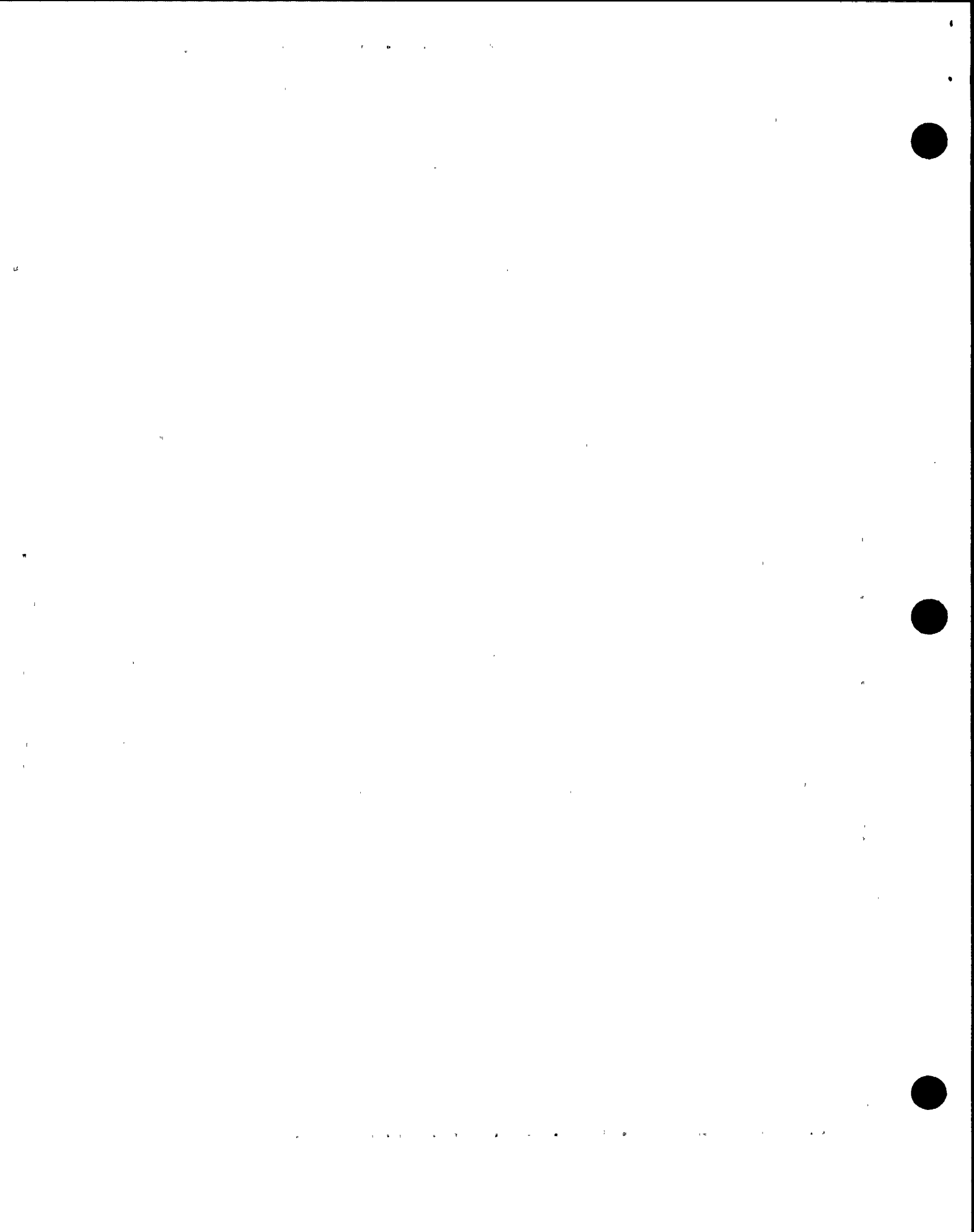
c. RHR loop flow indicator - CHECK FOR FLOW

a. Perform the following:

- 1) Manually start SI pumps and align valves as necessary.
- 2) Establish maximum charging flow.

b. Go to Step 5.

c. Manually start RHR pumps and align valves.



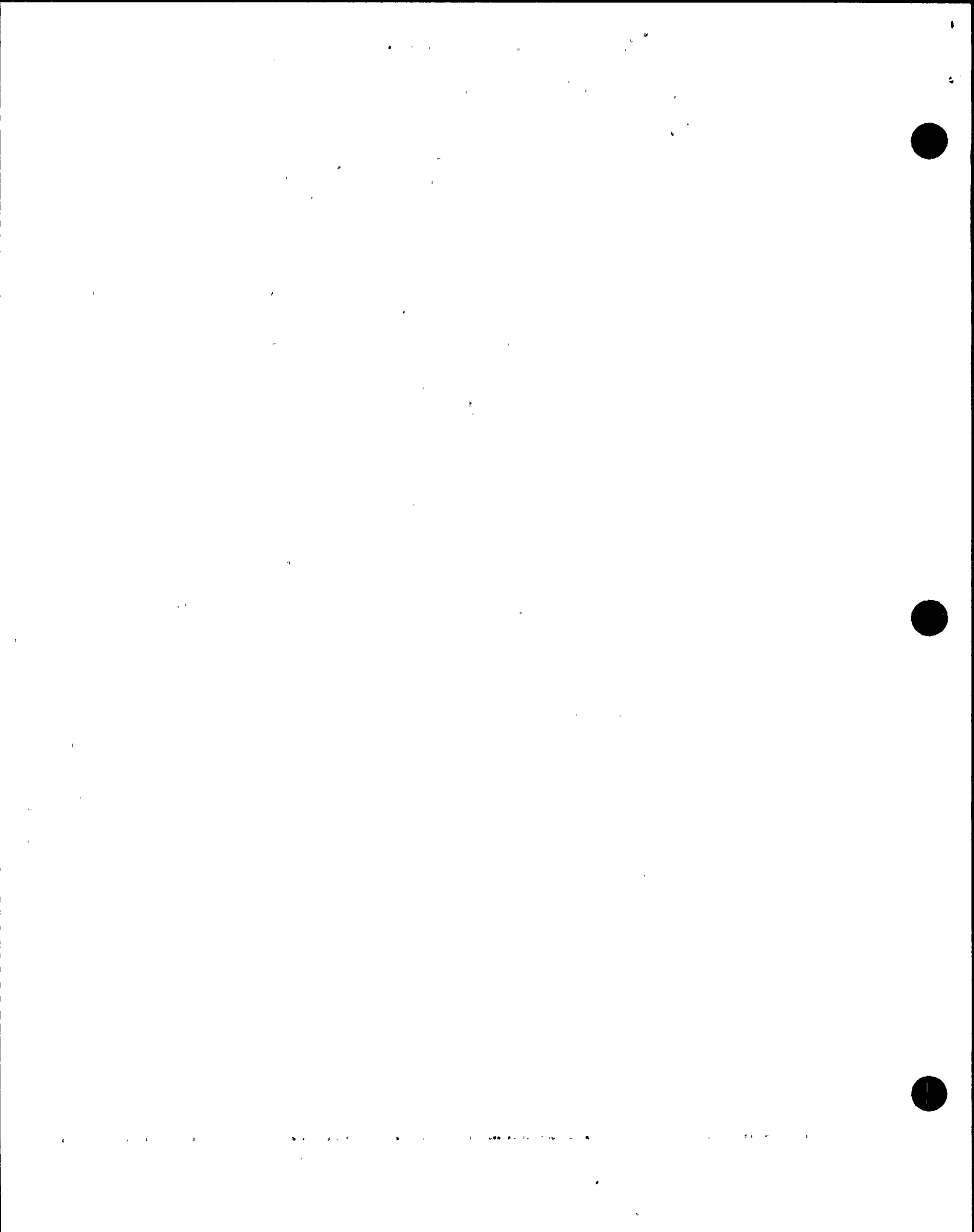
STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
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CAUTION

IF ANY PRZR PORV OPENS BECAUSE OF HIGH PRZR PRESSURE, IT SHOULD BE CLOSED AFTER PRESSURE DECREASES TO LESS THAN 2335 PSIG (REFER TO STEP 5B).

5 Check RCS Vent Paths:

- | | |
|--|---|
| <p>a. Power to PRZR PORV block valves
- AVAILABLE</p> | <p>a. Restore power to block valves unless block valve was closed to isolate an open PORV:</p> <ul style="list-style-type: none"> • MOV-515, MCC C position 6C • MOV-516, MCC D position 6C |
| <p>b. PORVs - CLOSED</p> | <p>b. <u>IF</u> PRZR pressure less than 2335 psig, <u>THEN</u> manually close PORVs.</p> <p><u>IF</u> any PORV can <u>NOT</u> be closed, <u>THEN</u> manually close its block valve.</p> |
| <p>c. Block valves - AT LEAST ONE OPEN</p> | <p>c. Open one block valve unless it was closed to isolate an open PORV.</p> |
| <p>d. Rx vessel head vent valves - CLOSED</p> <ul style="list-style-type: none"> • SOV-590 • SOV-591 • SOV-592 • SOV-593 | <p>d. Manually close valves.</p> |



STEP

ACTION/EXPECTED RESPONSE

RESPONSE NOT OBTAINED

NOTE: Normal conditions for running RCPs are desired, but RCPs should not be tripped if normal conditions cannot be established or maintained.

6 Check RCP Status:

- | | |
|--|---|
| a. At least one RCP - RUNNING | a. Go to Step 9. |
| b. Support conditions for the operating RCP(s) available (Refer to Attachment RCP START) | b. Try to establish support conditions for the operating RCP. |

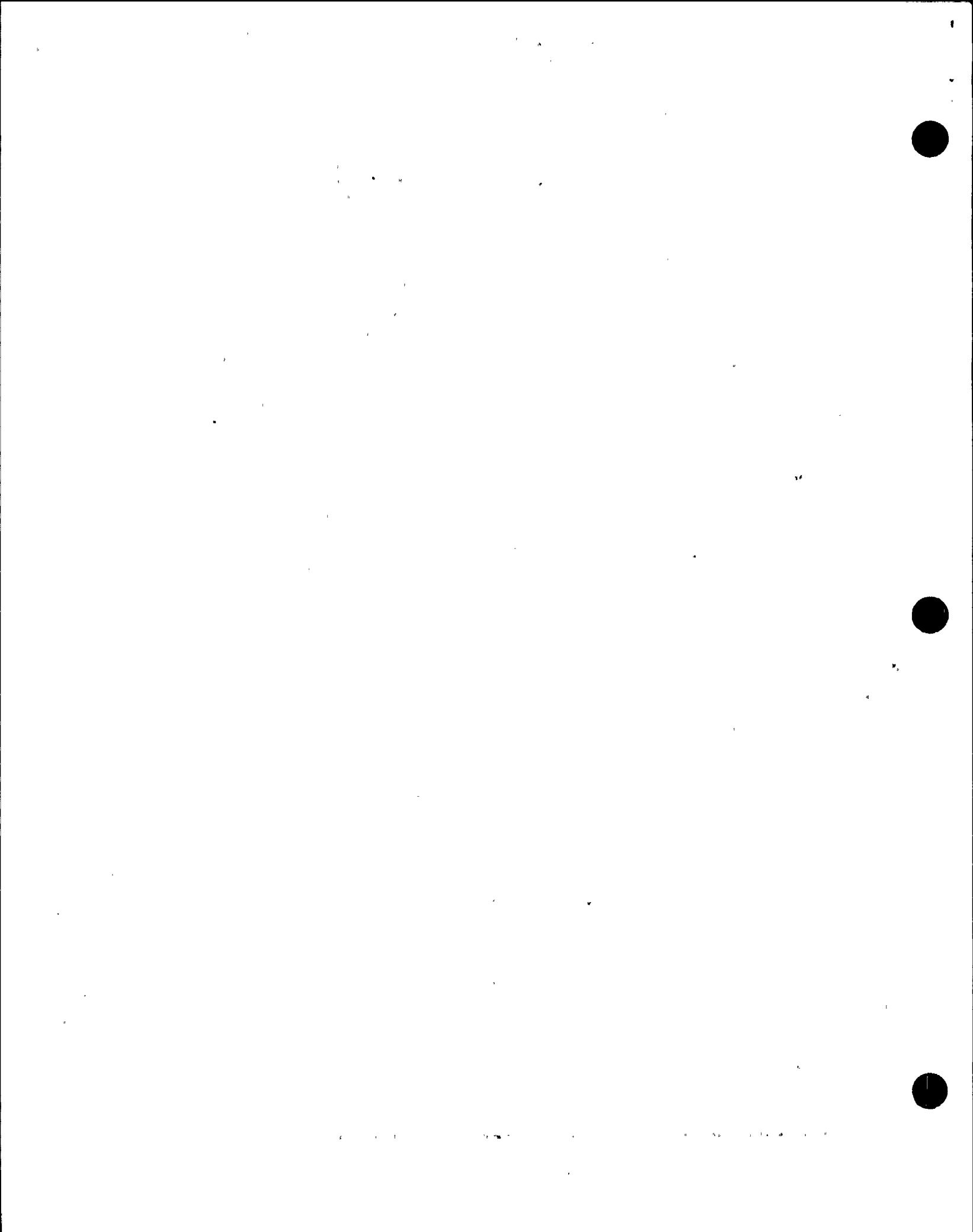
7 Check RVLIS Fluid Fraction

- | | |
|---|--|
| a. Fluid fraction (any RCP on) - GREATER THAN 60% | a. <u>IF</u> increasing, <u>THEN</u> return to Step 1.

<u>IF NOT</u> , then go to Step 8. |
| b. Return to procedure and step in effect. | |

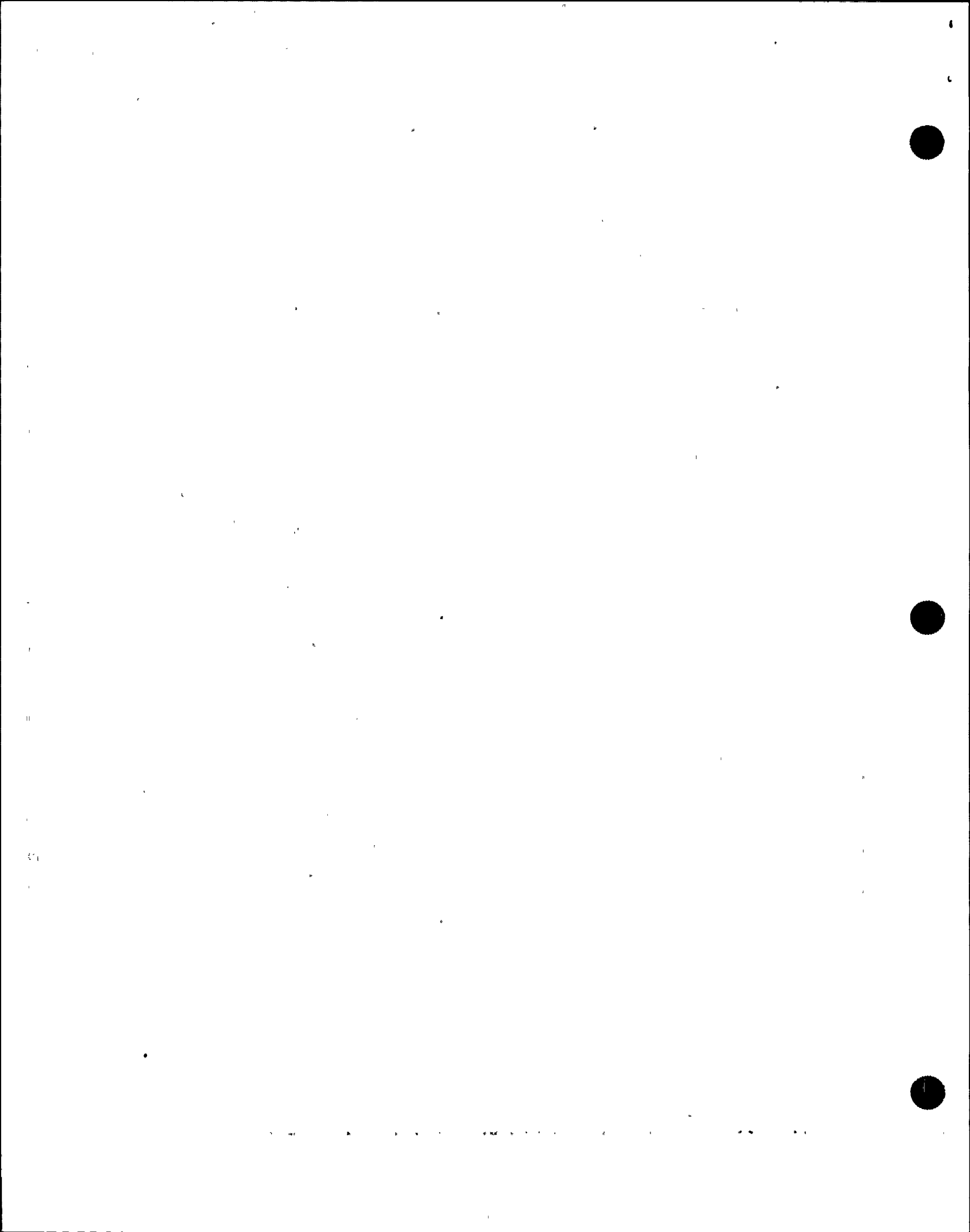
8 Check If One RCP Should Be Stopped:

- | | |
|------------------------|-------------------|
| a. Both RCPs - RUNNING | a. Go to Step 10. |
| b. Stop one RCP | |
| c. Go to Step 10 | |



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STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
9	<p>Check Core Cooling:</p> <p>a. RVLIS level (no RCPs) - GREATER THAN 43% [46% adverse CNMT]</p> <p>b. Core exit T/Cs - LESS THAN 700°F</p> <p>c. Return to procedure and step in effect</p>	<p>a. <u>IF</u> increasing, <u>THEN</u> return to Step 1. <u>IF NOT</u>, <u>THEN</u> go to Step 10.</p> <p>b. <u>IF</u> decreasing, <u>THEN</u> return to Step 1. <u>IF NOT</u>, <u>THEN</u> go to Step 10.</p>
<p>10</p> <p>Check SI ACCUM Discharge Valves - OPEN</p> <ul style="list-style-type: none"> • MOV-841 • MOV-865 	<p><u>IF</u> SI ACCUM discharge valves closed after ACCUM discharge, <u>THEN</u> go to Step 11. <u>IF NOT</u>, <u>THEN</u> perform the following:</p> <p>a. Dispatch A0 with locked valve key to locally close breakers for SI ACCUM discharge valves.</p> <ul style="list-style-type: none"> • MOV-841, MCC C position 12F • MOV-865, MCC D position 12C <p>b. Open SI ACCUM discharge valves.</p> <ul style="list-style-type: none"> • ACCUM A, MOV-841 • ACCUM B, MOV-865 	



STEP

ACTION/EXPECTED RESPONSE

RESPONSE NOT OBTAINED

CAUTION

- o 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).
- o A FAULTED OR RUPTURED S/G SHOULD NOT BE USED IN SUBSEQUENT STEPS UNLESS NO INTACT S/G IS AVAILABLE.

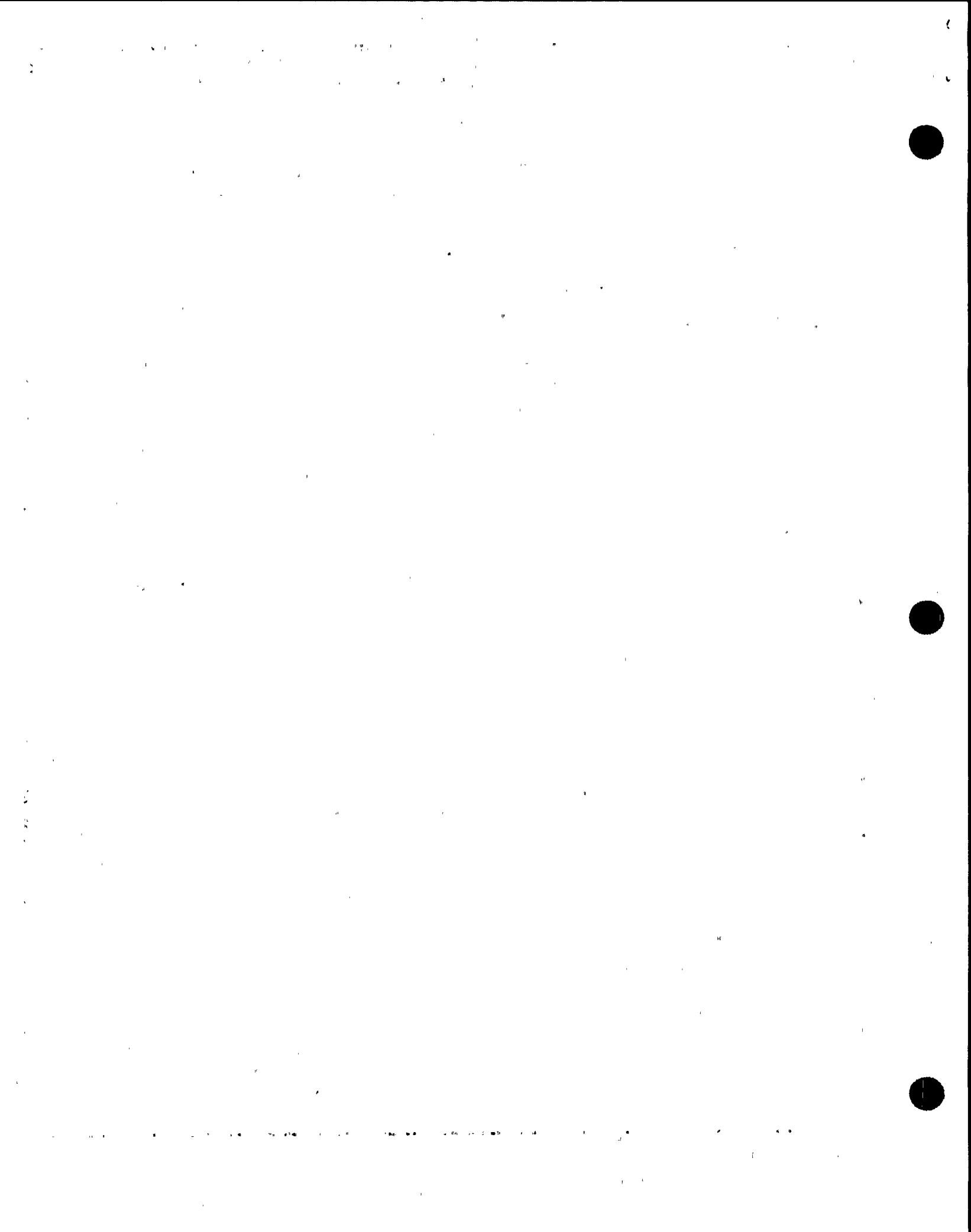
NOTE: TDAFW pump flow control valves fail open on loss of IA.

*11 Monitor Intact S/G Levels:

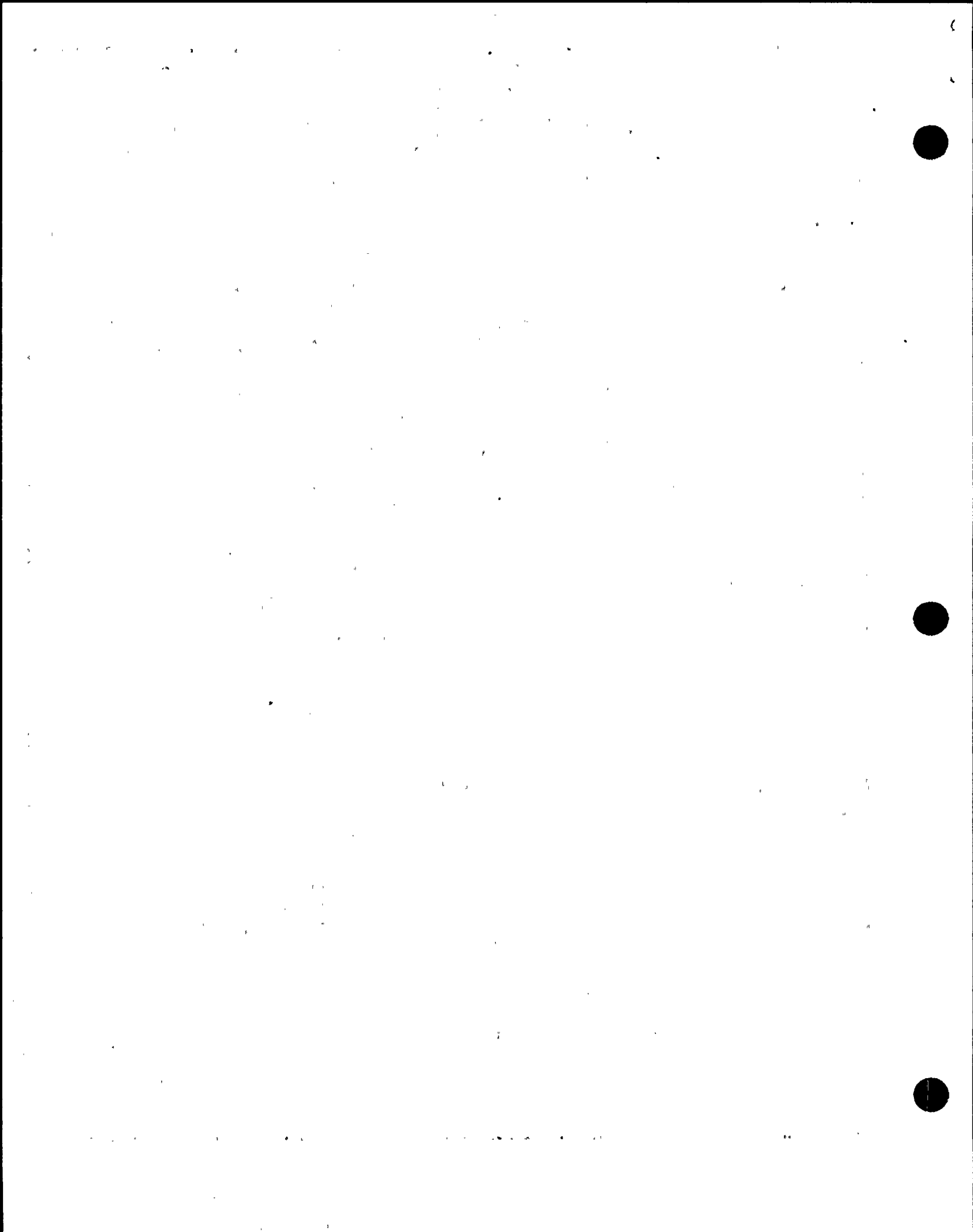
- | | |
|--|---|
| <ul style="list-style-type: none"> a. Narrow range level - GREATER THAN 5% [25% adverse CNMT] b. Control feed flow to maintain narrow range level between 17% [25% adverse CNMT] and 50% | <ul style="list-style-type: none"> a. Increase total feed flow to restore narrow range level greater than 5% [25% adverse CNMT] in at least one S/G. |
|--|---|

12 Verify Condenser Steam Dump In Manual:

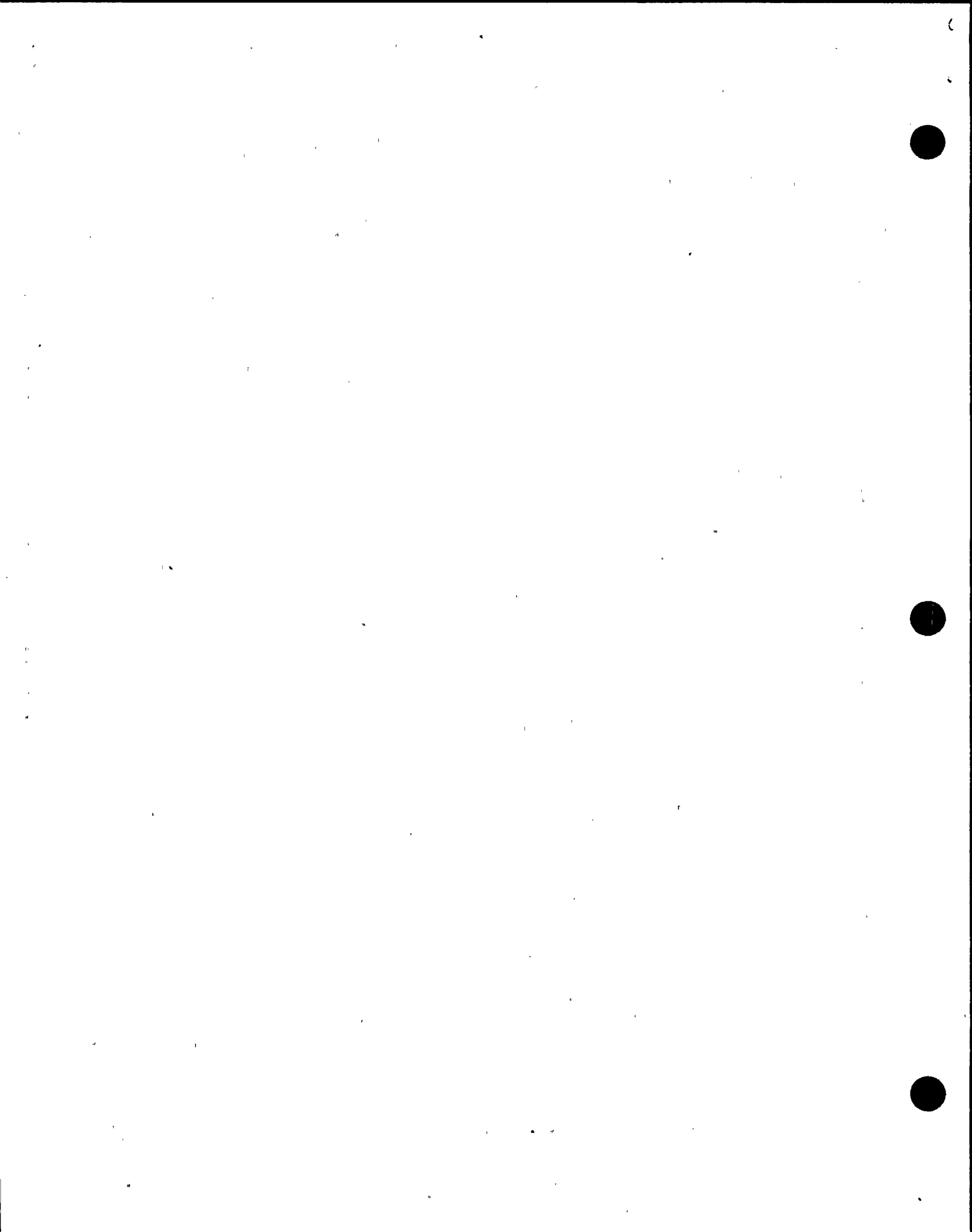
- | | |
|--|---|
| <ul style="list-style-type: none"> a. Verify condenser available: <ul style="list-style-type: none"> o Intact S/G MSIV - OPEN o Annunciator G-15, STEAM DUMP ARMED - LIT b. Place steam dump mode selector switch in MANUAL c. Place steam dump controller in MANUAL | <ul style="list-style-type: none"> a. Place intact S/G ARV controller in MANUAL and go to Step 13. |
|--|---|



STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
<p>***** <u>CAUTION</u> THE FOLLOWING STEP WILL CAUSE SI ACCUMULATOR INJECTION WHICH MAY RESULT IN A RED PATH CONDITION IN F-0.4, INTEGRITY STATUS TREE. THIS PROCEDURE SHOULD BE COMPLETED BEFORE TRANSITION TO FR-P.1, RESPONSE TO IMMINENT PRESSURIZED THERMAL SHOCK. *****</p>		
13	<p>Depressurize All Intact S/Gs To 200 PSIG:</p> <p>a. Maintain cooldown rate in RCS cold legs - LESS THAN 100°F/HR</p>	<p>b. Manually or locally dump steam from intact S/Gs:</p> <ul style="list-style-type: none"> o Use S/G ARVs. -OR- o Open TDAFW pump steam supply valve(s) for affected S/G(s): <ul style="list-style-type: none"> • S/G A, MOV-3505A • S/G B, MOV-3504A -OR- o Locally perform the following: <ul style="list-style-type: none"> o Open intact S/G MSIV bypass valve. o Open priming air ejector steam isolation valves. <ul style="list-style-type: none"> • V-3580 • V-3581
	<p>c. Check S/G pressures - LESS THAN 200 PSIG</p>	<p>c. Return to Step 11.</p>
	<p>d. Stop S/G depressurization</p>	



STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
<p style="text-align: center;">***** <u>CAUTION</u> *****</p>		
<p style="text-align: center;">RHR PUMPS SHOULD NOT BE RUN LONGER THAN 1 HOUR WITHOUT GCW TO THE RHR HEAT EXCHANGERS.</p>		
<p style="text-align: center;">*****</p>		
14 Check RHR Pumps - RUNNING		Manually start pumps as necessary.
15 Check If SI ACCUMs Should Be Isolated:		
a. RCS hot leg temperatures - BOTH LESS THAN 400°F		a. Go to Step 17.
b. Dispatch AO with locked valve key to locally close breakers for SI ACCUM discharge valves if necessary		
<ul style="list-style-type: none"> • MOV-841, MCC C position 12F • MOV-865, MCC D position 12C 		
c. Close SI ACCUM discharge valves		c. Vent any unisolated ACCUMs:
<ul style="list-style-type: none"> • MOV-841 • MOV-865 		1) Open vent valves for unisolated SI ACCUMs.
		<ul style="list-style-type: none"> • ACCUM A, AOV-834A • ACCUM B, AOV-834B
		2) Open HCV-945.
d. Locally reopen breakers for MOV-841 and MOV-865		



STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
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CAUTION

SYMPTOMS FOR FR-C.1, RESPONSE TO INADEQUATE CORE COOLING, SHOULD BE CLOSELY MONITORED DURING SUBSEQUENT STEPS.

16 Stop All RCPs

17 Depressurize All Intact S/Gs To Atmospheric Pressure:

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

b. Dump steam to condenser

b. Manually or locally dump steam from intact S/Gs:

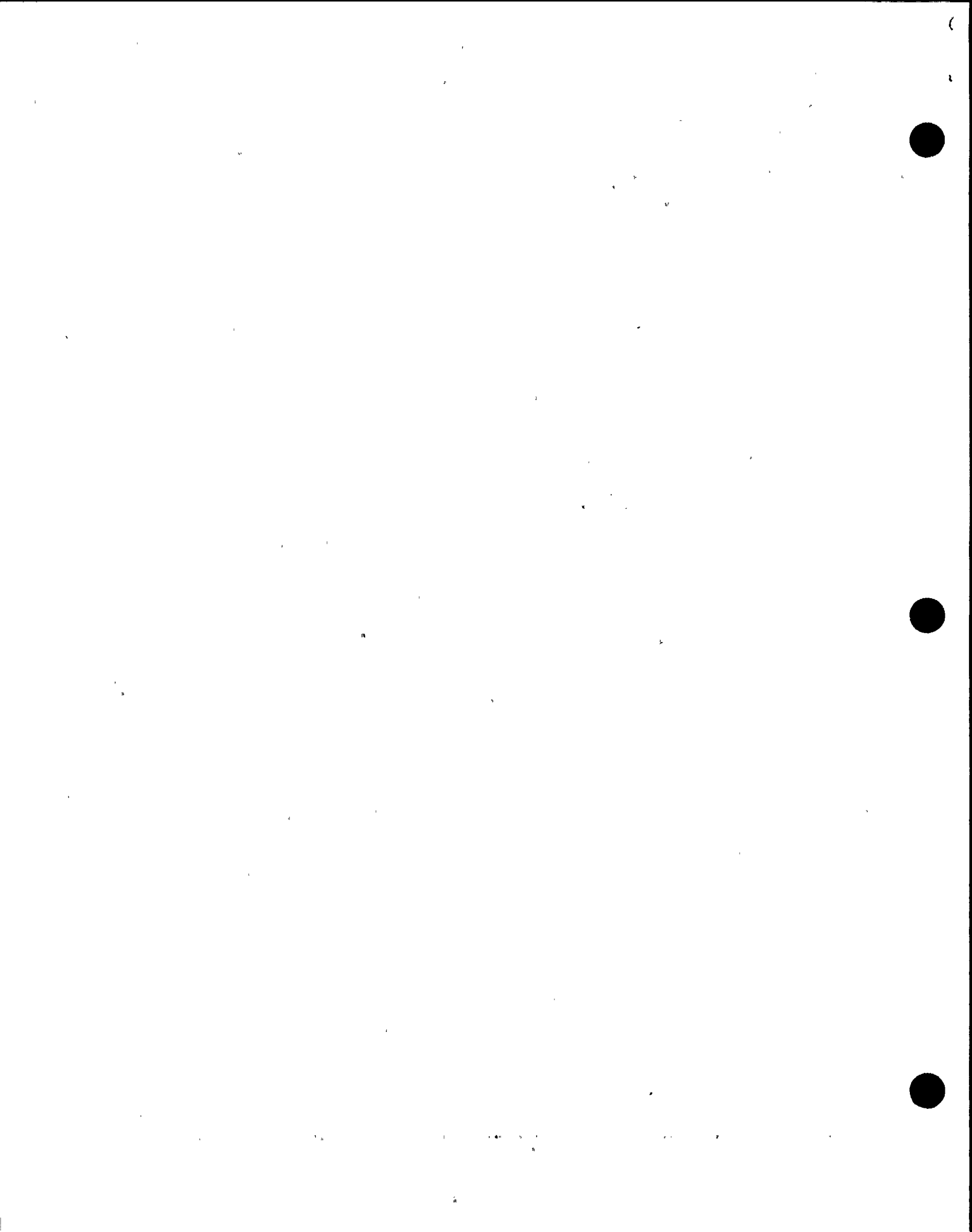
1) Use S/G ARVs.

2) Open TDAFW pump steam supply valve(s) for affected S/G(s):

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

3) Locally perform the following:

- o Open intact S/G MSIV bypass valve.
- o Open priming air ejector steam isolation valves.
 - V-3580
 - V-3581



STEP

ACTION/EXPECTED RESPONSE

RESPONSE NOT OBTAINED

18 Verify SI Flow:

- o SI line loop A and B flow indicators - CHECK FOR FLOW

-OR-

- o RHR loop flow indicator - CHECK FOR FLOW

Perform the following:

- a. Continue efforts to establish SI flow.
- b. Try to establish maximum charging flow.
- c. Return to Step 17.

19 Isolate Both SI ACCUMs:

- a. Close SI ACCUM discharge valves

- MOV-841
- MOV-865

- b. Locally reopen breakers for MOV-841 and MOV-865

- a. Vent any unisolated ACCUMs:

- 1) Open vent valves for unisolated SI ACCUMs.

- ACCUM A, AOV-834A
- ACCUM B, AOV-834B

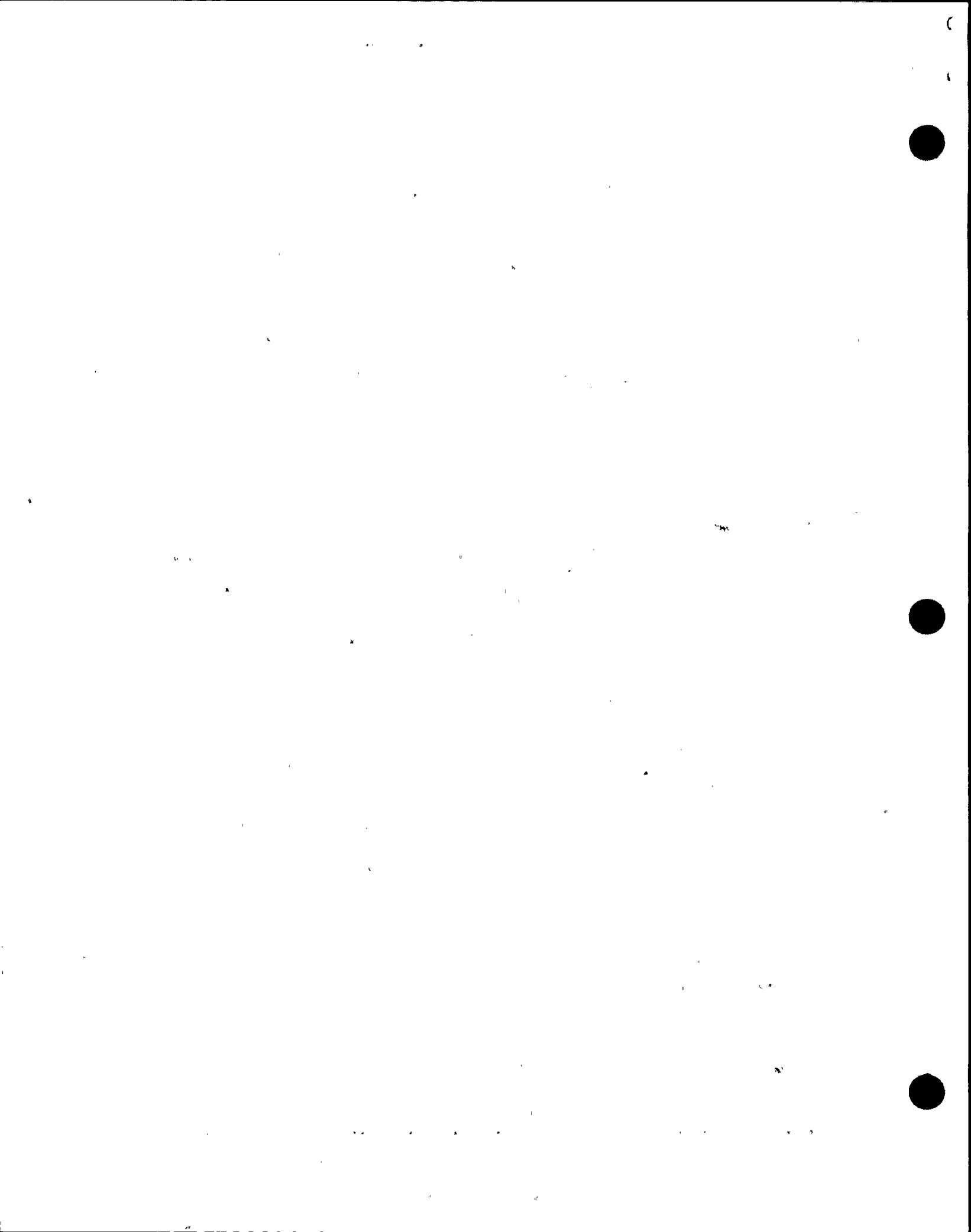
- 2) Open HCV-945.

20 Stop All RCPS

21 Check Core Cooling:

- o RVLIS level (no RCPS) - GREATER THAN 68% [73% adverse CNMT]
- o Both RCS hot leg temperatures - LESS THAN 320°F

Return to Step 17.



EOP:

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STEP

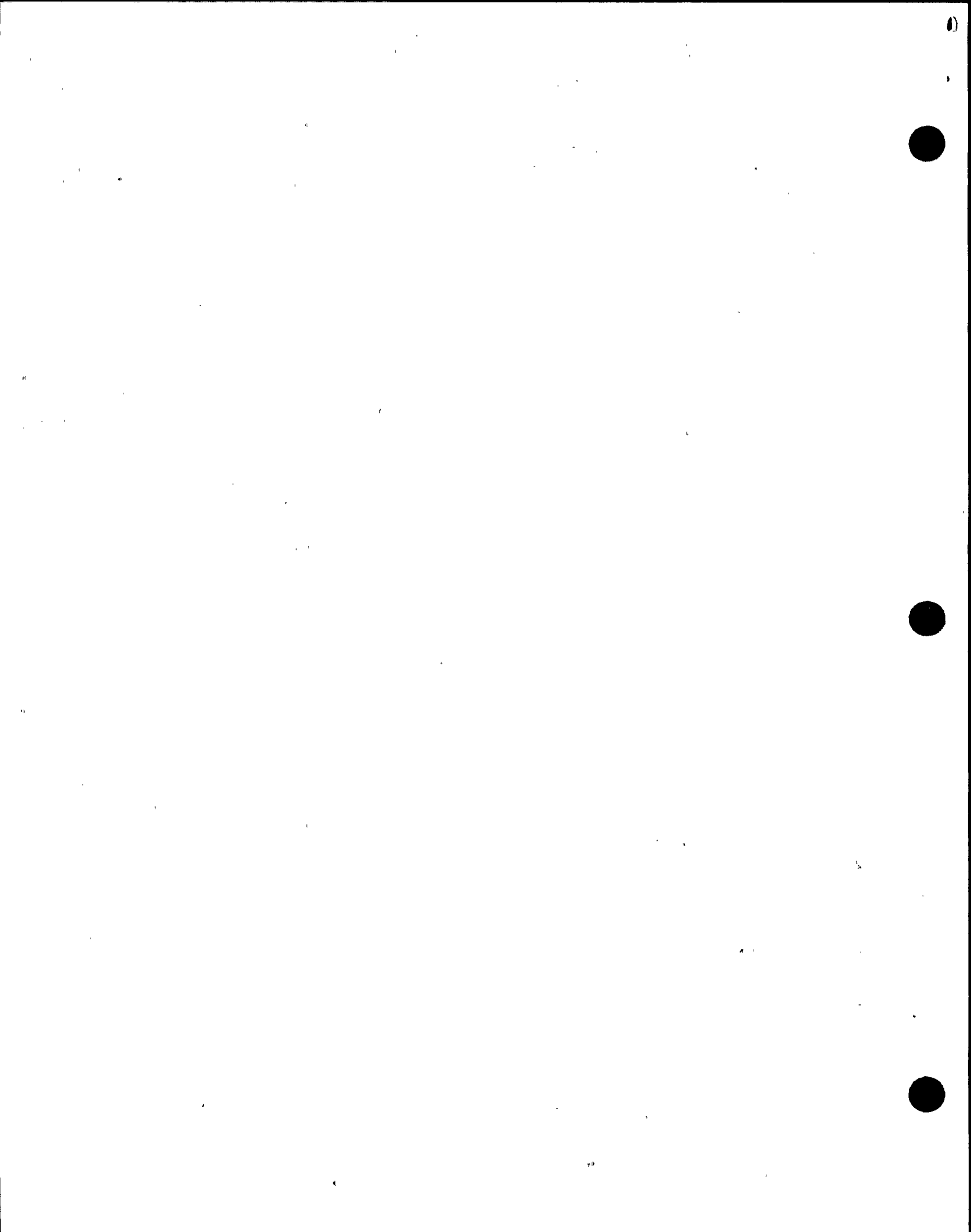
ACTION/EXPECTED RESPONSE

RESPONSE NOT OBTAINED

22 Go to Appropriate Plant
Procedure

- a. Check RWST level - GREATER THAN 28%
 - a. Go to ES-1.3, TRANSFER TO COLD LEG RECIRCULATION, Step 1.
- b. Go to E-1, LOSS OF REACTOR OR SECONDARY COOLANT, Step 17

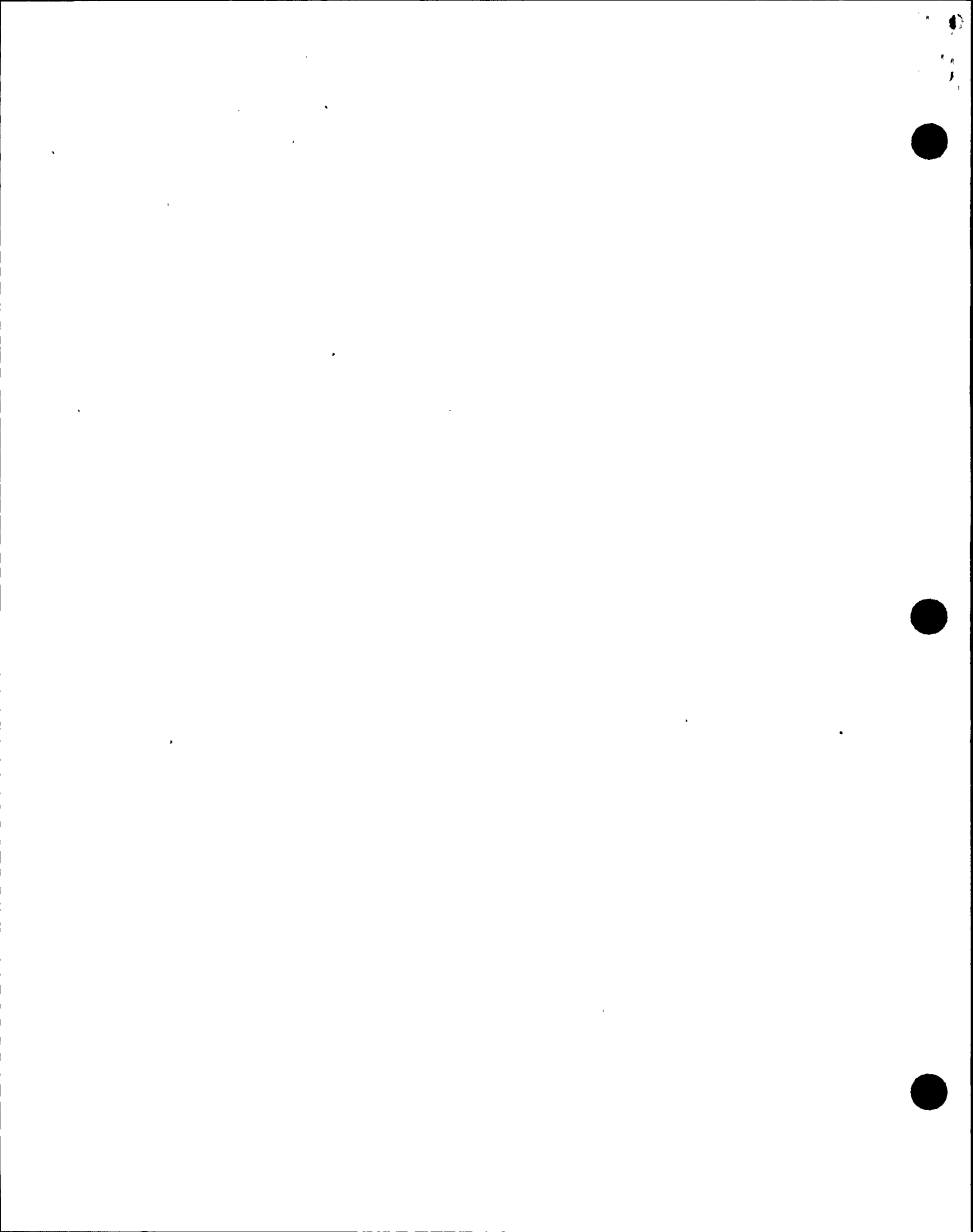
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FR-C.2 APPENDIX LIST

<u>TITLE</u>	<u>PAGES</u>
1) ATTACHMENT RCP START	1



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ROCHESTER GAS AND ELECTRIC CORPORATION
GINNA STATION
CONTROLLED COPY NUMBER 23

TECHNICAL REVIEW

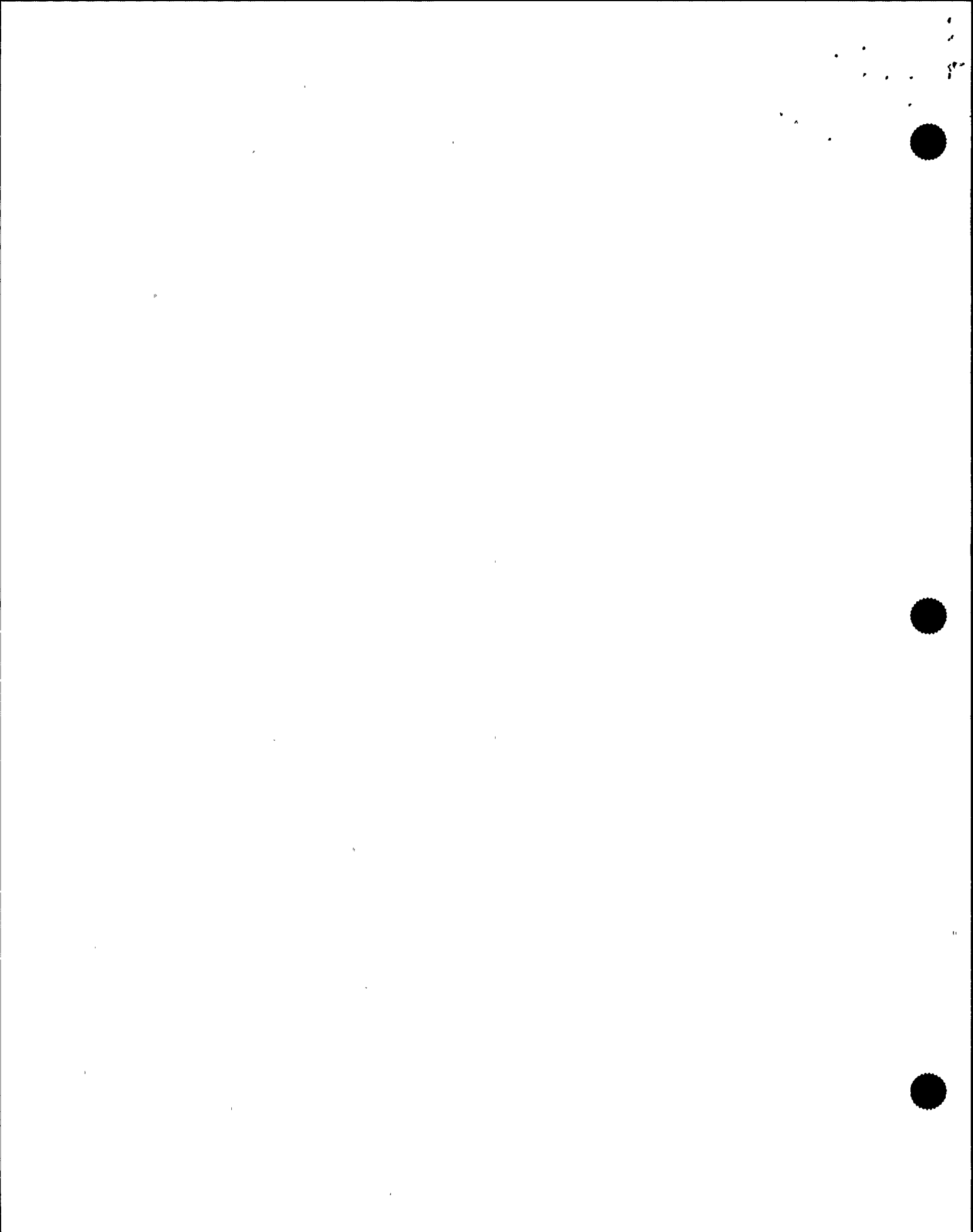
PORC REVIEW DATE 3-1-95

Thomas A. Marlow
PLANT SUPERINTENDENT

3-2-95
EFFECTIVE DATE

CATEGORY 1.0

REVIEWED BY: _____



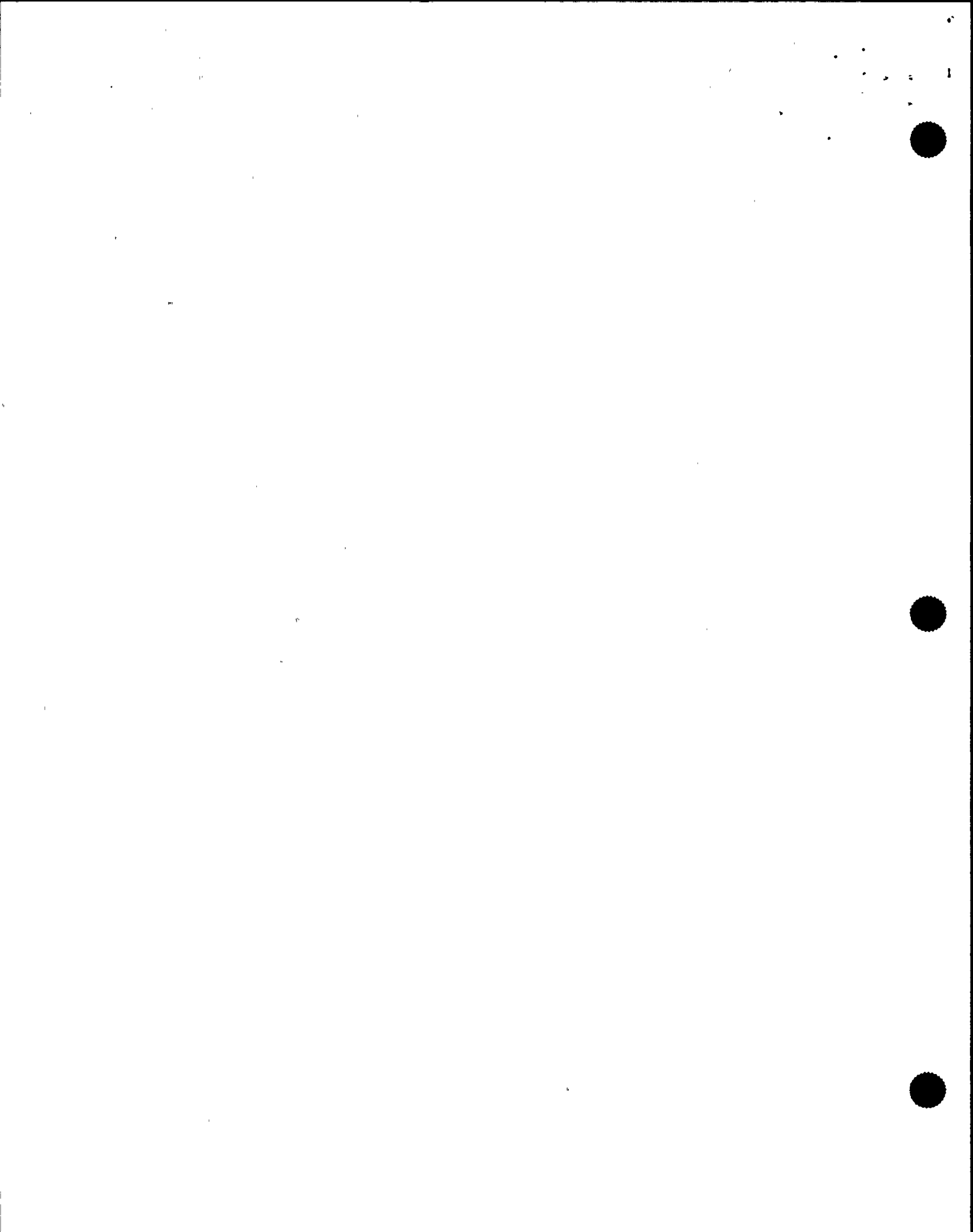
EOP: FR-C.3	TITLE: RESPONSE TO SATURATED CORE COOLING	REV: 5 PAGE 2 of 5
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A. PURPOSE - This procedure provides actions to restore core cooling.

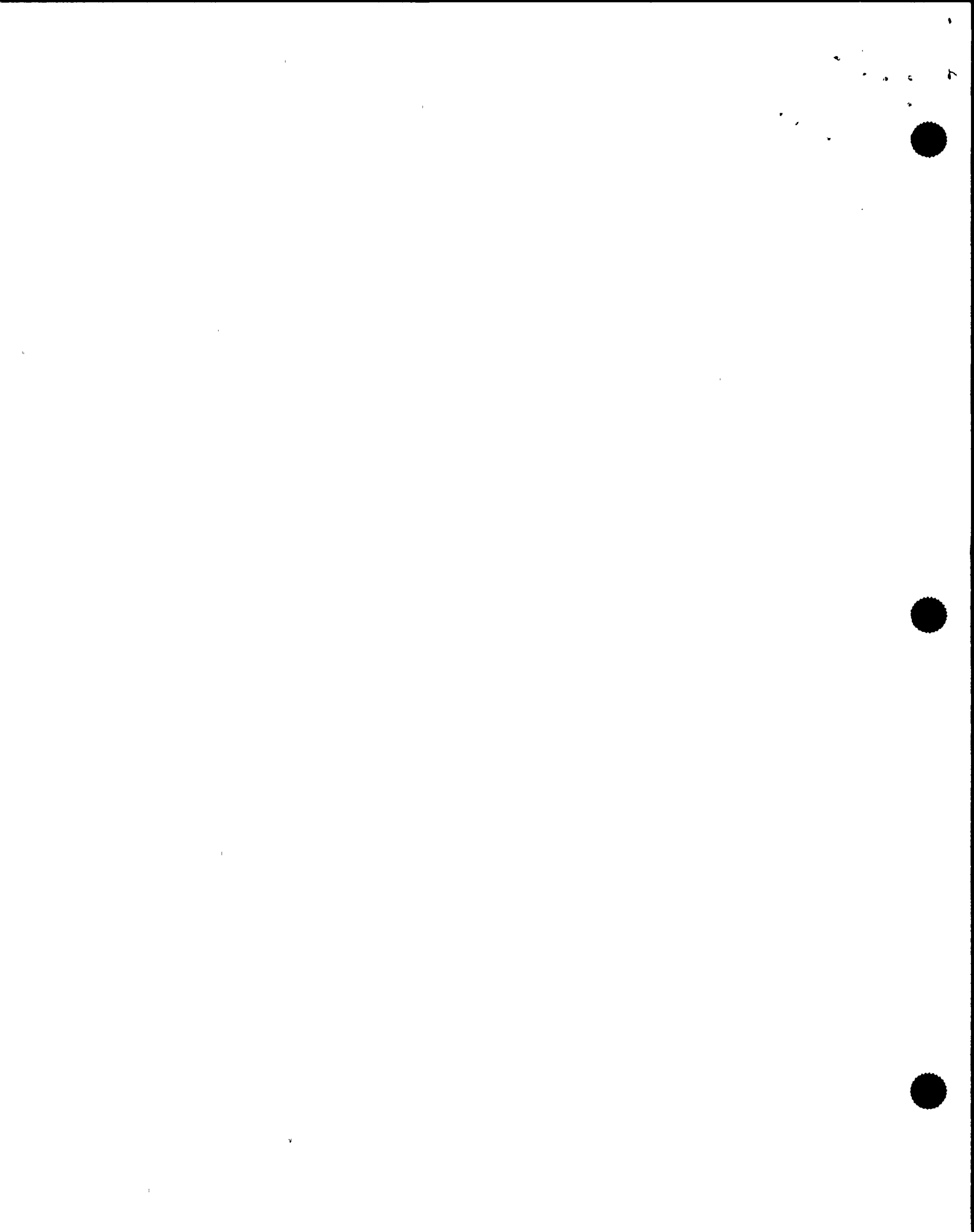
B. ENTRY CONDITIONS/SYMPTOMS

1. ENTRY CONDITIONS - This procedure is entered from:

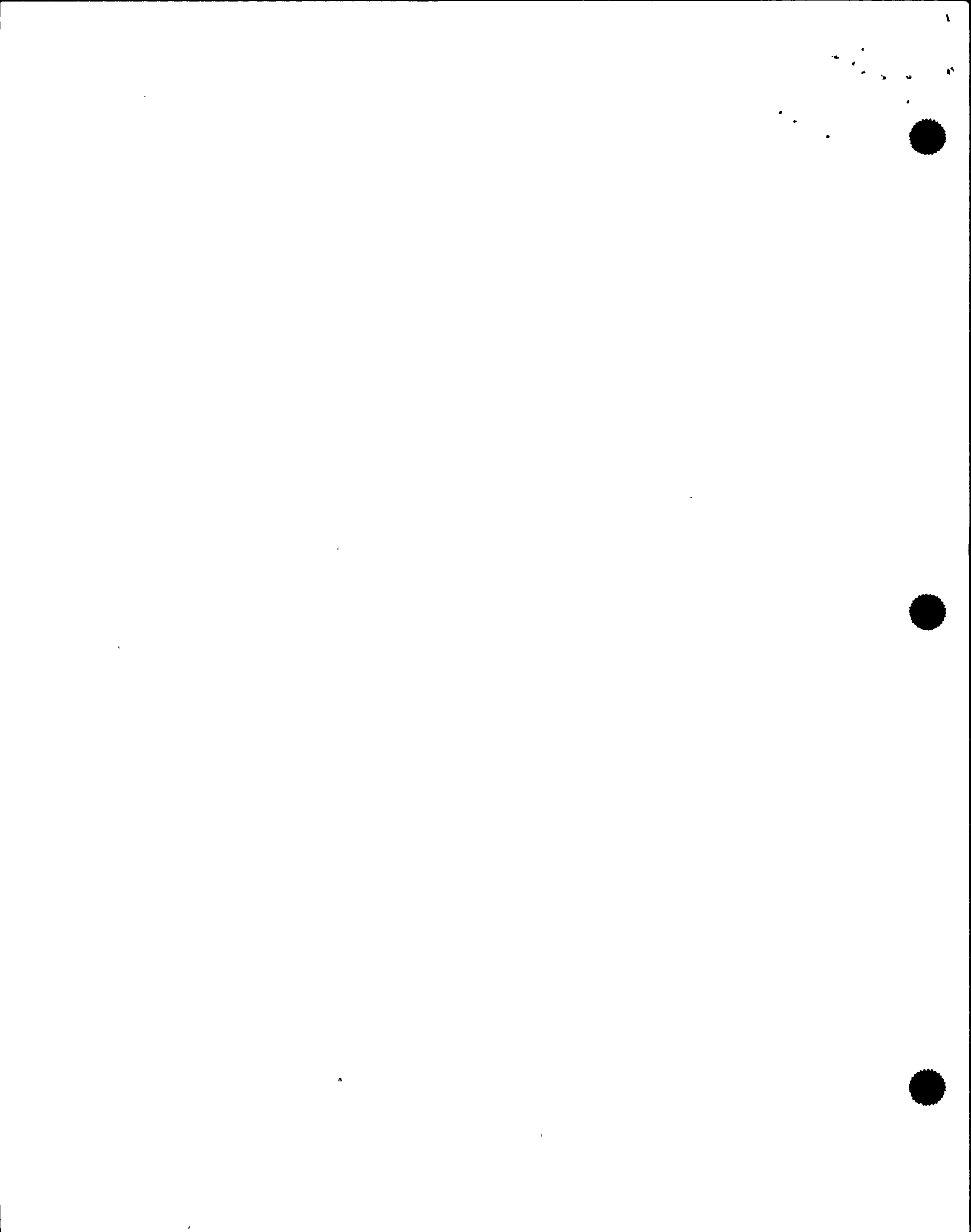
a. F-0.2, CORE COOLING Critical Safety Function Status Tree, on a YELLOW condition.



STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
<p><u>NOTE:</u></p> <ul style="list-style-type: none"> o If either ECA-3.2, SGTR WITH LOSS OF REACTOR COOLANT - SATURATED RECOVERY DESIRED or ES-1.3, TRANSFER TO COLD LEG RECIRCULATION is in effect, this procedure should not be performed. 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 RHR Normal Cooling - NOT IN SERVICE	Refer to AP-RHR.1, LOSS OF RHR.
2	Check RWST Level - GREATER THAN 28%	Ensure SI system aligned for cold leg recirculation using Steps 1 through 11 of ES-1.3, TRANSFER TO COLD LEG RECIRCULATION.
3	Verify SI Flow:	
	a. SI line loop A and B flow indicators - CHECK FOR FLOW	a. Manually start SI pumps and align valves.
	b. RCS pressure - LESS THAN 250 psig [465 psig adverse CNMT]	b. Go to Step 4.
	c. RHR loop flow indicator - CHECK FOR FLOW	c. Manually start RHR pumps and align valves.



STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
<p>***** <u>CAUTION</u> IF ANY PRZR PORV OPENS BECAUSE OF HIGH PRZR PRESSURE, IT SHOULD BE CLOSED AFTER PRESSURE DECREASES TO LESS THAN 2335 PSIG (REFER TO STEP 4B). *****</p>		
4	Check PRZR PORVs And Block Valves:	
a.	Power to PORV block valves - AVAILABLE	a. Restore power to block valves unless block valve was closed to isolate an open PORV:
		<ul style="list-style-type: none"> • MOV-515, MCC C position 6C • MOV-516, MCC D position 6C
b.	PORVs - CLOSED	b. <u>IF</u> PRZR pressure less than 2335 psig, <u>THEN</u> manually close PORVs.
		<u>IF</u> any PORV can <u>NOT</u> be closed, <u>THEN</u> manually close its block valve.
c.	Block valves - AT LEAST ONE OPEN	c. Open one block valve unless it was closed to isolate an open PORV.
d.	Rx vessel head vent valves - CLOSED	d. Manually close valves.
	<ul style="list-style-type: none"> • SOV-590 • SOV-591 • SOV-592 • SOV-593 	



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STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
5	Return To Procedure And Step In Effect	
		-END-

