ROCHESTER GAS AND ELECTRIC CORPORATION

GINNA STATION

CONTROLLED COPY NUMBER 23

TECHNICAL REVIEW

PORC REVIEW DATE 1-17-91

T R Schuler
for PLANT SUPERINTENDENT

1-18-91
EFFECTIVE DATE

CATEGORY 1.0

REVIEWED BY: _____

A. PURPOSE - This procedure provides the steps necessary to respond to a MFW system malfunction resulting in a decrease in or complete loss of main feedwater.

B. ENTRY CONDITIONS/SYMPTOMS

1. SYMPTOMS - The symptoms of PARTIAL OR COMPLETE LOSS OF OF MAIN FEEDWATER are;

a. Annunciator G-3(5), S/G A(B) LEVEL DEVIATION ±7%, lit, or

b. Annunciator G-19(21), S/G A(B) FF < SF CHANNEL ALERT 0.8×10^6 LB/HR, lit, or

c. Annunciator G-20(22), S/G A(B) LO LEVEL CHANNEL ALERT 30%, lit or

d. Annunciator K-18, MAIN FEEDWATER PUMPS TRIPPED, lit, or

e. Low indicated MFW pump suction flow on 1 pump, or

f. MFW pump indicates tripped, or

g. MFW pump discharge valve indicates shut.

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED

* *

CAUTION

IF, AT ANY TIME DURING THIS PROCEDURE, A REACTOR TRIP OR SI OCCURS, E-0, REACTOR TRIP OR SAFETY INJECTION, SHALL BE PERFORMED.

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NOTE: Step 1 is an IMMEDIATE ACTION step.

1	Check MFW Requirements:	
	a. Power - GREATER THAN 50%	a. IF power less than 50%, THEN go to Step 2.
	b. Both MFW pumps - RUNNING	b. IF only one MFW pump has tripped, THEN perform the following: 1) Start all 3 AFW pumps and verify flow. 2) Decrease power rapidly to less than 50%. 3) Go to Step 3. IF both MFW pumps have tripped, THEN ensure reactor trip and go to E-0, REACTOR TRIP or SAFETY INJECTION.
	c. Go to Step 3	

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
2	Verify At Least One MFW Pump - RUNNING	Perform the following: a. Start all 3 AFW pumps and verify flow. b. IF turbine previously operating, THEN verify turbine trip and go to AP-TURB.1, TURBINE TRIP WITHOUT RX TRIP REQUIRED OR E-0, REACTOR TRIP or SAFETY INJECTION. IF turbine was NOT previously operating, THEN go to Step 5.
3	Verify MFW Pump Suction Pressure - GREATER THAN 185 PSIG	Perform the following: a. Verify standby condensate pump running, if required. b. Verify condensate bypass valve open. c. Place trim valve controller to manual and close trim valves. d. Check if condensate booster pumps have tripped and start as necessary.
4	Verify Adequate MFW Flow: o A MFW flow - GREATER THAN OR EQUAL TO A STEAM FLOW o B MFW flow - GREATER THAN OR EQUAL TO B STEAM FLOW	Check MFW regulating valves controlling in AUTO. IF NOT, THEN control MFW flow in MANUAL. IF MFW flow can NOT be controlled, THEN, trip the turbine and go to AP-TURB.1, TURBINE TRIP WITHOUT RX TRIP REQUIRED, or E-0, REACTOR TRIP or SAFETY INJECTION.

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
5	Check Both S/G Levels - GREATER THAN 17% AND TRENDING TO PROGRAM LEVEL	IF S/G levels can NOT be restored, THEN trip the reactor AND go to E-0, REACTOR TRIP or SAFETY INJECTION.
6	Establish Stable Plant Conditions:	
	a. Tavg - TRENDING TO TREF	a. Restore Tavg to normal: 1) Control rods controlling in AUTO. IF NOT, THEN place rod control bank selector switch to MANUAL and adjust control rods as necessary. 2) Borate if required for power reduction.
	b. PRZR pressure - BETWEEN 2210 PSIG AND 2260 PSIG	b. Ensure PRZR heaters and spray operating as required, OR if necessary control heaters and spray manually. If PRZR pressure can NOT be controlled, THEN refer to AP-PRZR.1 ABNORMAL PRESSURIZER PRESSURE.
	c. Narrow range S/G levels - TRENDING TO PROGRAM LEVEL	c. Ensure MFW regulating valves controlling in AUTO, OR control feed water in MANUAL.

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
7	Check Status Of MFW Control Malfunction	
	a. Feedwater control malfunction - IDENTIFIED	a. Continue to control feedwater as necessary. WHEN malfunction identified, THEN do Steps 7b and c.
	b. Restore feedwater control system to AUTO	
	c. Verify all AFW pumps OFF with switches in AUTO	c. Stop running AFW pumps and place in AUTO.

NOTE: Refer to 0-9.3, NRC IMMEDIATE NOTIFICATION, for reporting requirements.

8	Notify Higher Supervision	
9	Return To Procedure Or Guidance In Effect	

-END-

EOP:	TITLE:	REV: 10
ES-1.3	TRANSFER TO COLD LEG RECIRCULATION	PAGE 1 of 18

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 the necessary instructions for transferring the Safety Injection system and Containment Spray system to recirculation modes of operation.

B. ENTRY CONDITIONS/SYMPTOMS

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

a. E-1, LOSS OF REACTOR OR SECONDARY COOLANT, Step 20, on low RWST level.

b. ECA-2.1, UNCONTROLLED DEPRESSURIZATION OF ALL STEAM GENERATORS, Step 10, on low RWST level.

c. Other procedures whenever RWST level reaches the switchover setpoint (28%).

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED

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CAUTION

- INJECTION FLOW TO THE RCS MUST BE MAINTAINED AT ALL TIMES.
- IF OFFSITE POWER IS LOST AFTER SI RESET, THEN SELECTED SW PUMPS AND ONE CCW PUMP WILL AUTO START ON EMERGENCY D/G. MANUAL ACTION WILL BE REQUIRED TO RESTART SAFEGUARDS EQUIPMENT.
- CONSULT WITH HEALTH PHYSICS BEFORE DISPATCHING PERSONNEL TO AUXILIARY BUILDING.

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NOTE: FOLDOUT page should be open and monitored periodically.

1	Verify CNMT Sump B Level - GREATER THAN 113 INCHES	IF RWST level is less than 28% AND CNMT sump B level is less than 113 inches, THEN go to ECA-1.2, LOCA OUTSIDE CONTAINMENT, Step 1.

NOTE: Steps 2 through 8 should be performed without delay. FR procedures should not be implemented prior to completion of these steps.

2	Reset SI	

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
3	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). IF NOT, THEN shed sufficient non-essential loads. • 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. Perform the following: 1) Dispatch AO to locally open valves several turns to minimize hydraulic shock. 2) WHEN notified that both valves in a set partially open THEN manually open valves.

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
4	Establish Conditions For RHR Suction Swapover:	
	a. Place switch for MOV-856, RHR pump suction from RWST, to OPEN (spring returns to AUTO)	
	b. Establish CCW flow to RHR Hxs:	
	1) Check both CCW pumps - RUNNING	1) Start CCW pumps as power supply permits.
	2) Open CCW valves to RHR Hxs • MOV-738A • MOV-738B	2) Dispatch AO to locally open valves.

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CAUTION

ANY PUMPS TAKING SUCTION FROM RWST SHOULD BE STOPPED UPON REACHING RWST LO-LO LEVEL ALARM.

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5	Check IF Unnecessary Pumps Can Be Stopped:	
	a. Three SI pumps - RUNNING	a. Go to Step 5c.
	b. Stop SI pump C and place both switches in PULL STOP	
	c. Both CNMT spray pumps - RUNNING	c. Pull stop any idle CNMT spray pump and go to Step 5e.
	d. Pull stop CNMT spray pump on emergency D/G with maximum load	
	e. Stop both RHR pumps and place in PULL STOP	

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED

NOTE: CCW Hx SW outlet valves should be opened equally to distribute flow evenly to both CCW Hxs.

6 Dispatch AO To Locally Perform The Following:

a. Adjust Total SW Flow To CCW Hxs To - BETWEEN 5000 GPM AND 6000 GPM

- V-4619
- V-4620

a. IF greater than 5000 gpm can NOT be established, THEN perform the following as necessary to establish greater than 5000 gpm:

1) Start additional SW pumps as power supply permits (258 kw each).

2) Isolate SW to screenhouse and air conditioning headers.

- MOV-4609 and MOV-4780
- MOV-4663 and MOV-4733

3) Dispatch AO to locally isolate SW return from SFP Hxs:

- SFP Hx A (V-4622)
- SFP Hx B (V-8634 and V-8685)

4) Verify SW portions of Attachment SD-1 are complete.

b. Close breaker for RHR pump suction from RWST

- MOV-856, MCC C position 10C

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED

7 Verify RHR System Alignment:

a. Verify the following valves - CLOSED

- o RHR suction valves from loop A hot leg
  - MOV-700
  - MOV-701
- o RHR discharge valves to loop B cold leg
  - MOV-720
  - MOV-721

a. Ensure at least one suction valve and one discharge valve closed.

b. Verify the following valves - OPEN

- o RHR pump suction valves
  - MOV-704A
  - MOV-704B
- o RHR pump discharge to Rx vessel deluge valves
  - MOV-852A
  - MOV-852B
- o RHR suction from sump B (inside CNMT)
  - MOV-851A
  - MOV-851B

b. Ensure at least one valve in each set open.

c. Verify RCDT pump suction valves from sump B - CLOSED

- MOV-1813A
- MOV-1813B

c. Manually close valves.

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
8	Initiate RHR Sump Recirculation:	
	a. Close RWST outlet valve to RHR pump suction (MOV-856)	a. Dispatch AO to locally close valve and continue with Step 8b.
	b. Open RHR suction valves from sump B (outside CNMT) • MOV-850A • MOV-850B	b. Perform the following: 1) Ensure at least one RHR suction path from sump B aligned: o MOV-850A and MOV-851A - OPEN -OR- o MOV-850B and MOV-851B - OPEN 2) Verify both RHR pump suction crosstie valves open. • MOV-704A • MOV-704B 3) Verify sump B suction established to operable RHR pump (Refer to Attachment RHR SYSTEM). IF NOT, THEN go to ECA-1.1, LOSS OF EMERGENCY COOLANT RECIRCULATION, Step 1.
	c. Start RHR pumps with suction established from sump B (Refer to Attachment RHR SYSTEM)	c. IF no RHR pump can be started, THEN go to ECA-1.1, LOSS OF EMERGENCY COOLANT RECIRCULATION, Step 1.

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
9	Check RWST Level - LESS THAN 15%	DO NOT continue with this procedure until RWST level is less than 15%.
10	Stop All Pumps Supplied From RWST: a. Stop all SI pumps and place in PULL STOP b. Stop all charging pumps c. Reset CNMT spray if necessary d. Stop operating CNMT spray pump(s) and place in PULL STOP e. Close CNMT spray pump discharge valves • MOV-860A • MOV-860B • MOV-860C • MOV-860D	

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED

* *

CAUTION

SI PUMPS SHOULD BE STOPPED IF RCS PRESSURE IS GREATER THAN THEIR SHUTOFF HEAD PRESSURE.

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11 Align SI And CNMT Spray For Sump Recirculation:

a. Verify SI pump suction valves from BASTs - CLOSED

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

a. Ensure at least one valve in each flowpath closed.

b. Close RWST outlet valves to SI and CNMT spray pumps (turn on DC power key switches)

- MOV-896A
- MOV-896B

b. Ensure at least one valve closed.

c. Close SI pump RECIRC valves

- MOV-898
- MOV-897

c. Ensure at least one valve closed.

d. Verify SI pump suction valves from RWST - OPEN

- MOV-825A
- MOV-825B

d. Ensure at least one valve open.

e. Open RHR Hx outlet valves to SI and CNMT spray pump suction

- MOV-857A
- MOV-857B
- MOV-857C

e. Ensure operating RHR pump(s) aligned to SI and CS pump suction header (Refer to Attachment RHR SYSTEM).

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED

NOTE: SI pump C is preferred since it delivers to both lines.

12 Check If SI Pump Should Be Started:

a. Check the following:

- Core exit T/Cs - GREATER THAN REQUIREMENTS OF FIGURE RHR INJECTION

-OR-

- RCS pressure - GREATER THAN 225 psig [425 psig adverse CNMT]

a. IF RVLIS level (no RCPS) greater than 43% [46% adverse CNMT], THEN go to Step 13.

b. Start one SI pump

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
13	Check If CNMT Spray Is Required:	
	a. CNMT pressure - GREATER THAN 37 PSIG	a. Perform the following: 1) IF CNMT spray previously actuated, THEN consult TSC to determine if CNMT spray should be restarted. 2) Go to Step 14.
	b. Start one CNMT spray pump	
	c. Open NaOH tank outlet valves for running pump • AOV-836A, pump A • AOV-836B, pump B	
	d. Open one CNMT spray pump discharge valve for running pump • MOV-860A or MOV-860B, pump A • MOV-860C or MOV-860D, pump B	
	e. WHEN CNMT pressure less than 32 psig, THEN close discharge valve and PULL STOP CNMT spray pump	
14	Verify Adequate Core Cooling: o Core exit T/Cs - STABLE OR DECREASING o RVLIS level (no RCPs) - STABLE OR INCREASING o RVLIS level (no RCPs) - GREATER THAN 43% [46% adverse CNMT]	IF both RHR pumps running, THEN ensure two SI pumps running. IF only ONE RHR pump running, THEN perform the following: a. Ensure at least one SI pump running. b. WHEN CNMT spray pumps stopped, THEN start another SI pump 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).

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15 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.

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

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
16	Establish Normal Shutdown Alignment:	
	a. Check condenser - AVAILABLE	a. Dispatch AO to perform Attachment SD-2.
	b. Perform the following: o Open generator disconnects • 1G13A71 • 9X13A73 o Place voltage regulator to OFF o Open turbine drain valves o Rotate reheater steam supply controller cam to close valves o Place reheater dump valve switches to HAND o Stop all but one condensate pump	
	c. Verify adequate Rx head cooling:	
	1) Check IA to CNMT - AVAILABLE	1) Go to Step 16d.
	2) Verify at least one control rod shroud fan - RUNNING	2) Manually start one fan as power supply permits (45 kw)
	3) Verify one Rx compartment cooling fan - RUNNING	3) 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)
	d. Verify Attachment SD-1 - COMPLETE	

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
17	Check If Emergency D/Gs Should Be Stopped: a. Verify AC emergency busses energized by offsite power: o Emergency D/G output breakers - OPEN o AC emergency bus voltage - GREATER THAN 420 VOLTS o AC emergency bus normal feed breakers - CLOSED b. Stop any unloaded emergency D/G and place in standby (Refer to Attachment D/G STOP)	a. Try to restore offsite power (Refer to ER-ELEC.1, RESTORATION OF OFFSITE POWER).

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
18	Check If SI ACCUMs Should Be Isolated:	
	a. Both RCS hot leg temperatures - LESS THAN 400°F	a. Continue with Step 19. WHEN both RCS hot leg temperatures less than 400°F, THEN do Steps 18b through d.
	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. Vent any unisolated ACCUMs: 1) Open vent valves for unisolated SI ACCUMs. • 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

IF FUEL DAMAGE IS SUSPECTED, MAINTAIN S/G PRESSURE SLIGHTLY GREATER THAN RCS PRESSURE.

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19	Check If Intact S/Gs Should Be Depressurized To RCS Pressure:	
	a. RCS pressure - LESS THAN INTACT S/G PRESSURES	a. Go to Step 20.
	b. Check S/G radiation - NORMAL o Steamline Monitors (R-31, R-32) o Direct HP to sample S/Gs for activity	b. Do NOT dump steam from a S/G with high radiation. Isolate feed flow to a S/G with high radiation.
	c. Dump steam to condenser from intact S/G(s) until S/G pressure less than RCS pressure	c. IF steam dump to condenser NOT available, THEN dump steam using intact S/G ARVs until S/G pressure less than RCS pressure.
20	Consult TSC to Determine If Rx Vessel Head Should Be Vented	

NOTE: The TSC should be consulted before changing recirculation lineups.

21	At 19 HOURS After Event Initiation, Perform Steps 22 through 24	Consult TSC to evaluate long term plant status.

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
22	Place CNMT Spray Pumps In PULL STOP	
23	Verify Two SI Pumps - RUNNING	Manually start pumps.
24	Check Core Exit T/Cs - LESS THAN REQUIREMENTS OF FIGURE RHR INJECTION	Perform the following: a. Manually open both PRZR PORVs and block valves. b. Verify core exit T/Cs decreasing to less than requirements of Figure RHR INJECTION. IF NOT, THEN dump steam from intact S/Gs until core exit T/Cs less than required.
25	Consult TSC To Evaluate Long Term Plant Status	

-END-

ES-1.3 APPENDIX LIST

RED PATH SUMMARY

a. SUBCRITICALITY - Nuclear power greater than 5%

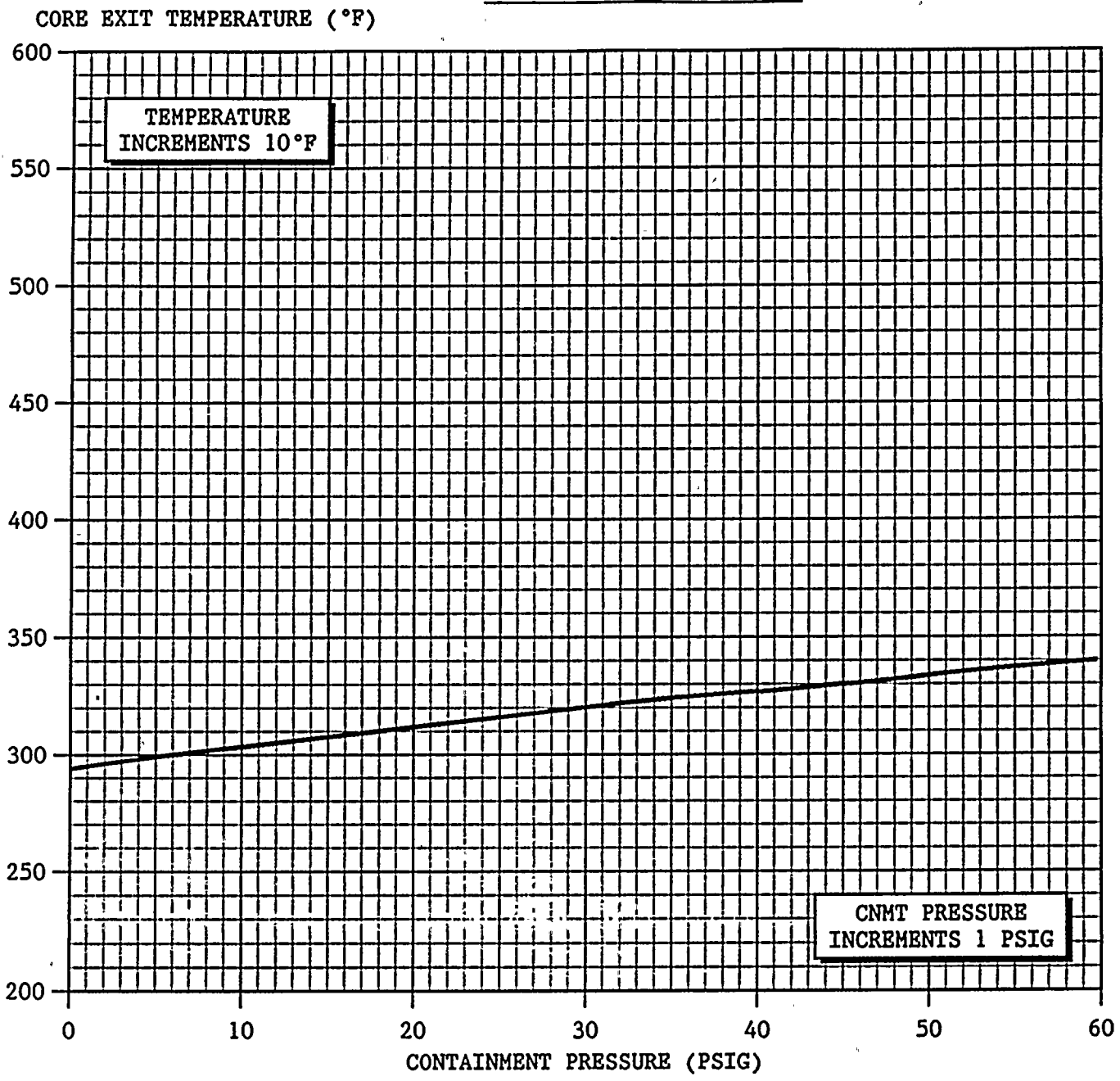
b. CORE COOLING - Core exit T/Cs greater than 1200°F
-OR-
Core exit T/Cs greater than 700°F AND RVLIS level (no RCPs) less than 43% [46% adverse CNMT]

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 RHR INJECTION



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1. SI REINITIATION CRITERIA

IF EITHER condition listed below occurs, THEN operate SI pumps manually as necessary:

- Core exit TCs - GREATER THAN REQUIREMENTS OF FIGURE RHR INJECTION

OR

- RVLIS level - LESS THAN 43% [46% adverse CNMT]

2. 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).