

*Superseded pages per
Rev to EPIP dtd. 12/27/91*

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ROCHESTER GAS AND ELECTRIC CORPORATION

GINNA STATION

CONTROLLED COPY NUMBER *23*

TECHNICAL REVIEW

PORC REVIEW DATE *5/9/91*

Joseph A. Widay
PLANT SUPERINTENDENT

5/10/91
EFFECTIVE DATE

CATEGORY 1.0

REVIEWED BY: _____

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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, on low RWST level.
- b. ECA-2.1, UNCONTROLLED DEPRESSURIZATION OF ALL STEAM GENERATORS, on low RWST level.
- c. Other procedures whenever RWST level reaches the switchover setpoint (28%).

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STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
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CAUTION

- o INJECTION FLOW TO THE RCS MUST BE MAINTAINED AT ALL TIMES.
- o 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.
- o CONSULT WITH HEALTH PHYSICS BEFORE DISPATCHING PERSONNEL TO AUXILIARY BUILDING.

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

- 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 CNMT Sump B Level - IF RWST level is less than 28% AND GREATER THAN 113 INCHES 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

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STEP

ACTION/EXPECTED RESPONSE

RESPONSE NOT OBTAINED

3 Establish Conditions For RHR Suction Swapover:

- a. Verify at least two SW pumps -
RUNNING

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

IF D/Gs supplying emergency AC
busses, THEN shed non-essential
loads as necessary

- Rx compartment cooling fans
- Control rod shroud fans
- PRZR heaters
- Charging pumps

- b. Verify AUX BLDG SW isolation
valves - OPEN

- b. Establish SW to AUX BLDG (Refer
to Attachment AUX BLDG SW).

- MOV-4615 and MOV-4734
- MOV-4616 and MOV-4735

- c. Dispatch A0 to perform the
following:

- 1) Close breaker for RHR pump
suction from RWST, MOV-856
(MCC C position 10C)

- 2) Perform the following:

- a) Isolate SW to screenhouse
and air conditioning
headers.

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

- b) Direct A0 to locally
adjust total SW flow to
the CCW Hxs to between
5000 gpm and 6000 gpm.

- c) Direct A0 to locally
isolate SW return from SFP
Hxs:

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

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

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STEP

ACTION/EXPECTED RESPONSE

RESPONSE NOT OBTAINED

4 Establish CCW flow to RHR Hxs:

a. Check both CCW pumps - RUNNING

a. Start CCW pumps as power supply permits (124 kw each).

b. Manually open CCW valves to RHR Hxs

b. Dispatch A0 to locally open valves.

- MOV-738A
- MOV-738B

CAUTION

o RHR FLOW INDICATED ON FI-626 SHOULD BE LIMITED TO 1500 GPM PER OPERATING PUMP TO ENSURE OPTIMUM PUMP PERFORMANCE.

o CONSULT WITH HEALTH PHYSICS BEFORE DISPATCHING PERSONNEL TO AUXILIARY BUILDING.

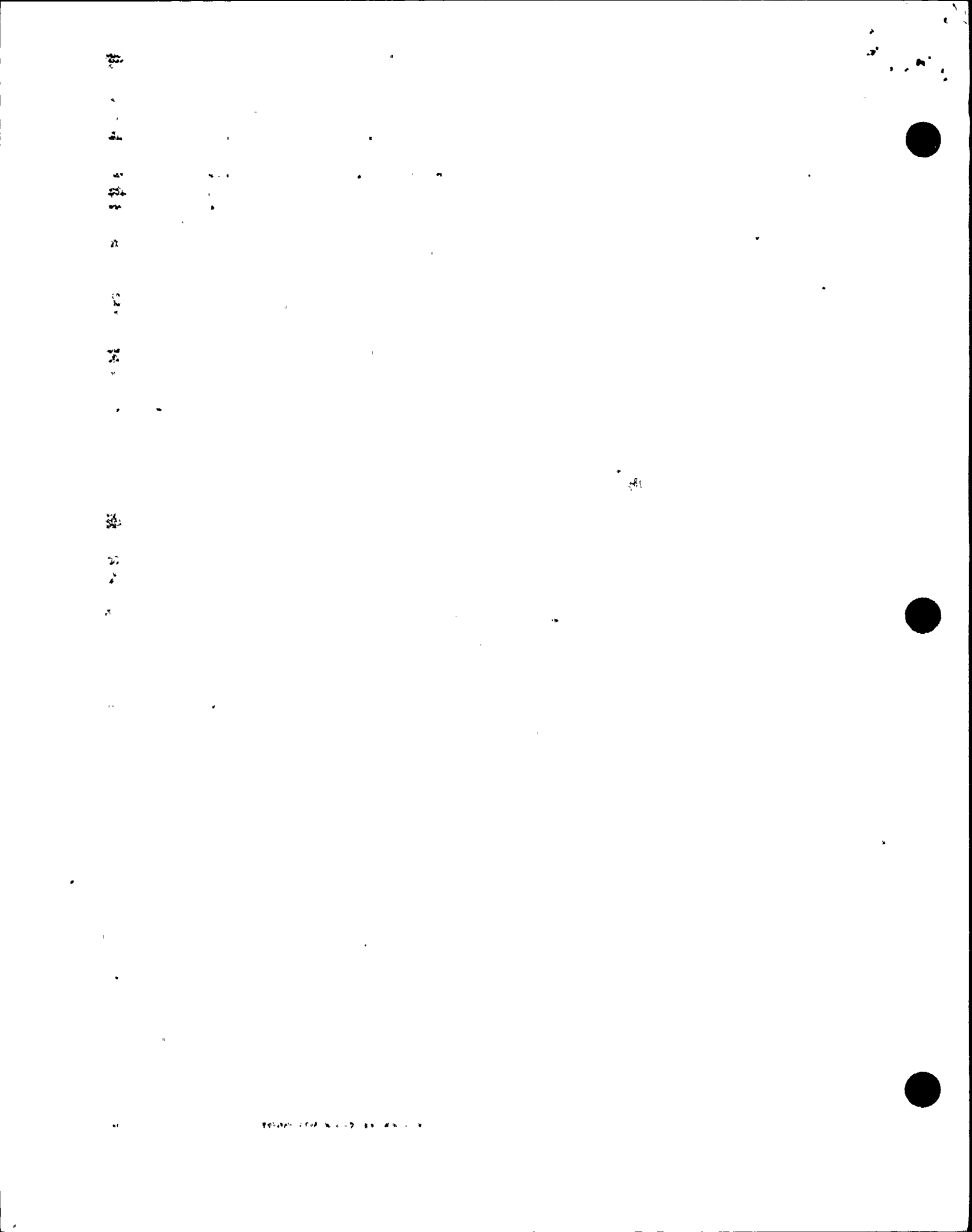
5 Check RHR Flow (FI-626) - LESS THAN 3000 GPM

Manually adjust RHR Hx outlet valves equally to reduce flow to less than 3000 gpm.

- HCV-624 B RHR Hx
- HCV-625 A RHR Hx

IF flow can NOT be reduced manually, THEN dispatch an A0 to locally adjust RHR Hx outlet manual valves equally to reduce flow.

- V-715 B RHR Hx
- V-717 A RHR Hx



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STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED

<u>CAUTION</u>		
	<ul style="list-style-type: none">o ANY PUMPS TAKING SUCTION FROM RWST SHOULD BE STOPPED UPON REACHING RWST LO-LO LEVEL ALARM.o SI PUMPS SHOULD BE STOPPED IF RCS PRESSURE IS GREATER THAN THEIR SHUTOFF HEAD PRESSURE.	

6	Check IF Unnecessary Pumps Can Be Stopped:	
	<ul style="list-style-type: none">a. Three SI pumps - RUNNINGb. Stop SI pump C and place both switches in PULL STOPc. Both CNMT spray pumps - RUNNINGd. Pull stop one CNMT spray pumpe. Stop both RHR pumps and place in PULL STOP	<ul style="list-style-type: none">a. Go to Step 6c.c. Pull stop any idle CNMT spray pump and go to Step 6e.

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STEP

ACTION/EXPECTED RESPONSE

RESPONSE NOT OBTAINED

7 Verify RHR System Alignment:

a. Verify the following valves -
CLOSEDo 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

b. Verify RHR pump suction crosstie
valves - OPEN

- MOV-704A
- MOV-704B

c. Verify the following valves -
OPENo RHR pump discharge to Rx
vessel deluge valves

- MOV-852A
- MOV-852B

o RHR suction from sump B
(inside CNMT)

- MOV-851A
- MOV-851B

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

- MOV-1813A
- MOV-1813B

a. Ensure at least one suction
valve and one discharge valve
closed.b. Manually open valves. If valves
can NOT be opened, THEN dispatch
A0 to locally open valves.c. Ensure at least one valve in
each set open.

d. Manually close valves.

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STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
8	Initiate RHR Sump Recirculation:	
	<ul style="list-style-type: none"> a. Close RWST outlet valve to RHR pump suction, MOV-856 (turn on DC power key switch) b. Open both RHR suction valves from sump B (outside CNMT) <ul style="list-style-type: none"> o MOV-850A - OPEN o MOV-850B - OPEN c. Start both RHR pumps 	<ul style="list-style-type: none"> a. Dispatch AO to locally close valve and continue with Step 8b. b. <u>IF</u> two RHR pump suction paths from sump B can <u>NOT</u> be established, <u>THEN</u> perform the following: <ul style="list-style-type: none"> 1) Initiate only one train of RHR recirculation (Refer to Attachment RHR NPSH for further guidance). 2) Go to Step 9. c. <u>IF</u> no RHR pump can be started, <u>THEN</u> go to ECA-1.1, LOSS OF EMERGENCY COOLANT RECIRCULATION, Step 1.
<p><u>NOTE:</u> The TSC should be requested to establish periodic monitoring of the AUX BLDG sub-basement, as radiological conditions permit, to monitor RHR pump operation.</p>		
9	Check RWST Level - LESS THAN 15%	DO <u>NOT</u> continue with this procedure until RWST level is less than 15%.

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STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
10	<p>Stop All Pumps Supplied From RWST:</p> <ul style="list-style-type: none"> a. Stop all SI pumps and place in PULL STOP b. Stop all charging pumps c. Stop operating CNMT spray pump and place in PULL STOP d. Check CNMT pressure - LESS THAN 28 PSIG e. Reset CNMT spray if necessary f. Close CNMT spray pump discharge valves <ul style="list-style-type: none"> • MOV-860A • MOV-860B • MOV-860C • MOV-860D 	<p>d. Go to Step 11.</p>

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STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
11	Align SI And CNMT Spray For Sump Recirculation:	
	<p>a. Verify SI pump suction valves from BASTs - CLOSED</p> <ul style="list-style-type: none"> • MOV-826A and MOV-826B • MOV-826C and MOV-826D <p>b. Close RWST outlet valves to SI and CNMT spray pumps (turn on DC power key switches)</p> <ul style="list-style-type: none"> • MOV-896A • MOV-896B <p>c. Close SI pump RECIRC valves</p> <ul style="list-style-type: none"> • MOV-898 • MOV-897 <p>d. Verify SI pump suction valves from RWST - OPEN</p> <ul style="list-style-type: none"> • MOV-825A • MOV-825B <p>e. Check both RHR pumps - RUNNING</p>	<p>a. Ensure at least one valve in each flowpath closed.</p> <p>b. Ensure at least one valve closed.</p> <p>c. Ensure at least one valve closed.</p> <p>d. Ensure at least one valve open.</p> <p>e. <u>IF</u> only A RHR pump running, <u>THEN</u> perform the following:</p> <ol style="list-style-type: none"> 1) Open all RHR Hx outlet valves to SI and CNMT spray pump suction header. <ul style="list-style-type: none"> • MOV-857A • MOV-857B • MOV-857C 2) Go to Step 12. <p><u>IF</u> only B RHR pump running, <u>THEN</u> perform the following:</p> <ol style="list-style-type: none"> 1) Open RHR Hx outlet to SI and CNMT spray pump suction from B RHR pump only (MOV-857B). 2) Go to Step 12.
	<p>f. Open all RHR Hx outlet valves to SI and CNMT spray pump suction</p> <ul style="list-style-type: none"> • MOV-857A • MOV-857B • MOV-857C 	<p>f. Ensure at least one RHR pump(s) aligned to SI and CS pump suction header (Refer to Attachment RHR SYSTEM).</p>

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STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
<p><u>NOTE:</u> SI pump C is preferred since it delivers to both lines.</p>		
12	<p>Verify Adequate RHR Injection:</p> <ul style="list-style-type: none"> o Core exit T/Cs - LESS THAN REQUIREMENTS OF FIGURE RHR INJECTION o RCS pressure - LESS THAN 225 psig [425 psig adverse CNMT] o Check RVLIS level (no RCPS) - GREATER THAN 43% [46% adverse CNMT] 	<p>Start one SI pump.</p>

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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 CNMT SPRAY PUMP IS STARTED, THEN CNMT PRESSURE SHOULD BE CLOSELY MONITORED. CNMT PRESSURE SHOULD NOT BE REDUCED TO LESS THAN 32 PSIG.</p> <p>*****</p>		
13	<p>Check If CNMT Spray Is Required:</p> <p>a. CNMT pressure - GREATER THAN 37 PSIG</p> <p>b. Verify open CNMT spray pump discharge valves</p> <ul style="list-style-type: none"> • MOV-860A • MOV-860B • MOV-860C • MOV-860D <p>c. Start selected CNMT spray pump</p> <p>d. Open NaOH tank outlet valves for running pump</p> <ul style="list-style-type: none"> • AOV-836A, pump A • AOV-836B, pump B <p>e. <u>WHEN</u> CNMT pressure less than 32 psig, <u>THEN</u> PULL STOP CNMT spray pump</p> <p>f. Close CNMT spray pump discharge valve</p>	<p>a. Perform the following:</p> <p>1) <u>IF</u> CNMT spray previously actuated, <u>THEN</u> consult TSC to determine if CNMT spray should be restarted.</p> <p>2) Go to Step 14.</p> <p>b. Manually open valve(s) for selected pump.</p> <ul style="list-style-type: none"> • MOV-860A or MOV-860B, A pump • MOV-860C or MOV-860D, B pump

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Figure 1 | *Staphylococcus aureus* strains used in this study. The strains were isolated from various sources and characterized by their antibiotic resistance patterns (Ampicillin, Clindamycin, Erythromycin, Fusidic acid, Gentamicin, Mupirocin, Rifampin, Sulfamethoxazole, Tetracycline, Vancomycin).

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
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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.

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).

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

15 Check Intact S/G Levels:

- 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%

- 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.

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STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
16	Establish Normal Shutdown Alignment:	
	a. Check condenser - AVAILABLE	a. Dispatch A0 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 A0 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	

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STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
17	<p>Check If Emergency D/Gs Should Be Stopped:</p> <ul style="list-style-type: none"> a. Verify AC emergency busses energized by offsite power: <ul style="list-style-type: none"> 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) 	<ul style="list-style-type: none"> a. Try to restore offsite power (Refer to ER-ELEC.1, RESTORATION OF OFFSITE POWER).

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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

b. Dispatch A0 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

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

a. Continue with Step 19. WHEN both RCS hot leg temperatures less than 400°F, THEN do Steps 18b through d.

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.

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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.

19 Check If Intact S/Gs Should
Be Depressurized To RCS
Pressure:

- a. RCS pressure - LESS THAN INTACT
S/G PRESSURES
- b. Check S/G radiation - NORMAL
 - o Steamline Monitors (R-31,
R-32)
 - o Direct HP to sample S/Gs for
activity
- c. Dump steam to condenser from
intact S/G(s) until S/G pressure
less than RCS pressure

- a. Go to Step 20.
- b. Do NOT dump steam from a S/G
with high radiation. Isolate
feed flow to a S/G with high
radiation.
- 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 Check Event Duration -
GREATER THAN 19 HOURS AFTER
EVENT INITIATION

Consult TSC to evaluate long term
plant status.

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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. <u>IF NOT</u> , <u>THEN</u> dump steam from intact S/Gs until core exit T/Cs less than required.
25	Consult TSC To Evaluate Long Term Plant Status	

-END-

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ES-1.3 APPENDIX LIST

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2) FIGURE RHR INJECTION	1
3) ATTACHMENT D/G STOP	1
4) ATTACHMENT SD-1	1
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6) ATTACHMENT RHR NPSH	1
7) ATTACHMENT RHR SYSTEM	1
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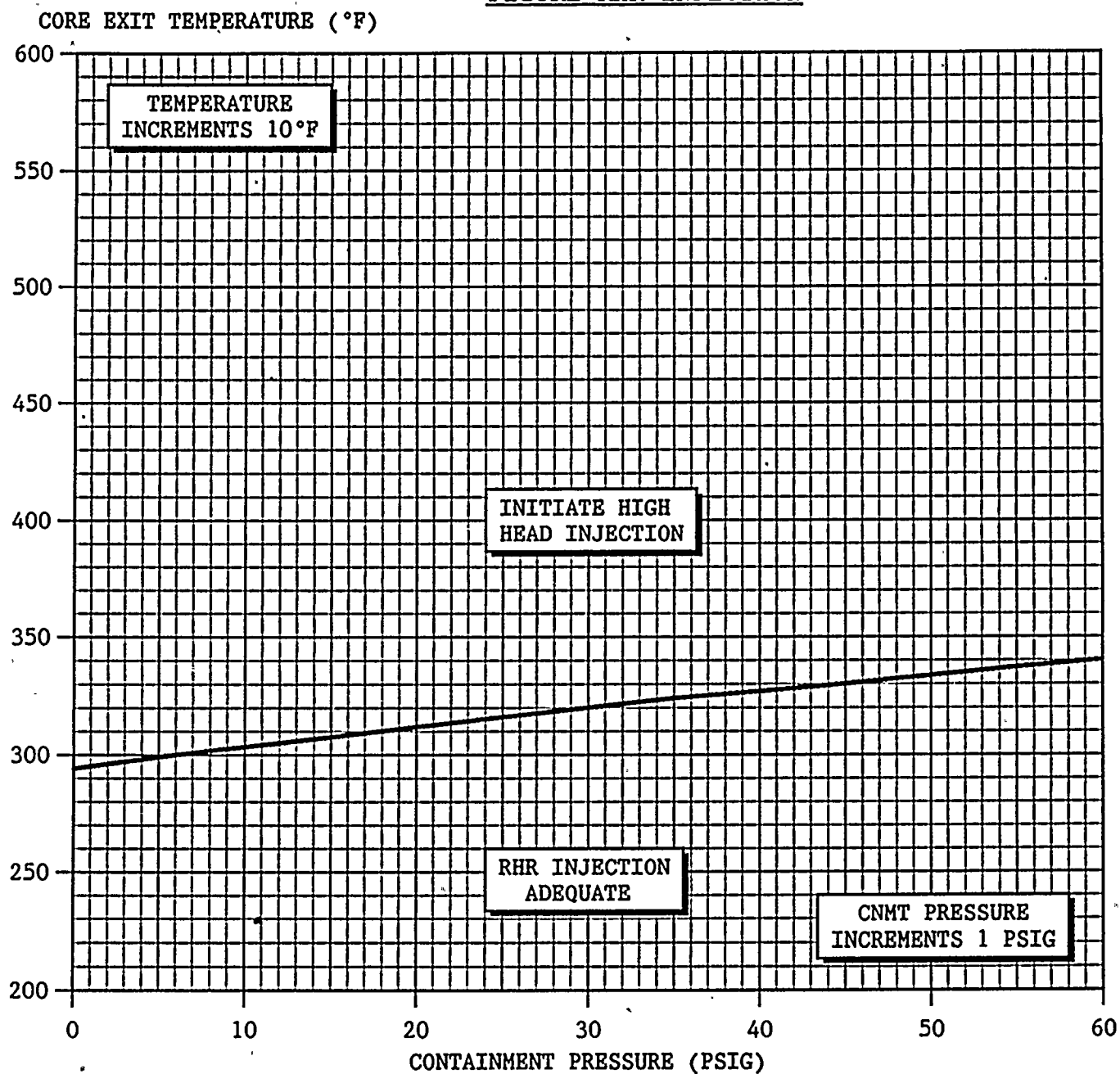
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EOP: ES-1.3	TITLE: TRANSFER TO COLD LEG RECIRCULATION	REV: 12 PAGE 1 of 1
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FIGURE RHR INJECTION



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