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ROCHESTER GAS AND ELECTRIC CORPORATION

GINNA STATION

CONTROLLED COPY NUMBER 23

TECHNICAL REVIEW

PORC REVIEW DATE 8/8/90

Thomas A. Marlow  
PLANT SUPERINTENDENT

8/10/90  
EFFECTIVE DATE

CATEGORY 1.0

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

GINNA STATION	
START:	
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- A. PURPOSE - This procedure provides actions to verify proper response of the automatic protection systems following manual or automatic actuation of a reactor trip or safety injection and to assess plant conditions, and identify the appropriate recovery procedure.
- B. ENTRY CONDITIONS/SYMPTOMS
1. The following are symptoms that require a reactor trip, if one has not occurred:
    - o Any plant parameter reaches a reactor trip setpoint and logic as listed in procedure P-1, REACTOR CONTROL AND PROTECTION SYSTEM.
    - o Operator discretion.
  2. The following are symptoms of a reactor trip:
    - o Any First Out reactor trip annunciator lit.
    - o A rapid decrease in core neutron level as indicated by nuclear instrumentation.
    - o MRPI Indicates all control and shutdown rods on bottom.
    - o Reactor trip breakers indicate open.
  3. The following are symptoms that require a reactor trip and safety injection, if one has not occurred:
    - o Any plant parameter reaches the Safety Injection setpoint and logic as listed in procedure P-1, REACTOR CONTROL AND PROTECTION SYSTEM.
    - o Operator discretion.
  4. The following are symptoms of a reactor trip and safety injection:
    - o Any SI annunciator lit.
    - o Safeguards sequencing started.



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STEP

ACTION/EXPECTED RESPONSE

RESPONSE NOT OBTAINED

- NOTE:
- o Steps 1 through 12 are IMMEDIATE ACTION steps.
  - 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 Reactor Trip:

Manually trip reactor.

- o At least one train of reactor trip breakers - OPEN
- o Neutron flux - DECREASING
- o MRPI indicates - ALL CONTROL AND SHUTDOWN RODS ON BOTTOM

IF reactor trip breakers NOT open, THEN perform the following:

- a. Open Bus 13 and Bus 15 normal feed breakers.
- b. Verify rod drive MG sets tripped.
- c. Close Bus 13 and Bus 15 normal feed breakers.
- d. Reset lighting breakers.

IF any power range channel greater than 5% OR MRPI indicates more than one control rod not fully inserted, THEN go to FR-S.1, RESPONSE TO REACTOR RESTART/ATWS, Step 1

2 Verify Turbine Stop Valves - CLOSED

Manually trip turbine.

IF turbine trip can NOT be verified, THEN close both MSIVs.

3 Verify Both Trains Of AC Emergency Busses Energized To At Least 420 VOLTS:

Attempt to start any failed emergency D/G to restore power to all AC emergency busses.

- Bus 14 and Bus 18
- Bus 16 and Bus 17

IF power can NOT be restored to at least one train, THEN go to ECA-0.0, LOSS OF ALL AC POWER, Step 1.



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STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
4	Check If Any SI Annunciator - LIT	<p><u>IF</u> any of the following conditions are met, <u>THEN</u> manually actuate SI and CI:</p> <ul style="list-style-type: none"> <li>o PRZR pressure less than 1750 psig</li> <li>-OR-</li> <li>o Steamline pressure less than 514 psig</li> <li>-OR-</li> <li>o CNMT pressure greater than 4 psig</li> <li>-OR-</li> <li>o Safeguards sequencing started</li> <li>-OR-</li> <li>o Operator determines SI required</li> </ul> <p><u>IF</u> SI is <u>NOT</u> required, <u>THEN</u> go to ES-0.1, REACTOR TRIP RESPONSE, Step 1.</p>
5	Verify SI and RHR Pumps Running:	
	a. All SI pumps - RUNNING	a. Manually start pumps.
	b. Both RHR pumps - RUNNING	b. Manually start pumps.





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STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
6	<p>Verify CNMT RECIRC Fans Running:</p> <ul style="list-style-type: none"> <li>a. All fans - RUNNING</li> <li>b. Charcoal filter dampers green status lights - EXTINGUISHED</li> </ul>	<ul style="list-style-type: none"> <li>a. Manually start fans.</li> <li>b. Dispatch personnel to relay room with relay rack key to locally open dampers by pushing in trip relay plungers. <ul style="list-style-type: none"> <li>• AUX RELAY RACK RA-2 for fan A</li> <li>• AUX RELAY RACK RA-3 for fan C</li> </ul> </li> </ul>
7	<p>Verify CNMT Spray Not Required:</p> <ul style="list-style-type: none"> <li>o Annunciator A-27, CNMT SPRAY - EXTINGUISHED</li> <li>o CNMT pressure - LESS THAN 28 PSIG</li> </ul>	<p>Verify CNMT spray initiated.</p> <p><u>IF</u> CNMT spray <u>NOT</u> initiated, <u>THEN</u> perform the following:</p> <ul style="list-style-type: none"> <li>a. Depress manual CNMT spray pushbuttons (2 of 2).</li> <li>b. Ensure CNMT spray pumps running.</li> <li>c. Ensure CNMT spray pump discharge valves open. <ul style="list-style-type: none"> <li>• MOV-860A</li> <li>• MOV-860B</li> <li>• MOV-860C</li> <li>• MOV-860D</li> </ul> </li> <li>d. Ensure NaOH tank outlet valves open. <ul style="list-style-type: none"> <li>• AOV-836A</li> <li>• AOV-836B</li> </ul> </li> </ul>



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STEP

ACTION/EXPECTED RESPONSE

RESPONSE NOT OBTAINED

8

Check If Main Steamlines  
Should Be Isolated:

- a. Any MSIV - OPEN
- b. Check CNMT pressure - LESS THAN  
18 PSIG
- c. Check if ANY main steamlines  
should be isolated:
  - o Low Tavg (545°F) AND high  
steam flow ( $0.4 \times 10^6$  lb/hr)  
from either S/G

-OR-

- o High-High steam flow  
( $3.6 \times 10^6$  lb/hr) from either S/G
- d. Verify MSIV closed on the  
affected S/G(s)

- a. Go to Step 9.
- b. Ensure BOTH MSIVs closed and go  
to Step 9.
- c. Go to Step 9.

d. Manually close valves.

9

Verify MFW Isolation:

- a. MFW pumps - TRIPPED
- b. MFW flow control valves - CLOSED
  - MFW regulating valves
  - MFW bypass valves
- c. S/G blowdown and sample valves -  
CLOSED

- a. Manually close MFW pump  
discharge valves and trip MFW  
pumps.
- b. Place A and B S/G MFW regulating  
valve and bypass valve  
controllers in MANUAL at 0%  
demand.
- c. Place S/G blowdown and sample  
valve isolation switch to CLOSE.



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STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
10	Verify AFW Pumps Running:  a. MDAFW pumps - RUNNING  b. TDAFW pump - RUNNING IF NECESSARY	a. Manually start MDAFW pumps.  b. Manually open steam supply valves.  • MOV-3505A • MOV-3504A
11	Verify At Least Two SW Pumps - RUNNING	Perform the following:  a. Ensure one SW pump running on each energized screenhouse AC emergency bus:  • Bus 17 • Bus 18  b. <u>IF</u> offsite power <u>NOT</u> available, <u>THEN</u> ensure SW isolation.
12	Verify CI And CVI:  a. CI and CVI annunciators - LIT  • Annunciator A-26, CNMT ISOLATION • Annunciator A-25, CNMT VENTILATION ISOLATION  b. Verify CI and CVI valve status lights - BRIGHT  c. CNMT RECIRC fan coolers SW outlet valve status lights - BRIGHT  • FCV-4561 • FCV-4562	a. Depress manual CI pushbutton.          b. Manually close CI and CVI valves. <u>IF</u> valves can <u>NOT</u> be closed, <u>THEN</u> dispatch A0 to locally close valves (Refer to Attachment CI/CVI).  c. Dispatch A0 to locally fail open valves.



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STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
<p>*****  <u>CAUTION</u>  RCP TRIP CRITERIA LISTED ON FOLDOUT PAGE SHOULD BE MONITORED PERIODICALLY.  *****</p>		
13	Check CCW System Status:	
	a. Verify CCW pump - AT LEAST ONE RUNNING	a. <u>IF</u> offsite power available, <u>THEN</u> manually start one CCW pump.
	b. Verify CCW from excess letdown (AOV-745) - CLOSED	b. Manually close valve.
14	Verify SI And RHR Pump Flow:	
	a. SI flow indicators - CHECK FOR FLOW	a. <u>IF</u> RCS pressure less than 1400 psig, <u>THEN</u> manually start pumps and align valves. <u>IF NOT</u> , <u>THEN</u> go to Step 15.
	b. RHR flow indicator - CHECK FOR FLOW	b. <u>IF</u> RCS pressure less than 140 psig, <u>THEN</u> manually start pumps and align valves. <u>IF NOT</u> , <u>THEN</u> go to Step 15.
15	Verify Total AFW Flow - GREATER THAN 200 GPM	<p><u>IF</u> S/G narrow range level greater than 5% [25% adverse CNMT] in any S/G, <u>THEN</u> control AFW flow to maintain narrow range level.</p> <p><u>IF</u> narrow range level less than 5% [25% adverse CNMT] in all S/Gs, <u>THEN</u> manually start pumps and align valves as necessary. <u>IF</u> AFW flow greater than 200 gpm can <u>NOT</u> be established, <u>THEN</u> go to FR-H.1, RESPONSE TO LOSS OF SECONDARY HEAT SINK, Step 1.</p>





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STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
16	Verify AFW Valve Alignment:	Manually align valves as necessary.
	a. AFW flow - INDICATED TO BOTH S/G(s)	
	b. AFW flow from each MDAFW pump - LESS THAN 230 GPM	
17	Verify SI Pump Suction Alignment:	
	a. Check BAST level:	a. Perform the following:
	o Level - GREATER THAN 10%	1) Ensure at least one SI pump suction valve from RWST open:
	o Annunciator B-23, BORIC ACID TANK LO LO LEVEL - EXTINGUISHED	• MOV-825A • MOV-825B
		2) Ensure at least one valve in each SI pump suction line from BAST closed.
		• MOV-826A or MOV-826B • MOV-826C or MOV-826D
		3) Go to Step 18.
	b. Verify SI pump suction valves from BAST - OPEN	b. Ensure both valves in either flow path open.
	• MOV-826A • MOV-826B • MOV-826C • MOV-826D	o MOV-826A and MOV-826B  -OR- o MOV-826C and MOV-826D
	c. Verify SI pump suction from RWST - CLOSED	c. Manually align valves as necessary.
	• MOV-825A • MOV-825B	



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STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
18	Verify SI Pump And RHR Pump Emergency Alignment:	
	a. RHR pump discharge to Rx vessel deluge - OPEN	a. Ensure at least one valve open.
	<ul style="list-style-type: none"> <li>• MOV-852A</li> <li>• MOV-852B</li> </ul>	
	b. Verify SI pump C - RUNNING	b. Manually start pump on available bus.
	c. Verify SI pump A - RUNNING	c. Perform the following: <ul style="list-style-type: none"> <li>1) Ensure SI pumps B and C running.</li> <li>2) Ensure SI pump C aligned to discharge line A: <ul style="list-style-type: none"> <li>o MOV-871A open</li> <li>o MOV-871B closed</li> </ul> </li> <li>3) Go to Step 19.</li> </ul>
	d. Verify SI pump B - RUNNING	d. Perform the following: <ul style="list-style-type: none"> <li>1) Ensure SI pumps A and C running.</li> <li>2) Ensure SI pump C aligned to discharge line B: <ul style="list-style-type: none"> <li>o MOV-871B open</li> <li>o MOV-871A closed</li> </ul> </li> <li>3) Go to Step 19.</li> </ul>
	e. Verify SI pump C discharge valves - OPEN	e. Manually open valves as necessary.
	<ul style="list-style-type: none"> <li>• MOV-871A</li> <li>• MOV-871B</li> </ul>	



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STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
<p>*****  <u>CAUTION</u>            IF OFFSITE POWER IS LOST AFTER SI RESET, SELECTED SW PUMPS AND ONE CCW PUMP WILL AUTO START ON EMERGENCY D/G. MANUAL ACTION WILL BE REQUIRED TO RESTART SAFEGUARDS EQUIPMENT.            *****</p>		
19	<p>Check CCW Flow to RCP Thermal Barriers:</p> <ul style="list-style-type: none"> <li>o Annunciator A-7, RCP 1A CCW RETURN HI TEMP OR LO FLOW - EXTINGUISHED</li> <li>o Annunciator A-15, RCP 1B CCW RETURN HI TEMP OR LO FLOW - EXTINGUISHED</li> </ul>	<p><u>IF</u> CCW to a RCP is lost, <u>THEN</u> perform the following:</p> <ul style="list-style-type: none"> <li>a. Stop affected RCPs.</li> <li>b. Reset SI.</li> <li>c. Verify adequate power available to run one charging pump (75 kw).</li> <li>d. Start one charging pump at minimum speed for seal injection.</li> <li>e. Adjust HCV-142 to establish either of the following:               <ul style="list-style-type: none"> <li>o Labyrinth seal D/P to each RCP greater than 15 inches of water.</li> </ul> </li> </ul> <p style="text-align: center;">-OR-</p> <ul style="list-style-type: none"> <li>o RCP seal injection flow to each RCP greater than 6 gpm.</li> <li>f. <u>IF</u> large imbalance in seal injection flow exists, <u>THEN</u> consider local adjustment of V-300A and V-300B.</li> </ul>



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STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
20	<p>Check If TDAFW Pump Can Be Stopped:</p> <p>a. Both MDAFW pumps - RUNNING</p> <p>b. PULL STOP TDAFW pump steam supply valves</p> <ul style="list-style-type: none"> <li>• MOV-3504A</li> <li>• MOV-3505A</li> </ul>	<p>a. Go to Step 21.</p>
21	<p>Check RCS Tavg - STABLE AT OR TRENDING TO 547°F</p>	<p><u>IF</u> temperature less than 547°F and decreasing, <u>THEN</u> perform the following:</p> <p>a. Stop dumping steam.</p> <p>b. <u>IF</u> cooldown continues, <u>THEN</u> control total feed flow greater than 200 gpm until narrow range level greater than 5% [25% adverse CNMT] in at least one S/G.</p> <p>c. <u>WHEN</u> S/G level greater than 5% [25% adverse CNMT] in one S/G, <u>THEN</u> limit feed flow to that required to maintain level in at least one S/G.</p> <p>d. <u>IF</u> cooldown continues, <u>THEN</u> close both MSIVs.</p> <p><u>IF</u> temperature greater than 547°F and increasing, <u>THEN</u> perform the following:</p> <p>o Dump steam to condenser.</p> <p>-OR-</p> <p>o Control RCS temperature manually using S/G ARVs.</p>





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STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
22	Check PRZR PORVs And Spray Valves:	
a.	PORVs - CLOSED	<p>a. <u>IF</u> PRZR pressure less than 2335 psig, <u>THEN</u> manually close PORVs.</p> <p><u>IF</u> any valve can <u>NOT</u> be closed, <u>THEN</u> manually close its block valve.</p> <ul style="list-style-type: none"> <li>• MOV-516 for PCV-430</li> <li>• MOV-515 for PCV-431C</li> </ul> <p><u>IF</u> block valve can <u>NOT</u> be closed, <u>THEN</u> go to E-1, LOSS OF REACTOR OR SECONDARY COOLANT, Step 1.</p>
b.	Auxiliary spray valve (AOV-296) - CLOSED	<p>b. Manually close auxiliary spray valve. <u>IF</u> valve can <u>NOT</u> be closed, <u>THEN</u> perform the following:</p> <ol style="list-style-type: none"> <li>1) Decrease charging pump flow to minimum.</li> <li>2) Ensure charging valve to loop B cold leg open (AOV-294).</li> </ol>
c.	Check PRZR pressure - LESS THAN 2260 PSIG	<p>c. Continue with Step 23. <u>WHEN</u> pressure less than 2260 psig, <u>THEN</u> do Steps 22d.</p>
d.	Verify normal PRZR spray valve controllers - DEMAND AT 0%	<p>d. Place controllers in MANUAL at 0% demand. <u>IF</u> valves can <u>NOT</u> be closed, <u>THEN</u> stop associated RCP(s).</p>



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STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
23	Check If RCPs Should Be Stopped:  a. RCP status - ANY RCP RUNNING b. SI pumps - AT LEAST TWO RUNNING c. RCS pressure minus maximum S/G pressure - LESS THAN 175 psig [400 psig adverse CNMT] d. Stop both RCPs	a. Go to Step 24. b. Go to Step 24. c. Go to Step 24.
24	Check If S/G Secondary Side Is Intact:  o Pressure in both S/Gs - STABLE OR INCREASING o Pressure in both S/Gs - GREATER THAN 100 PSIG	<u>IF</u> any S/G pressure decreasing in an uncontrolled manner <u>OR</u> completely depressurized, <u>THEN</u> go to E-2, FAULTED STEAM GENERATOR ISOLATION, Step 1.
25	Check If S/G Tubes Are Intact:  o Air ejector radiation monitors (R-15 or R-15A) - NORMAL o S/G blowdown radiation monitor (R-19) - NORMAL o Steamline radiation monitors (R-31 and R-32) - NORMAL	Go to E-3, STEAM GENERATOR TUBE RUPTURE, Step 1.



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STEP

ACTION/EXPECTED RESPONSE

RESPONSE NOT OBTAINED

26 Check If RCS Is Intact:

Go to E-1, LOSS OF REACTOR OR  
SECONDARY COOLANT, Step 1.

a. CNMT area radiation monitors -  
NORMAL

- R-2
- R-7
- R-29
- R-30

b. CNMT pressure - LESS THAN .5 PSIG

c. CNMT sump B level - LESS THAN  
78 IN.

d. CNMT sump A level

- o Level - STABLE
- o Annunciator C-19, CONTAINMENT  
SUMP A HI LEVEL - EXTINGUISHED

NOTE: The following is an attempt to determine whether a PRZR spray valve  
has failed.

27 Check RCS Pressure - STABLE  
OR INCREASING

IF RCS pressure decreasing with  
PRZR level stable or increasing,  
THEN stop both RCPs.



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STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
28	Check If SI Should Be Terminated:	
	a. RCS pressure:	a. Do <u>NOT</u> stop SI pumps. Go to Step 30.
	o Pressure - GREATER THAN 1625 PSIG	
	o Pressure - STABLE OR INCREASING	
	b. RCS subcooling based on core exit T/Cs - GREATER THAN 0°F USING FIGURE MIN SUBCOOLING	b. Do <u>NOT</u> stop SI pumps. Go to Step 30.
	c. Secondary heat sink:	c. <u>IF</u> neither condition met, <u>THEN</u> do <u>NOT</u> stop SI pumps. Go to Step 30.
	o Total feed flow to S/Gs - GREATER THAN 200 GPM	
	-OR-	
	o Narrow range level in at least one S/G - GREATER THAN 5%	
	d. PRZR level - GREATER THAN 5%	d. Do <u>NOT</u> stop SI pumps. Perform the following:
		1) <u>IF</u> normal PRZR spray available, <u>THEN</u> try to stabilize RCS pressure with PRZR spray.
		2) Go to Step 30.
29	Go To ES-1.1, SI TERMINATION, Step 1	





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STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
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NOTE: o Conditions should be evaluated for Site Contingency Reporting (Refer to SC-100, GINNA STATION EVENT EVALUATION AND CLASSIFICATION).

o The Critical Safety Function Red Path Summary is available in APPENDIX 1.

30 Initiate Monitoring of Critical Safety Function Status Trees

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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).

\*\*\*\*\*

31 Check S/G Levels:

a. Narrow range level - GREATER THAN 5%

a. Maintain total feed flow greater than 200 gpm until narrow range level greater than 5% in at least one S/G.

b. Control feed flow to maintain narrow range level between 17% and 50%

b. IF narrow range level in any S/G continues to increase in an uncontrolled manner, THEN go to E-3, STEAM GENERATOR TUBE RUPTURE, Step 1.



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STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
32	<p>Check Secondary Radiation Levels - NORMAL</p> <ul style="list-style-type: none"> <li>o Steamline radiation monitor (R-31 and R-32)</li> <li>o Dispatch A0 to locally check steamline radiation</li> <li>o Request HP sample S/Gs for activity</li> </ul>	<p>Go to E-3, STEAM GENERATOR TUBE RUPTURE, Step 1.</p>
<p>*****  <u>CAUTION</u>  IF OFFERED POWER IS LOST AFTER SI RESET, SELECTED SW PUMPS AND ONE CCW PUMP WILL AUTO START ON EMERGENCY D/G. MANUAL ACTION WILL BE REQUIRED TO RESTART SAFEGUARDS EQUIPMENT.  *****</p>		
33	Reset SI	
34	Reset CI:	
	<p>a. Operate CI reset key switch</p> <p>b. Verify annunciator A-26, CNMT ISOLATION - EXTINGUISHED</p>	<p>b. Perform the following:</p> <p>1) Reset SI.</p> <p>2) Operate CI reset key switch.</p>



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STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
35	Verify Adequate SW Flow:	
a.	At least three SW pumps - RUNNING	a. Manually start SW pumps as power supply permits (258 kw each).
		<u>IF</u> less than three pumps running, <u>THEN</u> ensure SW isolation.
b.	Dispatch A0 to establish normal shutdown alignment (Refer to Attachment SD-1)	



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STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
36	Establish IA to CNMT:	
	<p>a. Verify non-safeguards busses energized from offsite power</p> <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> <p>b. Verify SW isolation valves to turbine building - OPEN</p> <ul style="list-style-type: none"> <li>• MOV-4613 and MOV-4670</li> <li>• MOV-4614 and MOV-4664</li> </ul> <p>c. Verify at least two air compressors - RUNNING</p> <p>d. Check IA supply:</p> <ul style="list-style-type: none"> <li>o Pressure - GREATER THAN 60 PSIG</li> <li>o Pressure - STABLE OR INCREASING</li> </ul> <p>e. Reset both trains of XY relays for IA to CNMT AOV-5392</p> <p>f. Verify IA to CNMT AOV-5392 - OPEN</p>	<p>a. Perform the following:</p> <ol 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) Verify adequate emergency D/G capacity to run air compressors (75 kw each).   <u>IF NOT, THEN</u> evaluate if CNMT RECIRC fans should be stopped (Refer to Attachment CNMT RECIRC FANS).</li> <li>3) <u>WHEN</u> bus 15 restored, <u>THEN</u> reset control room lighting.</li> </ol> <p>b. Manually align valves.</p> <p>c. Manually start air compressors as power supply permits (75 kw each). <u>IF</u> air compressors can <u>NOT</u> be started, <u>THEN</u> dispatch AO to locally reset compressors as necessary.</p> <p>d. Perform the following:</p> <ol 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 37. <u>WHEN</u> IA restored, <u>THEN</u> do Steps 36e and f.</li> </ol>





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STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
37	<p>Check Auxiliary Building Radiation - NORMAL</p> <ul style="list-style-type: none"> <li>• Plant vent iodine (R-10B)</li> <li>• Plant vent particulate (R-13)</li> <li>• Plant vent gas (R-14)</li> <li>• CCW liquid monitor (R-17)</li> <li>• LTD line monitor (R-9)</li> <li>• CHG pump room (R-4)</li> </ul>	<p>Evaluate cause of abnormal conditions.</p> <p><u>IF</u> the cause is a loss of RCS inventory outside CNMT, <u>THEN</u> go to ECA-1.2, LOCA OUTSIDE CONTAINMENT, Step 1.</p>
38	<p>Check PRT Conditions</p> <ul style="list-style-type: none"> <li>o PRT level (LI-442) - LESS THAN 6"</li> <li>o PRT temperature (TI-439) - LESS THAN 120°F</li> <li>o PRT pressure (PI-440A) - LESS THAN 3 PSIG</li> </ul>	<p>Evaluate the following flowpaths for cause of abnormal conditions:</p> <ul style="list-style-type: none"> <li>• RCP seal return relief</li> <li>• PRZR PORVs</li> <li>• PRZR safeties</li> <li>• Letdown line relief</li> </ul> <p><u>IF</u> excess letdown previously in service, <u>THEN</u> close AOV-310, excess letdown isolation valve from loop A cold.</p>







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STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
41	Check If Charging Flow Has Been Established:	
	a. Charging pumps - ANY RUNNING	a. Perform the following: <ul style="list-style-type: none"> <li>1) <u>IF</u> CCW flow is lost to any RCP thermal barrier <u>OR</u> any RCP #1 seal outlet temperature offscale high, <u>THEN</u> dispatch A0 with key to RWST gate to close seal injection needle valve(s) to affected RCP: <ul style="list-style-type: none"> <li>• V-300A for RCP A</li> <li>• V-300B for RCP B</li> </ul> </li> <li>2) Ensure HCV-142 open, demand at 0%.</li> </ul>
	b. Charging pump suction aligned to RWST: <ul style="list-style-type: none"> <li>o LCV-112B - OPEN</li> <li>o LCV-112C - CLOSED</li> </ul>	b. Manually align valves as necessary. <p><u>IF</u> LCV-112B can <u>NOT</u> be opened, <u>THEN</u> perform the following:</p> <ul style="list-style-type: none"> <li>1) Verify charging pump A <u>NOT</u> running and place in PULL STOP.</li> <li>2) Dispatch A0 to locally open manual charging pump suction from RWST (V-358 located in charging pump room).</li> <li>3) <u>WHEN</u> V-358 open, <u>THEN</u> direct A0 to close V-268 to isolate charging pumps B and C from VCT (V-268 located in charging pump room).</li> </ul>
	c. Start charging pumps as necessary and adjust charging flow to restore PRZR level	



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STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
42	Maintain PRZR Pressure Between 1800 PSIG And 2235 PSIG  o Reset PRZR heaters  o Use normal PRZR spray	





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STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
43	<p>Check If Emergency D/Gs Should Be Stopped:</p> <p>a. Verify AC emergency busses energized by offsite power:</p> <ul style="list-style-type: none"> <li>o Emergency D/G output breakers - OPEN</li> <li>o AC emergency bus voltage - GREATER THAN 420 VOLTS</li> <li>o AC emergency bus normal feed breakers - CLOSED</li> </ul> <p>b. Stop any unloaded emergency D/G and place in standby (Refer to Attachment D/G STOP)</p>	<p>a. Perform the following:</p> <ol style="list-style-type: none"> <li>1) Verify non-safeguards bus tie breakers closed: <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) Place the following pumps in PULL STOP: <ul style="list-style-type: none"> <li>• EH pumps</li> <li>• Turning gear oil pump</li> <li>• HP seal oil backup pump</li> </ul> </li> <li>3) Ensure condenser steam dump mode control in MANUAL.</li> <li>4) Restore power to MCCs: <ul style="list-style-type: none"> <li>• A from Bus 13</li> <li>• B from Bus 15</li> <li>• E from Bus 15</li> <li>• F from Bus 15</li> </ul> </li> <li>5) Refer to Attachment SI/UV for other equipment lost with loss of offsite power.</li> <li>6) Try to restore offsite power (Refer to ER-ELEC.1, RESTORATION OF OFFSITE POWER).</li> </ol>



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STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
44	Return to Step 21	
	-END-	



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E-0 APPENDIX LIST

<u>TITLE</u>	<u>PAGES</u>
1) RED PATH SUMMARY	1
2) FIGURE MIN SUBCOOLING	1
3) ATTACHMENT CI/CVI	2
4) ATTACHMENT SD-1	1
5) ATTACHMENT CNMT RECIRC FANS	1
6) ATTACHMENT D/G STOP	1
7) ATTACHMENT SI/UV	1
8) FOLDOUT	1





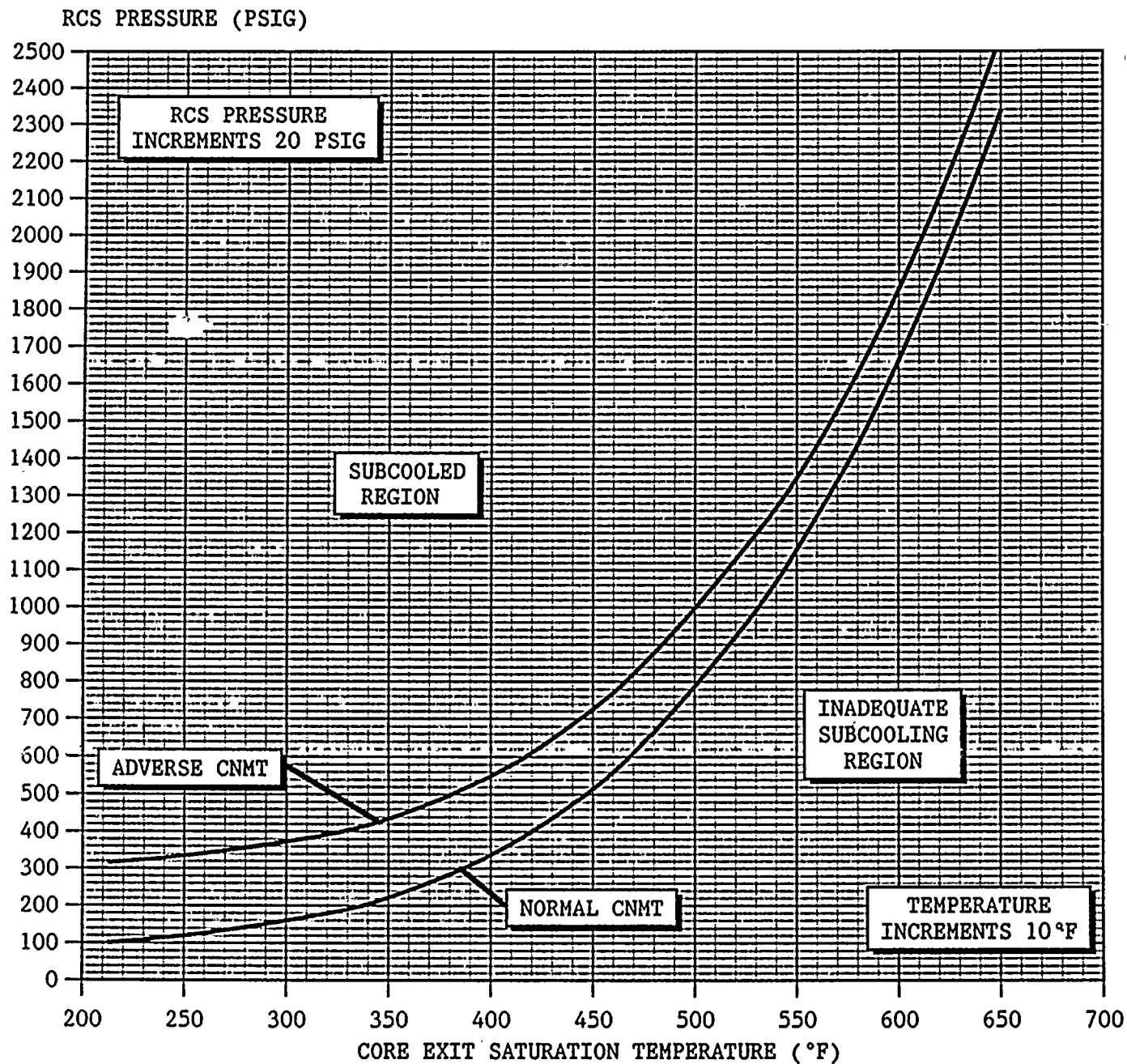




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FIGURE MIN SUBCOOLING

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





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FOLDOUT PAGE

NOTE: The Critical Safety Function Red Path Summary is available in APPENDIX 1.

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 [400 psig adverse CNMT]

2. SI ACTUATION CRITERIA

IF ANY 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 FIGURE MIN SUBCOOLING

-OR-

- o PRZR level - LESS THAN 5% [30% adverse CNMT]  
AND RCS subcooling based on core exit T/Cs - LESS THAN 20°F USING FIGURE MIN SUBCOOLING

-OR-

- o Any automatic SI setpoint reached

3. SI PUMP AUTO SWITCHOVER CRITERION

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

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).

