

EOP: FR-H.1	TITLE: RESPONSE TO LOSS OF SECONDARY HEAT SINK	REV: 9 PAGE 1 of 25
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ROCHESTER GAS AND ELECTRIC CORPORATION

GINNA STATION

CONTROLLED COPY NUMBER 23

TECHNICAL REVIEW

PORC REVIEW DATE 8-29-90

Thomas A. Marlow  
PLANT SUPERINTENDENT

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EFFECTIVE DATE

CATEGORY 1.0

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

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GINNA STATION	
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A. PURPOSE - This procedure provides actions for responding to a loss of secondary heat sink in both S/Gs.

B. ENTRY CONDITIONS/SYMPTOMS

1. ENTRY CONDITIONS - This procedure is entered from:

- a. E-0, REACTOR TRIP OR SAFETY INJECTION, when minimum AFW flow is not verified.
- b. F-0.3, HEAT SINK Critical Safety Function Status Tree on a RED condition.



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STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
<p>*****  <u>CAUTION</u>            o IF TOTAL FEED FLOW IS LESS THAN 200 GPM DUE TO OPERATOR ACTION, THIS PROCEDURE SHOULD NOT BE PERFORMED.            o FEED FLOW SHOULD NOT BE REESTABLISHED TO A FAULTED S/G IF A NON-FAULTED S/G IS AVAILABLE.            *****</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	<p>Check If Secondary Heat Sink Is Required:</p> <p>a. RCS pressure - GREATER THAN ANY NON-FAULTED S/G PRESSURE</p> <p>b. Check the following:</p> <ul style="list-style-type: none"> <li>o RCS cold leg temperature - GREATER THAN 350°F</li> <li>o RCS pressure - GREATER THAN 400 psig [300 psig adverse CNMT]</li> </ul>	<p>a. IF RWST level greater than 28%, <u>THEN</u> go to E-1, LOSS OF REACTOR OR SECONDARY COOLANT, Step 1.             IF RWST level less than 28%, <u>THEN</u> go to ES-1.3, TRANSFER TO COLD LEG RECIRCULATION, Step 1.</p> <p>b. Try to place RHR System in service while continuing with this procedure:</p> <ol style="list-style-type: none"> <li>1) Reset SI if necessary.</li> <li>2) Place letdown pressure controller in MANUAL CLOSED.</li> <li>3) Check the following valves - OPEN:               <ul style="list-style-type: none"> <li>• AOV-371, letdown isolation valve</li> <li>• AOV-427, loop B cold leg to REGEN Hx</li> <li>• At least one letdown orifice valve (AOV-200A, AOV-200B, or AOV-202)</li> </ul> </li> <li>4) IF pressure on PI-135 less than 400 psig, <u>THEN</u> establish RHR normal cooling (Refer to Attachment RHR COOL).</li> </ol> <p>IF adequate cooling with RHR system established, <u>THEN</u> return to procedure and step in effect.</p>



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STEP

ACTION/EXPECTED RESPONSE

RESPONSE NOT OBTAINED

2 Monitor Secondary Heat Sink:

Perform the following:

- o Verify both S/G wide range levels - GREATER THAN 35 inches [110 inches adverse CNMT]
- o Verify PRZR pressure - LESS THAN 2335 PSIG

- a. Trip both RCPs.
- b. Go to Step 11 to initiate bleed and feed cooling.





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STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
3	<p>Try to Establish AFW Flow To At Least One S/G:</p> <p>a. Check MCB indications for cause of AFW failure:</p> <ol style="list-style-type: none"> <li>1) Verify CST level - GREATER THAN 5 FEET</li> <li>2) Verify busses supplying power to MDAFW pumps - ENERGIZED <ul style="list-style-type: none"> <li>• Bus 14</li> <li>• Bus 16</li> </ul> </li> <li>3) Check AFW valve alignment <ul style="list-style-type: none"> <li>o AFW pump discharge valves - OPEN <ul style="list-style-type: none"> <li>• MOV-4007</li> <li>• MOV-4008</li> <li>• MOV-3996</li> </ul> </li> <li>o TDAFW pump flow control valves - OPEN <ul style="list-style-type: none"> <li>• AOV-4297</li> <li>• AOV-4298</li> </ul> </li> </ul> </li> </ol> <p>b. Check AFW pumps - ALL RUNNING</p> <p>c. Check total flow to S/Gs - GREATER THAN 200 GPM</p> <p>d. Return to procedure and step in effect</p>	<ol style="list-style-type: none"> <li>1) Refer to ER-AFW.1, ALTERNATE WATER SUPPLY TO AFW PUMPS.</li> <li>2) Continue attempts to restore power to MDAFW pumps.</li> <li>3) Dispatch A0 to locally align valves as necessary.</li> </ol> <p>b. Perform the following:</p> <ol style="list-style-type: none"> <li>1) Manually start MDAFW pumps.</li> <li>2) Check TDAFW pump steam supply valves OPEN. <ul style="list-style-type: none"> <li>• MOV-3504A</li> <li>• MOV-3505A</li> </ul> </li> <li>3) If necessary dispatch A0 to locally reset TDAFW pump governor valve.</li> </ol> <p>c. Continue attempts to restore AFW flow and go to Step 4.</p>



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STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
4	Stop Both RCPs	



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STEP

ACTION/EXPECTED RESPONSE

RESPONSE NOT OBTAINED

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CAUTION

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.

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5 Try To Establish MFW Flow To  
At Least One S/G:

a. Check condensate system:

- o Condensate pump - ANY RUNNING
- o MFW pump suction pressure - GREATER THAN 185 PSIG

a. IF offsite power available, THEN try to place condensate system in service.

IF NOT, THEN go to Step 6.

b. Reset SI if necessary

c. Reset feedwater isolation

d. Establish MFW flow:

- 1) Check MFW pump discharge valves - CLOSED
- 2) Verify MFW flow control bypass valve - OPERABLE
- 3) Dispatch AO to restore MFW pump SW cooling
- 4) Verify S/G blowdown key switches in NORMAL
- 5) Ensure one MFW pump recirc valve - OPEN
- 6) Start selected MFW pump
- 7) Open MFW pump discharge valve
- 8) Open MFW flow control bypass valves as necessary to restore S/G level

d. IF MFW flow can NOT be established, THEN go to Step 6.

e. Go to Step 9



STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
6	Establish SAFW Flow:	
a.	Perform the following:	a. IF greater than 200 gpm, total SAFW flow can <u>NOT</u> be established, <u>THEN</u> go to Step 7.
	1) Align SAFW system for operation (Refer to Attachment SAFW)	
	2) Start both SAFW pumps	
	3) Verify SAFW total flow - GREATER THAN 200 GPM	
b.	Go to Step 9	
***** CAUTION IF S/G WIDE RANGE LEVEL DECREASES TO LESS THAN 35 INCHES [110 INCHES ADVERSE CNMT] OR IF PRZR PRESSURE INCREASES TO GREATER THAN 2335 PSIG, THEN STEPS 11 through 13 SHOULD BE IMMEDIATELY INITIATED FOR BLEED AND FEED. *****		
7	Establish Condenser Steam Dump Pressure Control:	
a.	Verify condenser available:	a. Place S/G ARV controllers in AUTO at desired pressure and go to Step 8.
	o Any MSIV - OPEN	
	o Annunciator G-15, STEAM DUMP - LIT	
b.	Adjust condenser steam dump controller HC-484 to desired pressure and verify in AUTO	
c.	Place steam dump mode selector switch to MANUAL	





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STEP

ACTION/EXPECTED RESPONSE

RESPONSE NOT OBTAINED

\*\*\*\*\*  
CAUTION

FOLLOWING BLOCK OF AUTOMATIC SI ACTUATION, MANUAL SI ACTUATION MAY BE  
 REQUIRED IF CONDITIONS DEGRADE.

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NOTE: If auxiliary spray is in use, spray flow may be increased by closing  
 normal charging valve AOV-294 and normal PRZR spray valves.

8 Try To Establish Feed Flow  
 From Condensate System:

a. Check condensate pumps - ANY  
 RUNNING

a. IF offsite power available, THEN  
 manually start at least one  
 condensate pump. IF a  
 condensate pump can NOT be  
 started, THEN go to Step 10.

b. Establish condensate flowpath  
 (Refer to Attachment COND TO S/G)

b. Go to Step 10.

c. Depressurize RCS to less than  
 1950 psig:

1) Deenergize PRZR heaters.

2) Check letdown - IN SERVICE

2) Use one PRZR PORV. IF IA NOT  
 available, THEN refer to  
 Attachment N2 PORVS.

IF PORV NOT available, THEN  
 use auxiliary spray valve,  
 AOV-296 and go to Step 8d.

3) Depressurize using auxiliary  
 spray valve (AOV-296)

d. WHEN RCS pressure less than  
 1950 psig, THEN perform the  
 following:

1) Block SI

2) Dump steam to condenser at  
 maximum rate to depressurize  
 at least one S/G to less than  
 380 psig

2) Manually or locally dump  
 steam using intact S/G ARV.

e. Verify condensate flow to S/Gs

e. Go to Step 10.



STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
9	Check S/G Levels:	
	a. Narrow range level in at least one S/G - GREATER THAN 5% [25% adverse CNMT]	a. <u>IF</u> feed flow verified to at least one S/G, <u>THEN</u> maintain flow to restore narrow range level greater than 5% [25% adverse CNMT]. <u>IF NOT</u> verified, <u>THEN</u> go to Step 10.
	b. Return to procedure and step in effect	
10	Verify Secondary Heat Sink:	
	a. Check the following:	a. Perform the following:
	o Both S/G wide range levels - GREATER THAN 35 inches [110 inches adverse CNMT]	1) Trip both RCPs.
	o PRZR pressure - LESS THAN 2335 PSIG	2) Go to Step 11 to initiate bleed and feed cooling.
	b. Return to Step 1	
***** <u>CAUTION</u> STEPS 11 THROUGH 13 MUST BE PERFORMED QUICKLY IN ORDER TO ESTABLISH RCS HEAT REMOVAL BY RCS BLEED AND FEED. *****		
11	Actuate SI and CI	



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STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
<p>*****</p> <p style="text-align: center;"><u>CAUTION</u></p> <p>WHEN BAST LEVEL DECREASES TO 10%, THEN SI PUMP AUTOMATIC SWITCHOVER TO RWST SHOULD BE ENSURED.</p> <p>*****</p>		
12	Verify RCS Feed Path:	Manually start pumps and align valves as necessary to establish RCS feed path.
	a. Check SI pumps - AT LEAST ONE RUNNING	
	b. Check valve alignment for operating SI pumps - PROPER EMERGENCY ALIGNMENT	<u>IF</u> a feed path can <u>NOT</u> be established, <u>THEN</u> continue attempts to establish feed flow. Return to Step 3.
13	Establish RCS Bleed Path:	
	a. Open both PRZR PORV block valves	a. Ensure power to MCCs supplying block valves.
		<ul style="list-style-type: none"> <li>• MCC C for MOV-515</li> <li>• MCC D for MOV-516</li> </ul>
		<u>IF</u> any block valve can <u>NOT</u> be opened, <u>THEN</u> dispatch AO to locally check breaker:
		<ul style="list-style-type: none"> <li>• MOV-515, MCC C position 6C</li> <li>• MOV-516, MCC D position 6C</li> </ul>
	b. Place both PRZR PORV switches to OPEN	
	c. Align RCS overpressurization nitrogen system to open both PRZR PORVs (Refer to Attachment N2 PORVS)	c. <u>IF</u> BOTH PRZR PORVs can <u>NOT</u> be opened, <u>THEN</u> perform the following:
		1) Ensure both PORV switches in OPEN.
		2) Go to Step 14.



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STEP

ACTION/EXPECTED RESPONSE

RESPONSE NOT OBTAINED

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CAUTION

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.

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14 Check If SI Can Be Reset:

a. Check the following:

- o PRZR pressure - LESS THAN 1750 PSIG

-OR-

- o Either steamline pressure - LESS THAN 514 PSIG

b. Reset SI

- a. IF PRZR pressure stable or increasing, THEN reset SI and go to Step 15.

IF PRZR pressure decreasing, THEN perform the following:

- 1) WHEN PRZR pressure less than 1750 psig, THEN reset SI.

- 2) Go to Step 15.

15 Reset CI:

a. Operate CI reset key switch

- b. Verify annunciator A-26, CONTAINMENT 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

16 Verify Adequate SW Flow To  
CCW Hx:

a. Verify at least two SW pumps -  
RUNNING

b. Verify AUX BLDG SW isolation  
valves - AT LEAST ONE SET OPEN

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

a. Manually start pumps as power  
supply permits (258 kw each).  
IF less than two SW pumps can be  
operated, THEN go to Step 19.

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



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STEP

ACTION/EXPECTED RESPONSE

RESPONSE NOT OBTAINED

## 17 Establish IA to CNMT:

- a. Verify non-safeguards busses energized from offsite power

o Bus 13 normal feed - CLOSED

-OR-

o Bus 15 normal feed - CLOSED

- b. Verify turbine building SW isolation valves - OPEN

- MOV-4613 and MOV-4670
- MOV-4614 and MOV-4664

- c. Verify at least two air compressors - RUNNING

- d. Check IA supply:

o Pressure - GREATER THAN 60 PSIG

o Pressure - STABLE OR INCREASING

- e. Reset both trains of XY relays for IA to CNMT AOV-5392

- f. Verify IA to CNMT AOV-5392 - OPEN

- a. Perform the following:

- 1) Close non-safeguards bus tie breakers:

- Bus 13 to Bus 14 tie
- Bus 15 to Bus 16 tie

- 2) Verify adequate emergency D/G capacity to run air compressors (75 kw each).

IF NOT, THEN evaluate if CNMT RECIRC fans should be stopped (Refer to Attachment CNMT RECIRC FANS).

- 3) WHEN bus 15 restored, THEN reset control room lighting.

- b. Manually align valves.

- c. Manually start air compressors as power supply permits (75 kw each). IF air compressors can NOT be started, THEN dispatch AO to locally reset compressors as necessary.

- d. Perform the following:

- 1) Continue attempts to restore IA (Refer to AP-IA.1, LOSS OF INSTRUMENT AIR).

- 2) Continue with Step 19. WHEN IA restored, THEN do Steps 17e, f and 18.



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ACTION/EXPECTED RESPONSE

RESPONSE NOT OBTAINED

18 Restore RCS  
Overpressurization Nitrogen  
System To Standby:

- a. Verify instrument bus D -  
ENERGIZED

- a. Perform the following:

- 1) Ensure steam dump mode  
control in MANUAL.
- 2) Restore power to instrument  
bus D from MCC B or MCC A  
(maintenance supply).

- b. Place relief valve PC-431 and  
PC-430 arming switches to BLOCK

- SOV-8619A
- SOV-8619B

- c. Close SURGE TK VLVs

- SOV-8616A
- SOV-8616B

NOTE: PRZR PORVs may close temporarily until adequate IA pressure is  
restored in CNMT.

19 Verify Adequate RCS Bleed  
Path - BOTH PRZR PORVS OPEN

IF PRZR PORVs can NOT be opened,  
THEN perform the following:

- a. Open Rx vessel head vents.

- SOV-590
- SOV-591
- SOV-592
- SOV-593

- b. Depressurize at least one intact  
S/G to atmospheric pressure  
using S/G ARV.

- c. Align any available low pressure  
water source to the  
depressurized S/Gs.



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<p>*****  <u>CAUTION</u>            THE RCS BLEED PATH MUST BE MAINTAINED EVEN IF RCS PRESSURE REMAINS GREATER THAN SI PUMP SHUTOFF HEAD.            *****</p>		
20	Maintain RCS Heat Removal:	
	<ul style="list-style-type: none"> <li>o Maintain SI flow</li> <li>o Maintain both PRZR PORVs and block valves - OPEN</li> </ul>	
21	Check Normal Power Available To Charging Pumps:	Verify adequate emergency D/G capacity to run charging pumps (75 kw each).
	<ul style="list-style-type: none"> <li>o Bus 14 normal feed breaker - CLOSED</li> <li>o Bus 16 normal feed breaker - CLOSED</li> </ul>	<u>IF NOT, THEN</u> evaluate if CNMT RECIRC fans can be stopped (Refer to Attachment CNMT RECIRC FANS).





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ACTION/EXPECTED RESPONSE

RESPONSE NOT OBTAINED

22 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 A0 with key to RWST gate to locally 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. Align charging pump suction to RWST:

b. IF LCV-112B can NOT be opened, THEN perform the following:

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

- 1) Verify charging pump A NOT running and place in PULL STOP.
- 2) Dispatch A0 to locally open manual charging pump suction from RWST (V-358 located in charging pump room).
- 3) WHEN V-358 open, THEN direct A0 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 establish maximum charging flow



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STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
<p>*****</p> <p style="text-align: center;"><u>CAUTION</u></p> <p>o IF RWST LEVEL DECREASES TO LESS THAN 28%, THEN THE SI SYSTEM SHOULD BE ALIGNED FOR COLD LEG RECIRCULATION USING STEPS 1 THROUGH 13 OF ES-1.3, TRANSFER TO COLD LEG RECIRCULATION.</p> <p>o IF CONTAINMENT PRESSURE INCREASES TO GREATER THAN 28 PSIG, CONTAINMENT SPRAY SHOULD BE VERIFIED.</p> <p>*****</p>		
23	Continue Attempts To Establish Secondary Heat Sink In At Least One S/G:	
	<ul style="list-style-type: none"> <li>• AFW flow</li> <li>• Main FW flow</li> <li>• Standby AFW flow</li> <li>• Condensate flow</li> </ul>	
24	Check For Adequate Secondary Heat Sink:	
	<p>a. Check narrow range level in at least one S/G - GREATER THAN 5% [25% adverse CNMT]</p> <p>b. Adjust S/G ARV controllers to existing S/G pressure</p>	<p>a. Return to Step 23.</p>



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ACTION/EXPECTED RESPONSE

RESPONSE NOT OBTAINED

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CAUTION

IF THE RCS IS WATER SOLID, THEN ANY INCREASE IN RCS TEMPERATURE MAY RESULT IN A SIGNIFICANT RCS PRESSURE INCREASE. RCS HEATUP SHOULD BE PREVENTED.

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## 25 Monitor RCS Temperatures:

Perform the following:

- o Core exit T/Cs - DECREASING
- o RCS hot leg temperatures - DECREASING

- a. Control steam dump and feed flow to establish natural circulation and stabilize RCS temperature.
- b. Return to Step 23.

## 26 Check CCW Pumps - ANY RUNNING

Perform the following:

- a. 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
- b. Manually start one CCW pump (124 kw).



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<p>*****  <u>CAUTION</u>  IF RCS IS SOLID, THEN TERMINATION OF FEED AND BLEED MAY RESULT IN RAPID RCS PRESSURE INCREASE UNLESS RCS INFLOW AND OUTFLOW ARE CAREFULLY CONTROLLED.  *****</p>		
27	<p>Check If One Of Three SI Pumps Should Be Stopped:</p> <p>a. Three SI pumps - RUNNING</p> <p>b. RCS subcooling based on core exit T/Cs - GREATER THAN 35°F [90°F adverse CNMT] USING FIGURE MIN SUBCOOLING</p> <p>c. Check PRZR level, - GREATER THAN 13% [40% adverse CNMT]</p> <p>d. Stop one SI pump</p>	<p>a. Go to Step 28.</p> <p>b. Check the following:</p> <ul style="list-style-type: none"> <li>o RCS pressure greater than 1625 psig [1825 psig adverse CNMT]</li> <li>o RCS subcooling based on core exit T/Cs greater than 0°F using Figure MIN SUBCOOLING</li> </ul> <p><u>IF NOT, THEN</u> go to Step 30.</p> <p>c. Do <u>NOT</u> stop SI pump. Go to Step 30.</p>





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STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
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28 Check If One Of Two SI Pumps Should Be Stopped:

a. Two SI pumps - RUNNING

a. Go to Step 29.

b. Determine required RCS subcooling from table:

Charging Pump Availability	RCS Subcooling Criteria
NONE	120°F [200°F adverse CNMT]
ONE	115°F [190°F adverse CNMT]
TWO	105°F [180°F adverse CNMT]
THREE	100°F [175°F adverse CNMT]

c. RCS subcooling based on core exit T/Cs - GREATER THAN VALUE FROM TABLE ABOVE USING FIGURE MIN SUBCOOLING

c. Check the following:

- o RCS pressure greater than 1625 psig [1825 psig adverse CNMT]
- o RCS subcooling based on core exit T/Cs greater than 0°F using Figure MIN SUBCOOLING

IF NOT, THEN go to Step 30.

d. PRZR level - GREATER THAN 13% [40% adverse CNMT]

d. Do NOT stop SI pump. Go to Step 30.

e. Stop one SI pump



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RESPONSE NOT OBTAINED

29 Check If Last SI Pump Should  
Be Stopped:

- |   |  |
|---|--|
| a. One SI pump - RUNNING  | a. Go to Step 31.                                |
| b. Check the following:   | b. Go to Step 30.                                |
| o RCS subcooling based on core<br>exit T/Cs greater than 0°F<br>using Figure MIN SUBCOOLING |  |
| o RCS pressure greater than<br>1625 psig [1825 psig adverse<br>CNMT]                        |  |
| c. PRZR level - GREATER THAN 13%<br>[40% adverse CNMT]                                      | c. Do <u>NOT</u> stop SI pump. Go to<br>Step 30. |
| d. Stop running SI pump   |  |
| e. Go to Step 31  |  |



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STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
<p><b>NOTE:</b> After closing a PORV, it may be necessary to wait for RCS pressure to increase to permit stopping SI pumps in Steps 27, 28 and 29.</p>		
30	Check PRZR PORV Status:	
a.	PRZR PORVs - ANY OPEN	<p>a. Close any open Rx vessel head vent valves and go to appropriate plant procedure:</p> <ul style="list-style-type: none"> <li>o IF RWST level greater than 28%, THEN go to E-1, LOSS OF REACTOR OR SECONDARY COOLANT, Step 1.</li> </ul> <p style="text-align: center;">-OR-</p> <ul style="list-style-type: none"> <li>o IF RWST level less than 28%, THEN go to ES-1.3, TRANSFER TO COLD LEG RECIRCULATION, Step 1.</li> </ul>
b.	PRZR PORVs - BOTH OPEN	<p>b. IF PRZR level greater than 75% [65% adverse CNMT], THEN perform the following:</p> <ol style="list-style-type: none"> <li>1) Establish excess letdown as follows: <ul style="list-style-type: none"> <li>o Place AOV-312 to NORMAL.</li> <li>o Ensure CCW pump running.</li> <li>o Ensure CCW from excess letdown Hx open (AOV-745).</li> <li>o Open excess letdown isolation valve AOV-310.</li> <li>o Slowly open HCV-123.</li> </ul> </li> <li>2) Stop all but one charging pump and decrease charging flow to as necessary to control RCS pressure.</li> </ol>
This Step continued on the next page.		



STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
------	--------------------------	-----------------------

(Step 30 continued from previous page)

c. Close one open PRZR PORV

c. Close PORV block valve.

IF block valve can NOT be closed, THEN go to appropriate plant procedure:

o IF RWST level greater than 28%, THEN go to E-1, LOSS OF REACTOR OR SECONDARY COOLANT, Step 1.

-OR-

o IF RWST level less than 28%, THEN go to ES-1.3, TRANSFER TO COLD LEG RECIRCULATION, Step 1.

d. Return to Step 27

\*\*\*\*\*

CAUTION

IF RCS IS SOLID, CLOSURE OF PORVS WILL RESULT IN RAPID RCS PRESSURE INCREASE UNLESS RCS INFLOW AND OUTFLOW ARE CAREFULLY CONTROLLED.

\*\*\*\*\*

31 Check PRZR PORVs And Rx Vessel Head Vent Valves - ALL CLOSED

Close all PRZR PORVs and Rx vessel head vent valves. IF any PRZR PORV can NOT be closed, THEN manually close its block valve.





EOP:

FR-H.1

TITLE:

RESPONSE TO LOSS OF SECONDARY HEAT SINK

REV: 9

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STEP

ACTION/EXPECTED RESPONSE

RESPONSE NOT OBTAINED

32 Check If RHR Pumps Should Be Stopped:

a. Check RCS pressure:

- 1) Pressure - GREATER THAN 250 psig [465 psig adverse CNMT]
- 2) Pressure - STABLE OR INCREASING

a. Go to appropriate plant procedure:

- o IF RWST level greater than 28%, THEN go to E-1, LOSS OF REACTOR OR SECONDARY COOLANT, Step 1.

-OR-

- o IF RWST level less than 28%, THEN go to ES-1.3, TRANSFER TO COLD LEG RECIRCULATION, Step 1.

b. Stop RHR pumps and place in AUTO

33 Start Charging Pumps As Necessary And Control Charging Flow To Maintain PRZR Level

34 Go To ES-1.1, SI TERMINATION, Step 8

-END-



EOP: FR-H.1	TITLE: RESPONSE TO LOSS OF SECONDARY HEAT SINK	REV: 9 PAGE 1 of 1
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FR-H.1 APPENDIX LIST

<u>TITLE</u>	<u>PAGES</u>
1) FIGURE MIN SUBCOOLING	1
2) ATTACHMENT CNMT RECIRC FANS	1
3) ATTACHMENT COND TO S/G	1
4) ATTACHMENT N2 PORVS	1
5) ATTACHMENT SD-1	1
6) ATTACHMENT RHR COOL	2
7) ATTACHMENT SAFW	1
8) ATTACHMENT AUX BLDG SW	1



EOP:

FR-H.1

TITLE:

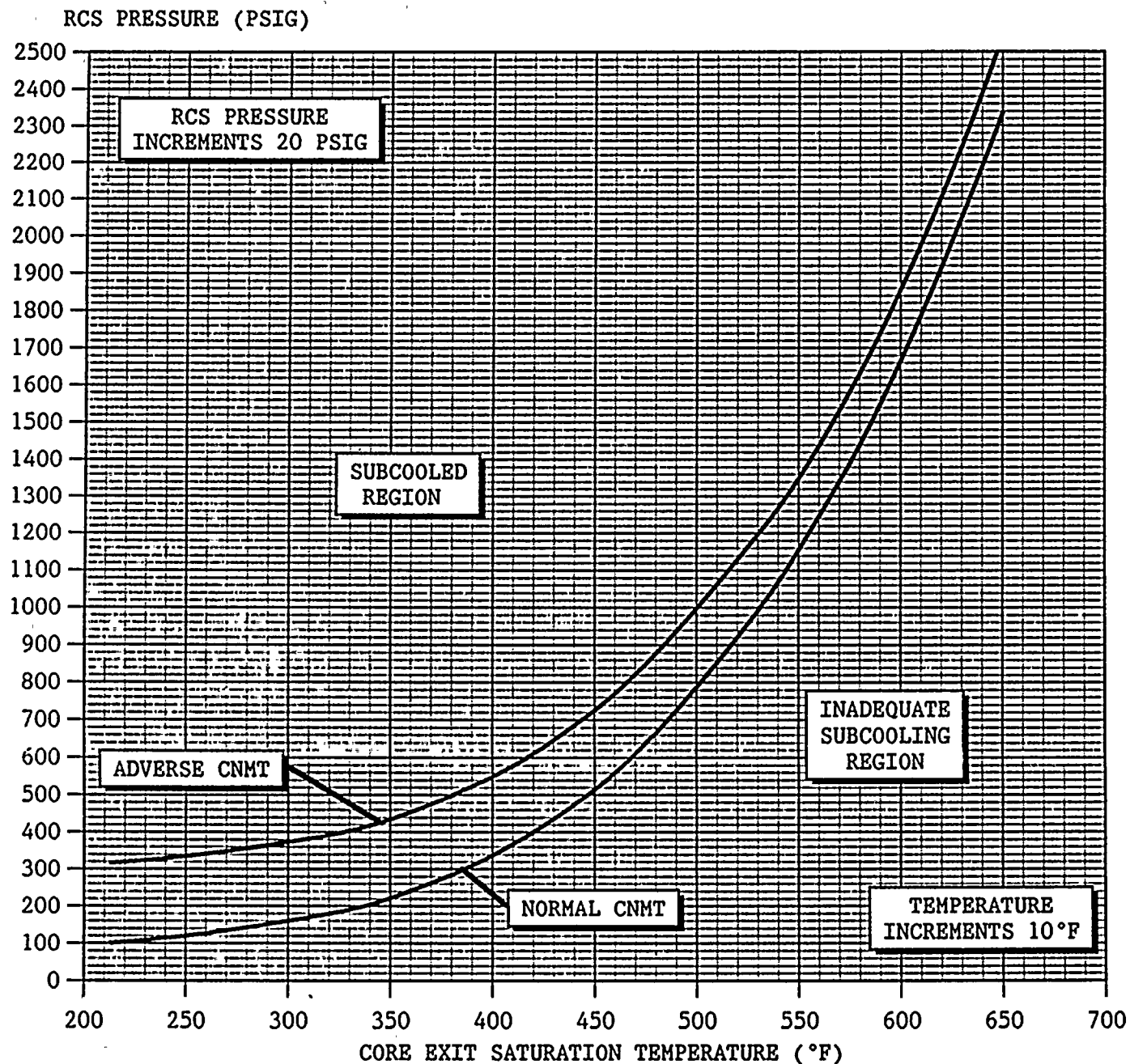
RESPONSE TO LOSS OF SECONDARY HEAT SINK

REV: 9

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FIGURE MIN SUBCOOLING

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





EOP:  ATT	TITLE:  EOP/AP ATTACHMENTS	REV: 2  PAGE 1 of 2
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ATTACHMENT GEN DEGAS

Supt. TR Schulz Date 9/12/90

\*\*\*\*\*

CAUTION: OBSERVE ALL NORMAL PRECAUTIONS FOR HANDLING EXPLOSIVE MIXTURES OF HYDROGEN IN AIR.

\*\*\*\*\*

1. Close all H2 manifold bottle stops.
  - o Valve V-6994A
  - o Valve V-6994B
  - o Valve V-6995
  - o Valve V-6998
2. Close H2 regulator isolation valve, V-6995X (gas bottle house).
3. Isolate hydrogen feed by closing valve V-6994K and V-6999C (TURB BLDG below generator).
4. Connect the CO2 feed to the bottom of the generator by opening valve V-6994G.
5. Open vent from top of generator, valve V-6994J.
6. Open vent isolation valve, V-6995P, to initiate H2 release through vent line.
7. Fully open CO2 manifold header stop valve, V-6999A (Gas Bottle House).

\*\*\*\*\*

CAUTION: DO NOT ALLOW MACHINE PRESSURE TO EXCEED 3 TO 5 PSIG DURING THE TIME CO2 IS BEING ADMITTED.

\*\*\*\*\*

8. WHEN generator pressure is less than 5 psig, as indicated on PI-2805, THEN open all CO2 bottle stops fully to admit CO2 to generator.
  - o Valve V-6993C
  - o Valve V-6999
  - o Valve V-6999B
  - o Valve V-6998A





EOP: ATT	TITLE: EOP/AP ATTACHMENTS	REV: 2 PAGE 2 of 2
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ATTACHMENT GEN DEGAS

9. Adjust vent isolation V-6995P OR isolate CO2 bottles as necessary to maintain 3-5 psig pressure as indicated on PI-2805.
10. Purge a minimum of 20 CO2 cylinders through the generator.  
  
When the purge is complete, the CO2 may be shut off by closing the valves in the CO2 supply first, then closing valves V-6999A and V-6994G.
11. Open the breaker for the DC seal oil backup pump (DC panel S-9 TURB BLDG basement west end breaker position 12).
12. WHEN conditions permit, THEN refer to T-31.2, REMOVING HYDROGEN WITH CO2 REMOVING CO2 WITH INSTRUMENT AIR, to complete purging CO2 with air.



EOP: AP-ELEC.1	TITLE: LOSS OF 12A AND/OR 12B TRANSFORMER	REV: 7 PAGE 1 of 19
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ROCHESTER GAS AND ELECTRIC CORPORATION

GINNA STATION

CONTROLLED COPY NUMBER 23

TECHNICAL REVIEW

PORC REVIEW DATE 5/1/91

Joseph A. Widay  
PLANT SUPERINTENDENT

5/3/91  
EFFECTIVE DATE

CATEGORY 1.0

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



EOP: AP-ELEC.1	TITLE: LOSS OF 12A AND/OR 12B TRANSFORMER	REV: 7 PAGE 2 of 19
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A. PURPOSE - This procedure provides actions to respond to a loss of #12A or 12B SS Transformer from HSD or at power conditions.

B. ENTRY CONDITIONS/SYMPTOMS

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

a. AP-TURB.1, when busses 12A and/or 12b are found to be deenergized.

2. SYMPTOMS - The symptoms of loss of #12A or 12B SS Transformer are:

a. Annunciator L-20, 12A XFMR OR 12A BUS TROUBLE, lit, or

b. Annunciator L-28, 12B XFMR OR 12B BUS TROUBLE, lit.

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EOP: AP-ELEC.1	TITLE: LOSS OF 12A AND/OR 12B TRANSFORMER	REV: 7  PAGE 3 of 19
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STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
***** <u>CAUTION</u> *****		
	o IF AT ANY TIME DURING THIS PROCEDURE A REACTOR TRIP OR SI IS REQUIRED, E-0, REACTOR TRIP OR SAFETY INJECTION, SHALL BE PERFORMED.  o IF A TURBINE RUNBACK HAS OCCURRED, THEN AP-TURB.2, AUTOMATIC TURBINE RUNBACK, SHOULD BE PERFORMED.	
	*****	
1	Verify Emergency D/G Associated With Dead Bus - RUNNING  o Bus 12A - D/G A  o Bus 12B - D/G B	IF appropriate emergency D/G(s) <u>NOT</u> running, <u>THEN</u> attempt to start manually. (Refer to ER-D/G.1, RESTORATION OF A FAILED D/G.)
2	Verify Both Trains Of AC Emergency Busses Energized To At Least 420 VOLTS:  o Bus 14 and bus 18  o Bus 16 and bus 17	Try to restore power to all AC emergency busses. IF power can <u>NOT</u> be restored to at least one train, <u>THEN</u> go to ECA-0.0, LOSS OF ALL AC POWER, Step 1.
3	Verify Service Water System Operation:  a. SW pumps - AT LEAST ONE RUNNING IN EACH LOOP  b. SW header pressure - GREATER THAN 40 PSIG IN EACH LOOP	a. Manually start pumps as necessary. (258 kw each)  b. Manually align valves as necessary.





EOP: AP-ELEC.1	TITLE: LOSS OF 12A AND/OR 12B TRANSFORMER	REV: 7  PAGE 4 of 19
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STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
5	Verify Bus 11A And 11B Normal Feed Breakers - CLOSED	<p><u>IF</u> turbine trip has occurred from power less than 50%, <u>THEN</u> go to AP-TURB.1, TURBINE TRIP WITHOUT RX TRIP REQUIRED, Step 1.</p> <p><u>IF</u> turbine stop valves open, <u>THEN</u> trip turbine and go to AP-TURB.1, TURBINE TRIP WITHOUT RX TRIP REQUIRED, Step 1.</p> <p><u>IF</u> turbine <u>NOT</u> previously latched, <u>THEN</u> perform the following:</p> <ul style="list-style-type: none"> <li>a. Ensure reactor power less than 8%.</li> <li>b. Go to Step 16.</li> </ul>
6	Check S/G Level Control <ul style="list-style-type: none"> <li>o S/G level - TRENDING TO PROGRAM</li> <li>o MFW regulating valves - CONTROLLING IN AUTO</li> </ul>	Place MFW regulating valves in MANUAL and control feed flow as required.
<p><u>NOTE:</u> When restarting equipment for recovery, it is preferable to start equipment on busses being supplied from offsite power, if possible.</p>		
7	Establish Normal Charging Flow: <ul style="list-style-type: none"> <li>a. Verify 2 charging pumps - RUNNING</li> <li>b. Adjust charging pump speed and HCV-142 as necessary to restore PRZR level and labyrinth seal D/P</li> </ul>	<ul style="list-style-type: none"> <li>a. Start charging pumps as necessary (75 kw each).</li> </ul>



EOP: AP-ELEC.1	TITLE: LOSS OF 12A AND/OR 12B TRANSFORMER	REV: 7 PAGE 5 of 19
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STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
8	<p>Check CVCS Letdown:</p> <p>a. Normal letdown in service:</p> <ul style="list-style-type: none"> <li>o Letdown flow - APPROXIMATELY 40 GPM</li> <li>o Letdown flow - STABLE</li> <li>o Letdown pressure - APPROXIMATELY 250 PSIG</li> </ul> <p>b. Go to Step 11</p>	<p>a. Perform the following:</p> <ol style="list-style-type: none"> <li>1) Place AOV-427 switch to CLOSE</li> <li>2) Place letdown orifice isolation valves to CLOSE.</li> <li>3) Go to Step 9.</li> </ol>
9	<p>Check PRZR Level - GREATER THAN 13%</p>	<p>Continue with Step 12. <u>WHEN</u> PRZR level greater than 13%, <u>THEN</u> do Steps 10 and 11.</p>



EOP: AP-ELEC.1	TITLE: LOSS OF 12A AND/OR 12B TRANSFORMER	REV: 7 PAGE 6 of 19
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STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
10	<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>Verify the following switches in CLOSE: <ul style="list-style-type: none"> <li>Letdown orifice valve (AOV-200A, AOV-200B, and AOV-202)</li> <li>Loop B cold leg to REGEN Hx AOV-427</li> </ul> </li> <li>Place letdown controllers in MANUAL at 25% open. <ul style="list-style-type: none"> <li>TCV-130</li> <li>PCV-135</li> </ul> </li> <li>Open 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>Establish Excess Letdown:</p> <ol 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>Ensure RCP seal return isolation valve open, MOV-313</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> </ol>



STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
<p>*****</p> <p style="text-align: center;"><u>CAUTION</u></p> <p>o OBSERVE D/G LOADING LIMITS OF 2300 KW FOR 1/2 HOUR, 2250 KW FOR 2 HOURS, AND 1950 KW FOR CONTINUOUS SERVICE.</p> <p>o ANYTIME EMERGENCY D/GS ARE THE ONLY SOURCE OF AC POWER TO THE PLANT, PERSONNEL SHOULD BE ASSIGNED TO MAINTAIN SURVEILLANCE OF THE D/GS.</p> <p>*****</p>		
11	Verify PRZR Heaters Restored:	Perform the following:
	o PRZR proportional heater breaker - CLOSED	a. Verify adequate D/G capacity available for PRZR heaters (400 kw each bank).
	o PRZR backup heater breaker - RESET/IN AUTO	b. Reset and close PRZR proportional heater breaker if necessary.
		c. Reset PRZR backup heater breaker and return to AUTO if necessary.
		<u>IF</u> on natural circulation and at least 100 kw of PRZR heaters can <u>NOT</u> be restored within 6 hours, <u>THEN</u> be on RHR within an additional 6 hours. (Refer to Technical Specification 3.1.1.5)





EOP:

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LOSS OF 12A AND/OR 12B TRANSFORMER

REV: 7

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STEP

ACTION/EXPECTED RESPONSE

RESPONSE NOT OBTAINED

## 12 Establish Stable Plant Conditions:

- a. Reset NIS rod drop rod stop signals (at NIS racks)
- b. Tav<sub>g</sub> - TRENDING TO TREF
- c. PRZR pressure - TRENDING TO 2235 PSIG
- d. PRZR level - TRENDING TO PROGRAM

- b. Insert control rods or, if necessary, decrease turbine load to match Tav<sub>g</sub> to Tref.
- c. Verify proper operation of PRZR heaters and spray or take manual control of PC-431K.
- d. Verify proper operation of charging pump speed controllers or take manual control of speed controllers to control PRZR level.

## 13 Restore Normal Alignment:

- a. Verify at least 2 CNMT recirc fans - RUNNING
- b. Verify IA available:
  - o Annunciator H-8, INSTRUMENT AIR LO PRESS - EXTINGUISHED
  - o Annunciator H-16, INSTRUMENT AIR COMPRESSOR - EXTINGUISHED

- a. Start CNMT recirc fans as necessary (240 kw each).
- b. Dispatch A0 to restore IA compressors as necessary (75 kw each).



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LOSS OF 12A AND/OR 12B TRANSFORMER

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STEP

ACTION/EXPECTED RESPONSE

RESPONSE NOT OBTAINED

NOTE: Power operation may continue if conditions required by Tech Spec section 3.7 are met.

14 Establish Normal Operation:

- a. Verify circuit 76702 or 75112 - AVAILABLE
- b. Restore power to 12A and/or 12B bus (refer to ER-ELEC.1, RESTORATION OF OFFSITE POWER)

15 Establish Normal Plant Conditions:

- a. Verify EH control in OPER PAN and IMP IN
- b. Verify steam dump controller, HC-484, in AUTO at 1005 psig
- c. Verify annunciator G-15, STEAM DUMP ARMED - EXTINGUISHED
- d. Verify charging pump speed control in AUTO
- e. Verify Rod Control Selector Switch in AUTO
- f. Go to Step 30

- a. Continue to monitor plant conditions and go to Step 15.

- a. IF conditions requiring runback have cleared, THEN place EH in OPER PAN and IMP IN.

- c. IF Tav<sub>g</sub> within 6°F of Tref, THEN perform the following:

- 1) Ensure steam dump valves closed.

- 2) Reset steam dump.

- d. Place charging pump speed control in AUTO if desired.
- e. Place Rod Control Selector Switch in AUTO if desired.



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AP-ELEC.1

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LOSS OF 12A AND/OR 12B TRANSFORMER

REV: 7  
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STEP

ACTION/EXPECTED RESPONSE

RESPONSE NOT OBTAINED

- NOTE:
- o Following RCP trip, a decrease in idle S/G level may occur. Also, swell may be anticipated in the operating S/G due to load pickup from the idle loop.
  - o Temperatures in the loop with the stopped RCP will not be indicative of true Tavg and  $\Delta T$  values.
  - o Attempts to restore offsite power should continue. (Refer to ER-ELEC.1, RESTORATION OF OFFSITE POWER.)

16 Check S/G Feed Status:

a. Any main feed pump - RUNNING

a. Perform the following:

- 1) Verify MDAFW pumps running as necessary.
- 2) Verify TDAFW pump running if necessary.
- 3) Ensure Rx power less than 2%.

b. Verify S/G levels - TRENDING TO 39%

b. Control feed flow as necessary to restore S/G level.

17 Check TDAFW Pump Status:

a. TDAFW pump - RUNNING

a. Go to Step 18.

b. Check S/G status

b. Go to Step 18.

- o At least one S/G level - GREATER THAN 17%

-OR-

- o Both MDAFW pumps - OPERABLE

c. Pull stop TDAFW pump steam supply valves

- MOV-3504A
- MOV-3505A



EOP: AP-ELEC.1	TITLE: LOSS OF 12A AND/OR 12B TRANSFORMER	REV: 7  PAGE 11 of 19
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STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
18	Check Any RCP - RUNNING	Verify natural circulation. (Refer to Attachment NC.) <u>IF</u> natural circulation can <u>NOT</u> be verified, <u>THEN</u> increase dumping steam.





STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
*****		
	<u>CAUTION</u>	
	<ul style="list-style-type: none"> <li>o OBSERVE D/G LOADING LIMITS OF 2300 KW FOR 1/2 HOUR, 2250 KW FOR 2 HOURS, AND 1950 KW FOR CONTINUOUS SERVICE.</li> <li>o ANYTIME EMERGENCY D/GS ARE THE ONLY SOURCE OF AC POWER TO THE PLANT, PERSONNEL SHOULD BE ASSIGNED TO MAINTAIN SURVEILLANCE OF THE D/GS.</li> </ul>	
*****		
19	Restore Non-Safeguards Busses As Follows:	
	<ul style="list-style-type: none"> <li>a. Close non-safeguards bus tie breakers for affected bus(es):               <ul style="list-style-type: none"> <li>• Bus 13 to bus 14 tie</li> <li>• Bus 15 to bus 16 tie</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>a. <u>IF</u> breaker can <u>NOT</u> be closed, <u>THEN</u> notify electricians.</li> </ul>
	<ul style="list-style-type: none"> <li>b. Before energizing affected MCC(s) place the associated pumps in PULL STOP:               <ul style="list-style-type: none"> <li>o MCC A                   <ul style="list-style-type: none"> <li>• EH pump A</li> <li>• Turning gear oil pump</li> <li>• HP seal oil backup pump</li> </ul> </li> <li>o MCCB                   <ul style="list-style-type: none"> <li>• EH pump B</li> </ul> </li> </ul> </li> </ul>	
	<ul style="list-style-type: none"> <li>c. Restore power to affected MCC(s):               <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> </ul>	<ul style="list-style-type: none"> <li>c. <u>IF</u> any breaker can <u>NOT</u> be closed, <u>THEN</u> notify electricians.</li> </ul>
	<ul style="list-style-type: none"> <li>d. WHEN bus 15 restored, THEN reset control room lighting if necessary</li> </ul>	



EOP:

AP-ELEC.1

TITLE:

LOSS OF 12A AND/OR 12B TRANSFORMER

REV: 7

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STEP

ACTION/EXPECTED RESPONSE

RESPONSE NOT OBTAINED

## 20 Establish IA:

a. Verify 2 IA compressors - RUNNING

a. Dispatch an AO to reset and start IA compressors as D/G loading permits (75 kw each).

b. Check IA supply

b. IF IA can NOT be established, THEN refer to AP-IA.1, LOSS OF INSTRUMENT AIR.

o Pressure - GREATER THAN 60 PSIG

o Pressure - STABLE OR INCREASING

## 21 Verify Instrument Bus 1D - ENERGIZED

Energize MCC B. IF MCC B. NOT available, THEN perform the following:

a. Verify MCC A energized.

b. Place instrument bus D on maintenance supply.

## 22 Establish Normal Charging Flow:

a. Verify 2 charging pumps - RUNNING

a. Start charging pumps as necessary (75 kw each).

b. Adjust charging pump speed and HCV-142 as necessary to restore PRZR level and labyrinth seal D/P



EOP: AP-ELEC.1	TITLE: LOSS OF 12A AND/OR 12B TRANSFORMER	REV: 7  PAGE 14 of 19
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STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
23	<p>Check CVCS Letdown:</p> <p>a. Normal letdown in service:</p> <ul style="list-style-type: none"> <li>o Letdown flow - APPROXIMATELY 40 GPM</li> <li>o Letdown flow - STABLE</li> <li>o Letdown pressure - APPROXIMATELY 250 PSIG</li> </ul> <p>b. Go to Step 26</p>	<p>a. Perform the following:</p> <ul style="list-style-type: none"> <li>1) Place AOV-427 switch to CLOSE</li> <li>2) Place letdown orifice isolation valves to CLOSE.</li> <li>3) Go to Step 24.</li> </ul>
24	<p>Check PRZR Level - GREATER THAN 13%</p>	<p>Continue with Step 27. <u>WHEN</u> PRZR level greater than 13%, <u>THEN</u> do Steps 25 and 26.</p>



EOP:

AP-ELEC.1

TITLE:

LOSS OF 12A AND/OR 12B TRANSFORMER

REV: 7

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STEP

ACTION/EXPECTED RESPONSE

RESPONSE NOT OBTAINED

## 25 Establish Normal Letdown:

- a. Establish charging line flow to REGEN Hx - GREATER THAN 20 GPM.
- b. Verify the following switches in CLOSE:
  - Letdown orifice valve (AOV-200A, AOV-200B, and AOV-202)
  - Loop B cold leg to REGEN Hx AOV-427
- c. Place letdown controllers in MANUAL at 25% open.
  - TCV-130
  - PCV-135
- d. Open AOV-427.
- e. Open letdown orifice valves as necessary.
- f. Place TCV-130 in AUTO at 105°F.
- g. Place PCV-135 in AUTO at 250 psig.
- h. Adjust charging pump speed and HCV-142 as necessary.

## Establish Excess Letdown:

- a. Place excess letdown divert valve, AOV-312, to NORMAL
- b. Ensure CCW from excess letdown open, AOV-745
- c. Ensure RCP seal return isolation valve open, MOV-313
- d. Open excess letdown isolation valve, AOV-310
- e. Slowly open HCV-123 to maintain excess letdown temperature less than 195°F and pressure less than 100 psig





EOP: AP-ELEC.1	TITLE: LOSS OF 12A AND/OR 12B TRANSFORMER	REV: 7  PAGE 16 of 19
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STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
<p>*****  <u>CAUTION</u>            o OBSERVE D/G LOADING LIMITS OF 2300 KW FOR 1/2 HOUR, 2250 KW FOR 2 HOURS, AND 1950 KW FOR CONTINUOUS SERVICE.            o ANYTIME EMERGENCY D/GS ARE THE ONLY SOURCE OF AC POWER TO THE PLANT, PERSONNEL SHOULD BE ASSIGNED TO MAINTAIN SURVEILLANCE OF THE D/GS.            *****</p>		
26	<p>Verify PRZR Heaters Restored:</p> <ul style="list-style-type: none"> <li>o PRZR proportional heater breaker - CLOSED</li> <li>o PRZR backup heater breaker - RESET/IN AUTO</li> </ul>	<p>Perform the following:</p> <ul style="list-style-type: none"> <li>a. Verify adequate D/G capacity available for PRZR heaters (400 kw each bank).</li> <li>b. Reset and close PRZR proportional heater breaker if necessary.</li> <li>c. Reset PRZR backup heater breaker and return to AUTO if necessary.</li> </ul> <p><u>IF</u> on natural circulation and at least 100 kw of PRZR heaters can <u>NOT</u> be restored within 6 hours, <u>THEN</u> be on RHR within an additional 6 hours. (Refer to Technical Specification 3.1.1.5)</p>



EOP: AP-ELEC.1	TITLE: LOSS OF 12A AND/OR 12B TRANSFORMER	REV: 7  PAGE 17 of 19
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STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
27	Establish Stable Plant Conditions:  a. Tav <sub>g</sub> - TRENDING TO TREF  b. PRZR pressure - TRENDING TO 2235 PSIG  c. PRZR level - TRENDING TO PROGRAM	  a. Insert control rods or, if necessary, decrease turbine load to match Tav <sub>g</sub> to Tref.  b. Verify proper operation of PRZR heaters and spray or take manual control of PC-431K.  c. Verify proper operation of charging pump speed controllers or take manual control of speed controllers to control PRZR level.
28	Verify Both S/G Levels - GREATER THAN 25%	Control feed flow as necessary to restore both S/G levels greater than 25%.



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STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
***** <u>CAUTION</u> OBSERVE D/G LOADING LIMITS OF 2300 KW FOR 1/2 HOUR, 2250 KW FOR 2 HOURS, AND 1950 KW FOR CONTINUOUS SERVICE. *****		
<u>NOTE:</u> Evaluate conditions to determine if turbine should be placed on turning gear.		
29	Establish Normal Shutdown Alignment:  a. Start turning gear oil pump (42 kw) and verify pump - RUNNING  b. Stop DC emergency oil pump  c. Verify adequate Rx head cooling: 1) Verify at least one control rod shroud fan - RUNNING 2) Verify one Rx compartment cooling fan - RUNNING  d. Dispatch A0 to start waste gas compressor as necessary  e. Start main transformer cooling fans as necessary  f. Start CNMT recirc fans as necessary (240 kw each)  g. Verify radiation monitoring system operating as required  h. Verify motor fire pump breaker - CLOSED	a. Verify DC emergency oil pump running and break vacuum to accelerate turbine coastdown. Continue with Step 29c. <u>WHEN</u> shaft stops, <u>THEN</u> stop DC emergency oil pump.   1) Manually start one fan as power supply permits (45 kw).  2) Manually start one fan as power supply permits (23 kw).   g. Reset radiation monitors and restart ventilation systems as necessary.  h. Close motor fire pump breaker.



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STEP

ACTION/EXPECTED RESPONSE

RESPONSE NOT OBTAINED

30 WHEN Conditions Permit, THEN  
Restore Offsite Power (Refer  
to ER-ELEC.1, RESTORATION OF  
OFFSITE POWER)

31 Notify Higher Supervision

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

32 Return To Procedure Or  
Guidance In Effect

-END-





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FIGURE MIN SUBCOOLING

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

