

EOP: FR-H.1	TITLE: RESPONSE TO LOSS OF SECONDARY HEAT SINK	REV: 12 PAGE 1 of 26
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ROCHESTER GAS AND ELECTRIC CORPORATION

GINNA STATION

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TECHNICAL REVIEW

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Thomas A. Marbo
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EOP:	TITLE:	REV: 12
FR-H.1	RESPONSE TO LOSS OF SECONDARY HEAT SINK	PAGE 2 of 26

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 AND normal range level in both S/Gs is less than 5% [25% adverse CNMT]
- b. F-0.3, HEAT SINK Critical Safety Function Status Tree on a RED condition.

EOP:	TITLE:	REV: 12
FR-H.1	RESPONSE TO LOSS OF SECONDARY HEAT SINK	PAGE 3 of 26

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^{+05} R/hr.</p>		
1	Check If Secondary Heat Sink Is Required:	
	a. RCS pressure - GREATER THAN ANY NON-FAULTED S/G PRESSURE b. Check the following: <ul style="list-style-type: none"> o RCS cold leg temperature - GREATER THAN 350°F o RCS pressure - GREATER THAN 400 psig [300 psig adverse CNMT] 	a. <u>IF</u> RWST level greater than 28%, <u>THEN</u> go to E-1, LOSS OF REACTOR OR SECONDARY COOLANT, Step 1. <u>IF</u> RWST level less than 28%, <u>THEN</u> go to ES-1.3, TRANSFER TO COLD LEG RECIRCULATION, Step 1. b. Try to place RHR System in service while continuing with this procedure: <ol style="list-style-type: none"> 1) Reset SI if necessary. 2) Place letdown pressure controller in MANUAL CLOSED. 3) Check the following valves - OPEN: <ul style="list-style-type: none"> • AOV-371, letdown isolation valve • AOV-427, loop B cold leg to REGEN Hx • At least one letdown orifice valve (AOV-200A, AOV-200B, or AOV-202) 4) <u>IF</u> pressure on PI-135 less than 400 psig, <u>THEN</u> establish RHR normal cooling (Refer to Attachment RHR COOL). <p><u>IF</u> adequate cooling with RHR system established, <u>THEN</u> return to procedure and step in effect.</p>

EOP: FR-H.1	TITLE: RESPONSE TO LOSS OF SECONDARY HEAT SINK	REV: 12 PAGE 4 of 26
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STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
2	Monitor Secondary Heat Sink:	<u>IF</u> a loss of heat sink is indicated, <u>THEN</u> perform the following:
	o Verify either S/G level - WIDE RANGE GREATER THAN 35 inches [100 inches adverse CNMT]	a. Trip both RCPs.
	o Verify PRZR pressure - LESS THAN 2335 PSIG	b. Go to Step 13 to initiate bleed and feed cooling.

EOP:	TITLE:	REV: 12
FR-H.1	RESPONSE TO LOSS OF SECONDARY HEAT SINK	PAGE 5 of 26

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
3	Try to Establish AFW Flow To At Least One S/G:	
	a. Check MCB indications for cause of AFW failure:	
	1) Verify CST level - GREATER THAN 5 FEET	1) Refer to ER-AFW.1, ALTERNATE WATER SUPPLY TO AFW PUMPS.
	2) Verify busses supplying power to MDAFW pumps - ENERGIZED	2) Continue attempts to restore power to MDAFW pumps.
	• Bus 14	
	• Bus 16	
	3) Check AFW valve alignment	3) Dispatch AO to locally align valves as necessary.
	o AFW pump discharge valves - OPEN	
	• MOV-4007	
	• MOV-4008	
	• MOV-3996	
	o TDAFW pump flow control valves - OPEN	
	• AOV-4297	
	• AOV-4298	
	b. Check AFW pumps - ALL RUNNING	b. Perform the following:
		1) Manually start MDAFW pumps.
		2) Check TDAFW pump steam supply valves OPEN.
		• MOV-3504A
		• MOV-3505A
		3) If necessary dispatch AO to locally reset TDAFW pump governor valve.
		4) <u>IF</u> NO AFW pumps operable, <u>THEN</u> go to Step 4.
	c. Check total flow to S/Gs - GREATER THAN 200 GPM	c. Continue attempts to restore AFW flow and go to Step 4.
	d. Return to procedure and step in effect	

EOP: FR-H.1	TITLE: RESPONSE TO LOSS OF SECONDARY HEAT SINK	REV: 12 PAGE 6 of 26
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STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
4	<p>Stop Both RCPs</p> <p>*****</p> <p><u>CAUTION</u></p> <p>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.</p> <p>*****</p>	
5	Reset SI If Actuated	



EOP:

FR-H.1

TITLE:

RESPONSE TO LOSS OF SECONDARY HEAT SINK

REV: 12

PAGE 7 of 26

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
6	Try To Establish MFW Flow To At Least One S/G:	
a.	Check any MFW pump - AVAILABLE	a. Go to Step 7.
b.	Check condensate system:	b. <u>IF</u> offsite power available, <u>THEN</u> try to place condensate system in service.
	o Condensate pump - ANY RUNNING	
	o MFW pump suction pressure - GREATER THAN 185 PSIG	<u>IF NOT</u> , <u>THEN</u> go to Step 7.
c.	Establish MFW flow:	c. <u>IF</u> MFW flow can <u>NOT</u> be established, <u>THEN</u> go to Step 7.
	1) Check MFW pump discharge valves - CLOSED	
	2) Verify MFW regulating or bypass valves - 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 regulating or bypass valves as necessary to restore S/G level	
d.	Go to Step 11	

EOP: FR-H.1	TITLE: RESPONSE TO LOSS OF SECONDARY HEAT SINK	REV: 12 PAGE 8 of 26
----------------	---	-------------------------

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
7	<p>Establish SAFW Flow:</p> <p>a. Perform the following:</p> <ol style="list-style-type: none"> 1) Align SAFW system for operation (Refer to Attachment SAFW) 2) Start both SAFW pumps 3) Verify SAFW total flow - GREATER THAN 200 GPM <p>b. Go to Step 11</p>	<p>a. <u>IF</u> greater than 200 gpm, total SAFW flow can <u>NOT</u> be established, <u>THEN</u> go to Step 8.</p>
<p>***** <u>CAUTION</u> IF WIDE RANGE LEVEL IN BOTH S/GS DECREASES TO LESS THAN 35 INCHES [100 INCHES ADVERSE CNMT] OR IF PRZR PRESSURE INCREASES TO GREATER THAN 2335 PSIG DUE TO LOSS OF HEAT SINK, THEN STEPS 13 THROUGH 15 SHOULD BE IMMEDIATELY INITIATED FOR BLEED AND FEED. *****</p>		
8	<p>Establish Conditions to Feed S/G(s) From Condensate System:</p> <p>a. Check condensate pumps - ANY RUNNING</p> <p>b. Establish condensate flowpath (Refer to Attachment COND to S/G)</p> <p>c. De-energize PRZR heaters</p>	<p>a. <u>IF</u> offsite power available, <u>THEN</u> manually start at least one condensate pump. <u>IF</u> a condensate pump can <u>NOT</u> be started, <u>THEN</u> go to Step 12.</p>

EOP: FR-H.1	TITLE: RESPONSE TO LOSS OF SECONDARY HEAT SINK	REV: 12 PAGE 9 of 26
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STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
9	Establish Condenser Steam Dump Pressure Control: <ul style="list-style-type: none">a. Verify condenser available:<ul style="list-style-type: none">o Any MSIV - OPENo Annunciator G-15, STEAM DUMP ARMED - LITb. Adjust condenser steam dump controller HC-484 to highest S/G pressurec. Verify condenser steam dump controller HC-484 in AUTOd. Place steam dump mode selector switch to MANUAL	<ul style="list-style-type: none">a. Place S/G ARV controllers in AUTO at desired pressure and go to Step 10.



1

EOP:	TITLE:	REV: 12
FR-H.1	RESPONSE TO LOSS OF SECONDARY HEAT SINK	PAGE 10 of 26

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
<p>***** <u>CAUTION</u> FOLLOWING BLOCK OF AUTOMATIC SI ACTUATION, MANUAL SI ACTUATION MAY BE REQUIRED IF CONDITIONS DEGRADE. *****</p> <p><u>NOTE:</u> If auxiliary spray is in use, spray flow may be increased by closing normal charging valve AOV-294 and normal PRZR spray valves.</p>		
10	Establish Condensate Flow to S/G:	
	a. Check RCS pressure - GREATER THAN 1950 PSIG b. Depressurize RCS to less than 1950 psig: 1) Check letdown - IN SERVICE 2) Depressurize using auxiliary spray valve (AOV-296)	a. Go to Step 10c. 1) Use one PRZR PORV. <u>IF</u> IA to CNMT, AOV-5392, <u>NOT</u> open, <u>THEN</u> refer to Attachment N2 PORVS. <u>IF</u> PORV <u>NOT</u> available, <u>THEN</u> use auxiliary spray valve, AOV-296 and go to step 10c. 2) Use one PRZR PORV. <u>IF</u> IA to CNMT, AOV-5392, <u>NOT</u> open, <u>THEN</u> refer to Attachment N2 PORVS.
	c. WHEN PRZR pressure less than 1950 psig, THEN place SI block switches to BLOCK • Train A • Train B	
	d. Verify SAFETY INJECTION BLOCKED status light - LIT	
	e. Manually open MFW flow control valves as desired	e. Manually open MFW flow control bypass valves.
	f. Dump steam to condenser at maximum rate to depressurize at least one S/G to less than 380 psig	f. Manually or locally dump steam using intact S/G ARV.
	g. Verify condensate flow to S/Gs	g. Go to Step 12.

EOP:	TITLE:	REV: 12
FR-H.1	RESPONSE TO LOSS OF SECONDARY HEAT SINK	PAGE 11 of 26

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
<p>*****</p> <p style="text-align: center;"><u>CAUTION</u></p> <p>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).</p> <p>*****</p>		
11	Check S/G Levels:	
	<p>a. Narrow range level in at least one S/G - GREATER THAN 5% [25% adverse CNMT]</p> <p>b. Return to procedure and step in effect</p>	<p>a. <u>IF</u> feed flow verified and level increasing in 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 12.</p>
12	Verify Secondary Heat Sink:	
	<p>a. Check the following:</p> <ul style="list-style-type: none"> o Either S/G level - WIDE RANGE GREATER THAN 35 inches [100 inches adverse CNMT] o PRZR pressure - LESS THAN 2335 PSIG <p>b. Return to Step 1</p>	<p>a. <u>IF</u> loss of heat sink is indicated, <u>THEN</u> perform the following:</p> <ul style="list-style-type: none"> 1) Trip both RCPs. 2) Go to Step 13 to initiate bleed and feed cooling.

EOP: FR-H.1	TITLE: RESPONSE TO LOSS OF SECONDARY HEAT SINK	REV: 12 PAGE 12 of 26
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STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
***** <u>CAUTION</u> STEPS 13 THROUGH 15 MUST BE PERFORMED QUICKLY IN ORDER TO ESTABLISH RCS HEAT REMOVAL BY RCS BLEED AND FEED. *****		
13	Actuate SI and CI ***** <u>CAUTION</u> WHEN BAST LEVEL DECREASES TO 10%, THEN SI PUMP AUTOMATIC SWITCHOVER TO RWST SHOULD BE ENSURED. *****	
14	Verify RCS Feed Path: a. Check SI pumps - AT LEAST ONE RUNNING b. Check valve alignment for operating SI pumps - PROPER EMERGENCY ALIGNMENT	Manually start pumps and align valves as necessary to establish RCS feed path. <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.



EOP:	TITLE:	REV: 12
FR-H.1	RESPONSE TO LOSS OF SECONDARY HEAT SINK	PAGE 13 of 26

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
15	Establish RCS Bleed Path:	
a.	Open both PRZR PORV block valves	<p>a. Ensure power to MCCs supplying block valves.</p> <ul style="list-style-type: none"> • MCC C for MOV-515 • MCC D for MOV-516 <p><u>IF</u> any block valve can <u>NOT</u> be opened, <u>THEN</u> dispatch AO to locally check breaker:</p> <ul style="list-style-type: none"> • MOV-515, MCC C position 6C • MOV-516, MCC D position 6C
b.	Place both PRZR PORV switches to OPEN	
c.	Align RCS overpressure protection system to open both PRZR PORVs (Refer to Attachment N2 PORVS)	
d.	Verify PORVs - BOTH OPEN	<p>d. <u>IF</u> BOTH PRZR PORVs can <u>NOT</u> be opened, <u>THEN</u> ensure both PORV switches in OPEN.</p>

EOP:	TITLE:	REV: 12
FR-H.1	RESPONSE TO LOSS OF SECONDARY HEAT SINK	PAGE 14 of 26

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
<p>*****</p> <p style="text-align: center;"><u>CAUTION</u></p> <p>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.</p> <p>*****</p>		
16	Check If SI Can Be Reset:	
	<p>a. Check the following:</p> <ul style="list-style-type: none"> o PRZR pressure - LESS THAN 1750 PSIG <p style="text-align: center;">-OR-</p> <ul style="list-style-type: none"> o Either steamline pressure - LESS THAN 514 PSIG 	<p>a. <u>IF</u> PRZR pressure stable or increasing, <u>THEN</u> reset SI and go to Step 17.</p> <p><u>IF</u> PRZR pressure decreasing, <u>THEN</u> perform the following:</p> <ul style="list-style-type: none"> 1) <u>WHEN</u> PRZR pressure less than 1750 psig, <u>THEN</u> reset SI. 2) Go to Step 17.
	b. Reset SI	
17	Reset CI:	
	<p>a. Depress CI reset pushbutton</p> <p>b. Verify annunciator A-26, CONTAINMENT ISOLATION - EXTINGUISHED</p>	<p>b. Perform the following:</p> <ul style="list-style-type: none"> 1) Reset SI. 2) Depress CI reset pushbutton

EOP: FR-H.1	TITLE: RESPONSE TO LOSS OF SECONDARY HEAT SINK	REV: 12 PAGE 15 of 26
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STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
18	Verify Adequate SW Flow:	
a.	Verify at least two SW pumps - RUNNING	a. Manually start pumps as power supply permits (258 kw each). <u>IF</u> less than two SW pumps can be operated, <u>THEN</u> go to Step 21.
b.	Verify AUX BLDG SW isolation valves - AT LEAST ONE SET OPEN	b. Establish SW to AUX BLDG (Refer to Attachment AUX BLDG SW).
	<ul style="list-style-type: none"> • MOV-4615 and MOV-4734 • MOV-4616 and MOV-4735 	

EOP:	TITLE:	REV: 12
FR-H.1	RESPONSE TO LOSS OF SECONDARY HEAT SINK	PAGE 16 of 26

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
19	Establish IA to CNMT:	
a.	Verify non-safeguards busses energized from offsite power <ul style="list-style-type: none"> o Bus 13 normal feed - CLOSED -OR- o Bus 15 normal feed - CLOSED 	a. Perform the following: <ol style="list-style-type: none"> 1) Close non-safeguards bus tie breakers: <ul style="list-style-type: none"> • 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). <p><u>IF NOT</u>, <u>THEN</u> evaluate if CNMT RECIRC fans should be stopped (Refer to Attachment CNMT RECIRC FANS).</p> 3) <u>WHEN</u> bus 15 restored, <u>THEN</u> reset control room lighting.
b.	Verify turbine building SW isolation valves - OPEN <ul style="list-style-type: none"> • MOV-4613 and MOV-4670 • MOV-4614 and MOV-4664 	b. Manually align valves.
c.	Verify at least two air compressors - RUNNING	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.
d.	Check IA supply: <ul style="list-style-type: none"> o Pressure - GREATER THAN 60 PSIG o Pressure - STABLE OR INCREASING 	d. Perform the following: <ol style="list-style-type: none"> 1) Continue attempts to restore IA (Refer to AP-IA.1, LOSS OF INSTRUMENT AIR). 2) Continue with Step 21. <u>WHEN</u> IA restored, <u>THEN</u> do Steps 19e, f and 20.
e.	Reset both trains of XY relays for IA to CNMT AOV-5392	
f.	Verify IA to CNMT AOV-5392 - OPEN	



EOP: FR-H.1	TITLE: RESPONSE TO LOSS OF SECONDARY HEAT SINK	REV: 12 PAGE 17 of 26
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STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
20	Restore RCS Overpressure Protection System To Standby:	
	<ul style="list-style-type: none"> a. Verify instrument bus D - ENERGIZED b. Place relief valve PC-431 and PC-430 arming switches to BLOCK <ul style="list-style-type: none"> • SOV-8619A • SOV-8619B c. Close SURGE TK VLVs <ul style="list-style-type: none"> • SOV-8616A • SOV-8616B 	<ul style="list-style-type: none"> a. Perform the following: <ul style="list-style-type: none"> 1) Ensure steam dump mode control in MANUAL. 2) Restore power to instrument bus D from MCC B or MCC A (maintenance supply).
	<p><u>NOTE:</u> PRZR PORVs may close temporarily until adequate IA pressure is restored in CNMT.</p>	
21	Verify Adequate RCS Bleed Path:	Perform the following:
	<ul style="list-style-type: none"> o Core exit T/Cs - STABLE OR DECREASING o Level (no RCPs) - GREATER THAN 68% [73% adverse CNMT] 	<ul style="list-style-type: none"> a. Open Rx head vent valves. <ul style="list-style-type: none"> • 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 depressurized S/Gs.

EOP: FR-H.1	TITLE: RESPONSE TO LOSS OF SECONDARY HEAT SINK	REV: 12 PAGE 18 of 26
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STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
***** <u>CAUTION</u> ACTIONS TAKEN TO INITIATE RCS FEED AND BLEED SHALL NOT BE REVERSED WHEN PERFORMING IMMEDIATE ACTIONS OF E-0, REACTOR TRIP OR SAFETY INJECTION. *****		
22	Complete The Immediate Actions Of E-0, REACTOR TRIP OR SAFETY INJECTION, While Continuing With This Procedure	
***** <u>CAUTION</u> THE RCS BLEED PATH MUST BE MAINTAINED EVEN IF RCS PRESSURE REMAINS GREATER THAN SI PUMP SHUTOFF HEAD. *****		
23	Maintain RCS Heat Removal:	
	o Maintain SI flow	
	o Maintain both PRZR PORVs and block valves - OPEN	
24	Check Normal Power Available To Charging Pumps:	Verify adequate emergency D/G capacity to run charging pumps (75 kw each).
	o Bus 14 normal feed breaker - CLOSED	<u>IF NOT</u> , <u>THEN</u> evaluate if CNMT RECIRC fans can be stopped (Refer to Attachment CNMT RECIRC FANS).
	o Bus 16 normal feed breaker - CLOSED	

EOP:	TITLE:	REV: 12
FR-H.1	RESPONSE TO LOSS OF SECONDARY HEAT SINK	PAGE 19 of 26

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
25	Check If Charging Flow Has Been Established:	
	a. Charging pumps - ANY RUNNING	a. Perform the following: <ul style="list-style-type: none"> 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 AO with key to RWST gate to locally close seal injection needle valve(s) to affected RCP: <ul style="list-style-type: none"> • RCP A, V-300A • RCP B, V-300B 2) Ensure HCV-142 open, demand at 0%.
	b. Align charging pump suction to RWST: <ul style="list-style-type: none"> o LCV-112B - OPEN o LCV-112C - CLOSED 	b. <u>IF</u> LCV-112B can <u>NOT</u> be opened, <u>THEN</u> perform the following: <ul style="list-style-type: none"> 1) Verify charging pump A <u>NOT</u> running and place in PULL STOP. 2) Dispatch AO to locally open manual charging pump suction from RWST (V-358 located in charging pump room). 3) <u>WHEN</u> V-358 open, <u>THEN</u> direct AO 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	

EOP: FR-H.1	TITLE: RESPONSE TO LOSS OF SECONDARY HEAT SINK	REV: 12 PAGE 20 of 26
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STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
<p>***** <u>CAUTION</u> 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. o IF CONTAINMENT PRESSURE INCREASES TO GREATER THAN 28 PSIG, CONTAINMENT SPRAY SHOULD BE VERIFIED. o RHR PUMPS SHOULD NOT BE RUN LONGER THAN 1 HOUR WITHOUT CCW TO THE RHR HEAT EXCHANGERS. *****</p>		
26	Continue Attempts To Establish Secondary Heat Sink In At Least One S/G:	
	<ul style="list-style-type: none"> • AFW flow • Main FW flow • Standby AFW flow • Condensate flow 	
27	Check For Adequate Secondary Heat Sink:	
	a. Check narrow range level in at least one S/G - GREATER THAN 5% [25% adverse CNMT] b. Adjust S/G ARV controllers to existing S/G pressure	a. Return to Step 26.



EOP:	TITLE:	REV: 12
FR-H.1	RESPONSE TO LOSS OF SECONDARY HEAT SINK	PAGE 21 of 26

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
<p>*****</p> <p style="text-align: center;"><u>CAUTION</u></p> <p>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.</p> <p>*****</p>		
28 Monitor RCS Temperatures:	<ul style="list-style-type: none"> o Core exit T/Cs - DECREASING o RCS hot leg temperatures - DECREASING 	<p>Perform the following:</p> <ul style="list-style-type: none"> a. Control steam dump and feed flow to establish natural circulation and stabilize RCS temperature. b. Return to Step 26.
29 Check CCW Pumps - ANY RUNNING		<p>Perform the following:</p> <ul style="list-style-type: none"> a. <u>IF</u> any RCP #1 seal outlet temperature offscale high, <u>THEN</u> isolate CCW to thermal barrier of affected RCP(s). <ul style="list-style-type: none"> • RCP A, MOV-749A and MOV-759A • RCP B, MOV-749B and MOV-759B b. Manually start one CCW pump (124 kw).
30 Verify Reactor Head Vent Valves - CLOSED	<ul style="list-style-type: none"> • SOV-590 • SOV-591 • SOV-592 • SOV-593 	Manually close valves.

EOP: FR-H.1	TITLE: RESPONSE TO LOSS OF SECONDARY HEAT SINK	REV: 12 PAGE 22 of 26
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STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
***** CAUTION 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. *****		
31	Check If One Of Three SI Pumps Should Be Stopped:	
	a. Three SI pumps - RUNNING	a. Go to Step 32.
	b. RCS subcooling based on core exit T/Cs - GREATER THAN 35°F [90°F adverse CNMT] USING FIGURE MIN SUBCOOLING	b. Check the following: <ul style="list-style-type: none"> 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 <p><u>IF NOT, THEN</u> go to Step 34.</p>
	c. Check PRZR level - GREATER THAN 13% [40% adverse CNMT]	c. Do <u>NOT</u> stop SI pump. Go to Step 34.
	d. Stop one SI pump	

EOP:	TITLE:	REV: 12
FR-H.1	RESPONSE TO LOSS OF SECONDARY HEAT SINK	PAGE 23 of 26

STEP

ACTION/EXPECTED RESPONSE

RESPONSE NOT OBTAINED

32 Check If One Of Two SI Pumps
Should Be Stopped:

a. Two SI pumps - RUNNING

a. Go to Step 33.

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 34.

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

d. Do NOT stop SI pump. Go to
Step 34.

e. Stop one SI pump



200

EOP:	TITLE:	REV: 12
FR-H.1	RESPONSE TO LOSS OF SECONDARY HEAT SINK	PAGE 24 of 26

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
33	Check If Last SI Pump Should Be Stopped:	
	a. One SI pump - RUNNING	a. Go to Step 36.
	b. Check the following:	b. Go to Step 34.
	o RCS subcooling based on core exit T/Cs greater than 0°F using Figure MIN SUBCOOLING	
	o RCS pressure greater than 1625 psig [1825 psig adverse CNMT]	
	c. PRZR level - GREATER THAN 13% [40% adverse CNMT]	c. Do <u>NOT</u> stop SI pump. Go to Step 34.
	d. Stop running SI pump	
	e. Go to Step 36	
	<u>NOTE:</u> After closing a PORV, it may be necessary to wait for RCS pressure to increase to permit stopping SI pumps in SI reduction steps.	
34	Check PRZR PORVs And Associated Block Valves - ANY BLEED PATH OPEN	Go to appropriate plant procedure:
		o <u>IF</u> RWST level greater than 28%, <u>THEN</u> go to E-1, LOSS OF REACTOR OR SECONDARY COOLANT.
		-OR-
		o <u>IF</u> RWST level less than 28%, <u>THEN</u> go to ES-1.3, TRANSFER TO COLD LEG RECIRCULATION.

EOP:	TITLE:	REV: 12
FR-H.1	RESPONSE TO LOSS OF SECONDARY HEAT SINK	PAGE 25 of 26

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
<p>*****</p> <p style="text-align: center;"><u>CAUTION</u></p> <p>IF RCS IS SOLID, CLOSURE OF PORVS WILL RESULT IN RAPID RCS PRESSURE INCREASE UNLESS RCS INFLOW AND OUTFLOW ARE CAREFULLY CONTROLLED.</p> <p>*****</p>		
35	Isolate PRZR Bleed Paths:	
a.	PRZR PORVs - BOTH OPEN	<p>a. Perform the following:</p> <ol style="list-style-type: none"> 1) Stop all but one charging pump. 2) Control charging flow as necessary to maintain RCS pressure and PRZR level. 3) Establish excess letdown as follows: <ul style="list-style-type: none"> o Place AOV-312 to NORMAL. o Ensure CCW pump running. o Manually open CCW from excess letdown Hx open (AOV-745). o Open excess letdown isolation valve AOV-310. o Slowly open HCV-123.
b.	Close one open PRZR PORV	<p>b. Close PORV block valve. <u>IF</u> block valve can <u>NOT</u> be closed, <u>THEN</u> go to appropriate plant procedure:</p> <ul style="list-style-type: none"> o <u>IF</u> RWST level greater than 28%, <u>THEN</u> go to E-1, LOSS OF REACTOR OR SECONDARY COOLANT. <p style="text-align: center;">-OR-</p> <ul style="list-style-type: none"> o <u>IF</u> RWST level less than 28%, <u>THEN</u> go to ES-1.3, TRANSFER TO COLD LEG RECIRCULATION.
c.	Return to Step 31	

EOP:	TITLE:	REV: 12
FR-H.1	RESPONSE TO LOSS OF SECONDARY HEAT SINK	PAGE 26 of 26

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
36	Check PRZR PORVs - BOTH CLOSED	Close both PRZR PORVs. <u>IF</u> any PRZR PORV can <u>NOT</u> be closed, <u>THEN</u> manually close its block valve.
37	Check If RHR Pumps Should Be Stopped:	
	a. Check RCS pressure:	a. Go to appropriate plant procedure:
	1) Pressure - GREATER THAN 250 psig [465 psig adverse CNMT]	o <u>IF</u> RWST level greater than 28%, <u>THEN</u> go to E-1, LOSS OF REACTOR OR SECONDARY COOLANT, Step 1.
	2) Pressure - STABLE OR INCREASING	-OR-
		o <u>IF</u> RWST level less than 28%, <u>THEN</u> go to ES-1.3, TRANSFER TO COLD LEG RECIRCULATION, Step 1.
	b. Stop RHR pumps and place in AUTO	
38	Start Charging Pumps As Necessary And Control Charging Flow To Maintain PRZR Level	
39	Go To ES-1.1, SI TERMINATION, Step 8.	
		-END-

EOP:	TITLE:	REV: 12
FR-H.1	RESPONSE TO LOSS OF SECONDARY HEAT SINK	PAGE 1 of 1

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: 12

PAGE 1 of 1

FIGURE MIN SUBCOOLING

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



