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JOSEPH A WIDAY
VICE PRESIDENT & PLANT MANAGER
GINNA STATION

August 13, 2002

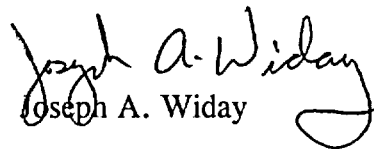
U.S. Nuclear Regulatory Commission
Document Control Desk
Attn: Robert Clark
Project Directorate I
Washington, D.C. 20555

Subject: Emergency Operating Procedures
R.E. Ginna Nuclear Power Plant
Docket No. 50-244

Dear Mr. Clark:

As requested, enclosed are Ginna Station Emergency Operating Procedures.

Very truly yours,


Joseph A. Widay

JAW/jdw

xc: U.S. Nuclear Regulatory Commission
Region I
475 Allendale Road
King of Prussia, PA 19406-1415

Ginna USNRC Senior Resident Inspector

Enclosure(s):

E Index	ECA-0.2, Rev 14
ECA Index	ECA-2.1, Rev 24
ES Index	ECA-3.1, Rev 24
FR Index	FR-H.1, Rev 27
E-0, Rev 32	FR-Z.1, Rev 6
E-1, Rev 26	
E-3, Rev 32	
ES-1.1, Rev 23	
ES-1.3, Rev 34	

A002

REPORT NO. 01
REPORT NPS0200
DOC TYPE PRE

GINNA NUCLEAR POWER PLANT
PROCEDURES INDEX
EMERGENCY PROCEDURE

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PARAMETERS: DOC TYPES - PRE PRECA PRES PRFR STATUS: EF QU 5 YEARS ONLY.

PROCEDURE NUMBER	PROCEDURE TITLE	REV	EFFECT DATE	LAST REVIEW	NEXT REVIEW	ST
E-0	REACTOR TRIP OR SAFETY INJECTION	032	08/13/02	05/01/98	05/01/03	EF
E-1	LOSS OF REACTOR OR SECONDARY COOLANT	026	08/13/02	05/01/98	05/01/03	EF
E-2	FAULTED STEAM GENERATOR ISOLATION	010	07/25/02	05/01/98	05/01/03	EF
E-3	STEAM GENERATOR TUBE RUPTURE	032	08/13/02	05/01/98	05/01/03	EF

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EMERGENCY CONTINGENCY ACTIONS PROC

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PARAMETERS: DOC TYPES - PRE PRECA PRES PRFR STATUS: EF QU 5 YEARS ONLY:

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ECA-0.0	LOSS OF ALL AC POWER	024	06/14/02	05/01/98	05/01/03	EF
ECA-0.1	LOSS OF ALL AC POWER RECOVERY WITHOUT SI REQUIRED	020	07/25/02	05/01/98	05/01/03	EF
ECA-0.2	LOSS OF ALL AC POWER RECOVERY WITH SI REQUIRED	014	08/13/02	05/01/98	05/01/03	EF
ECA-1.1	LOSS OF EMERGENCY COOLANT RECIRCULATION	021	07/25/02	05/01/98	05/01/03	EF
ECA-1.2	LOCA OUTSIDE CONTAINMENT	005	05/01/98	05/01/98	05/01/03	EF
ECA-2.1	UNCONTROLLED DEPRESSURIZATION OF BOTH STEAM GENERATORS	024	08/13/02	05/01/98	05/01/03	EF
ECA-3.1	SGTR WITH LOSS OF REACTOR COOLANT SUBCOOLED RECOVERY DESIRED	024	08/13/02	05/01/98	05/01/03	EF
ECA-3.2	SGTR WITH LOSS OF REACTOR COOLANT SATURATED RECOVERY DESIRED	026	07/25/02	05/01/98	05/01/03	EF
ECA-3.3	SGTR WITHOUT PRESSURIZER PRESSURE CONTROL	027	07/25/02	05/01/98	05/01/03	EF

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ES-0.0	REDIAGNOSIS	010	05/01/98	05/01/98	05/01/03	EF
ES-0.1	REACTOR TRIP RESPONSE	020	07/25/02	05/01/98	05/01/03	EF
ES-0.2	NATURAL CIRCULATION COOLDOWN	012	05/01/98	05/01/98	05/01/03	EF
ES-0.3	NATURAL CIRCULATION COOLDOWN WITH STEAM VOID IN VESSEL	008	05/01/98	05/01/98	05/01/03	EF
ES-1.1	SI TERMINATION	023	08/13/02	05/01/98	05/01/03	EF
ES-1.2	POST LOCA COOLDOWN AND DEPRESSURIZATION	024	07/25/02	05/01/98	05/01/03	EF
ES-1.3	TRANSFER TO COLD LEG RECIRCULATION	034	08/13/02	05/01/98	05/01/03	EF
ES-3.1	POST-SGTR COOLDOWN USING BACKFILL	014	07/25/02	05/01/98	05/01/03	EF
ES-3.2	POST-SGTR COOLDOWN USING BLOWDOWN	015	07/25/02	05/01/98	05/01/03	EF
ES-3.3	POST-SGTR COOLDOWN USING STEAM DUMP	015	07/25/02	05/01/98	05/01/03	EF

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PARAMETERS DOC TYPES - PRE PRECA PRES PRFR STATUS EF QU 5 YEARS ONLY:

PROCEDURE NUMBER	PROCEDURE TITLE	REV	EFFECT DATE	LAST REVIEW	NEXT REVIEW	ST
FR-C.1	RESPONSE TO INADEQUATE CORE COOLING	019	07/25/02	05/01/98	05/01/03	EF
FR-C.2	RESPONSE TO DEGRADED CORE COOLING	016	07/25/02	05/01/98	05/01/03	EF
FR-C.3	RESPONSE TO SATURATED CORE COOLING	008	05/01/98	05/01/98	05/01/03	EF
FR-H.1	RESPONSE TO LOSS OF SECONDARY HEAT SINK	027	08/13/02	05/01/98	05/01/03	EF
FR-H.2	RESPONSE TO STEAM GENERATOR OVERPRESSURE	004	05/01/98	05/01/98	05/01/03	EF
FR-H.3	RESPONSE TO STEAM GENERATOR HIGH LEVEL	005	05/01/98	05/01/98	05/01/03	EF
FR-H.4	RESPONSE TO LOSS OF NORMAL STEAM RELEASE CAPABILITIES	004	05/01/98	05/01/98	05/01/03	EF
FR-H.5	RESPONSE TO STEAM GENERATOR LOW LEVEL	008	05/02/02	05/01/98	05/01/03	EF
FR-I.1	RESPONSE TO HIGH PRESSURIZER LEVEL	014	10/31/01	05/01/98	05/01/03	EF
FR-I.2	RESPONSE TO LOW PRESSURIZER LEVEL	009	10/31/01	05/01/98	05/01/03	EF
FR-I.3	RESPONSE TO VOIDS IN REACTOR VESSEL	016	10/31/01	05/01/98	05/01/03	EF
FR-P.1	RESPONSE TO IMMINENT PRESSURIZED THERMAL SHOCK CONDITION	024	05/02/02	05/01/98	05/01/03	EF
FR-P.2	RESPONSE TO ANTICIPATED PRESSURIZED THERMAL SHOCK CONDITION	007	05/01/98	05/01/98	05/01/03	EF
FR-S.1	RESPONSE TO REACTOR RESTART/ATWS	014	07/25/02	05/01/98	05/01/03	EF
FR-S.2	RESPONSE TO LOSS OF CORE SHUTDOWN	008	05/01/98	05/01/98	05/01/03	EF
FR-Z.1	RESPONSE TO HIGH CONTAINMENT PRESSURE	006	08/13/02	05/01/98	05/01/03	EF
FR-Z.2	RESPONSE TO CONTAINMENT FLOODING	004	01/14/99	05/01/98	05/01/03	EF
FR-Z.3	RESPONSE TO HIGH CONTAINMENT RADIATION LEVEL	004	05/01/98	05/01/98	05/01/03	EF

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ROCHESTER GAS AND ELECTRIC CORPORATION

GINNA STATION

CONTROLLED COPY NUMBER 23



RESPONSIBLE MANAGER

8-13-2002

EFFECTIVE DATE

CATEGORY 1.0

REVIEWED BY: _____

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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 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

1 Verify Reactor Trip:

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

Manually trip reactor.

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 the reactor will NOT trip OR IF power range NIS indicates greater than 5%, 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:

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

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

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 SI is Actuated:

a. Any SI Annunciator - LIT

a. IF any of the following conditions are met, THEN manually actuate SI and CI:

o PRZR pressure less than 1750 psig

-OR-

o Steamline pressure less than 514 psig

-OR-

o CNMT pressure greater than 4 psig

-OR-

o SI sequencing started

-OR-

o Operator determines SI required

IF SI is NOT required, THEN go to ES-0.1, REACTOR TRIP RESPONSE, Step 1.

d. SI sequencing - BOTH TRAINS STARTED.

b. Manually actuate SI and CI.

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STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
<p>NOTE: o FOLDOUT page should be open and monitored periodically.</p> <p>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.</p>		
5	Verify SI and RHR Pumps Running:	
	a. All SI pumps - RUNNING	a. Perform the following: <ul style="list-style-type: none"> 1) Ensure SI pump suction supply open from RWST. 2) Manually start pumps.
	b. Both RHR pumps - RUNNING	b. Manually start pumps.
6	Verify CNMT RECIRC Fans Running:	
	a. All fans - RUNNING	a. Manually start fans.
	b. Charcoal filter dampers green status lights - EXTINGUISHED	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"> • AUX RELAY RACK RA-2 for fan A • AUX RELAY RACK RA-3 for fan C

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STEP

ACTION/EXPECTED RESPONSE

RESPONSE NOT OBTAINED

* 7 Verify CNMT Spray Not
Required:

- o Annunciator A-27, CNMT SPRAY -
EXTINGUISHED
- o CNMT pressure - LESS THAN 28 PSIG

Verify CNMT spray initiated.

IF CNMT spray NOT initiated, THEN
perform the following:

- a. Depress manual CNMT spray
pushbuttons (2 of 2).
- b. Ensure CNMT spray pumps running.
IF no CNMT spray pump available,
THEN go to Step 8.
- c. Ensure CNMT spray pump discharge
valves open for operating
pump(s).
 - o CNMT spray pump A:
 - MOV-860A
 - MOV-860B
 - o CNMT spray pump B:
 - MOV-860C
 - MOV-860D
- d. Verify NaOH flow (FI-930) |

IF NaOH flow NOT indicated, THEN |
place switches for NaOH tank |
outlet valves to OPEN. |
 - AOV-836A
 - AOV-836B

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STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
8	Check If Main Steamlines Should Be Isolated:	
	a. Any MSIV - OPEN	a. Go to Step 9.
	b. Check CNMT pressure - LESS THAN 18 PSIG	b. Ensure BOTH MSIVs closed and go to Step 9.
	c. Check if ANY main steamlines should be isolated:	c. Go to Step 9.
	o Low Tavg (545°F) AND high steam flow (0.4x10 ⁶ lb/hr) from either S/G	
	-OR-	
	o High-High steam flow (3.6x10 ⁶ lb/hr) from either S/G	
	d. Verify MSIV closed on the affected S/G(s)	d. Manually close valves.
9	Verify MFW Isolation:	
	a. MFW pumps - TRIPPED	a. Perform the following:.
		1) Manually close MFW pump discharge valves and trip MFW pumps.
		2) Continue with Step 9c. <u>WHEN</u> both MFPs are tripped, <u>THEN</u> perform Step 9b.
	b. Place A and B S/G MFW regulating valve and bypass valve controllers in MANUAL at 0% demand.	
	c. S/G blowdown and sample valves - CLOSED	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 Both MDAFW Pumps Running		<p>Manually start both MDAFW pumps.</p> <p><u>IF</u> less than 2 MDAFW pumps are running, <u>THEN</u> manually open TDAFW pump steam supply valves.</p> <ul style="list-style-type: none"> • MOV-3505A • MOV-3504A
11 Verify At Least Two SW Pumps - RUNNING		<p>Perform the following:</p> <p>a. Ensure one SW pump running on each energized screenhouse AC emergency bus:</p> <ul style="list-style-type: none"> • Bus 17 • Bus 18 <p>b. <u>IF</u> offsite power <u>NOT</u> available, <u>THEN</u> ensure SW isolation.</p>

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STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
12	Verify CI And CVI:	
a.	CI and CVI annunciators - LIT <ul style="list-style-type: none"> Annunciator A-26, CNMT ISOLATION Annunciator A-25, CNMT VENTILATION ISOLATION 	a. Depress manual CI pushbutton.
b.	Verify CI and CVI valve status lights - BRIGHT	b. Manually close CI and CVI valves as required. IF valves can <u>NOT</u> be verified closed by MCB indication, <u>THEN</u> dispatch AO to locally close valves (Refer to ATT-3.0, ATTACHMENT CI/CVI for alternate isolation valves).
c.	CNMT RECIRC fan coolers SW outlet valve status lights - BRIGHT <ul style="list-style-type: none"> FCV-4561 FCV-4562 	c. Dispatch AO to locally fail open valves.
d.	Letdown orifice valves - CLOSED <ul style="list-style-type: none"> AOV-200A AOV-200B AOV-202 	d. Place affected valve switch to CLOSE. IF valves can <u>NOT</u> be verified closed by MCB indication, <u>THEN</u> close alternate isolations. (Refer to ATT-3.0, ATTACHMENT CI/CVI)

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STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
<p>*****</p> <p style="text-align: center;"><u>CAUTION</u></p> <p>RCP TRIP CRITERIA LISTED ON FOLDOUT PAGE SHOULD BE MONITORED PERIODICALLY.</p> <p>*****</p>		
13	Check CCW System Status:	
	<ul style="list-style-type: none"> a. Verify CCW pump - AT LEAST ONE RUNNING b. Place switch for excess letdown AOV-310 to CLOSE c. Place switch for CCW from excess letdown, AOV-745 to CLOSE 	<ul style="list-style-type: none"> a. <u>IF</u> offsite power available, <u>THEN</u> manually start one CCW pump.
14	Verify SI And RHR Pump Flow:	
	<ul style="list-style-type: none"> a. SI flow indicators - CHECK FOR FLOW b. RHR flow indicator - CHECK FOR FLOW 	<ul style="list-style-type: none"> 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. <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 AFW Valve Alignment:	Manually align valves as necessary.
	<ul style="list-style-type: none"> a. AFW flow - INDICATED TO BOTH S/G(s) b. AFW flow from each MDAFW pump - LESS THAN 230 GPM 	

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STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
*16 Monitor Heat Sink:		
a.	Check S/G narrow range level - GREATER THAN 5% [25% adverse CNMT] in any S/G	<p>a. Perform the following:</p> <p>1) Verify total AFW flow - GREATER THAN 200 GPM</p> <p>IF total AFW is less than 200 gpm, THEN manually start pumps and align valves to establish greater than 200 gpm AFW flow. IF AFW flow greater than 200 gpm can NOT be established, THEN go to FR-H.1, RESPONSE TO LOSS OF SECONDARY HEAT SINK, Step 1.</p> <p>2) Go to Step 17.</p>
b.	Check S/G narrow range level - BOTH S/G LESS THAN 50%	b. Secure AFW flow to any S/G with level above 50%.
c.	Control feed flow to maintain S/G narrow range level between 5% [25% adverse CNMT] and 50%.	

STEP

ACTION/EXPECTED RESPONSE

RESPONSE NOT OBTAINED

17 Verify SI Pump And RHR Pump
Emergency Alignment:

a. RHR pump discharge to Rx vessel
deluge - OPEN

- MOV-852A
- MOV-852B

b. Verify SI pump C - RUNNING

c. Verify SI pump A - RUNNING

d. Verify SI pump B - RUNNING

e. Verify SI pump C discharge
valves - OPEN

- MOV-871A
- MOV-871B

a. Ensure at least one valve open.

b. Manually start pump on available
bus.

c. Perform the following:

1) Ensure SI pumps B and C
running. IF either pump NOT
running, THEN go to Step 17e.

2) Ensure SI pump C aligned to
discharge line A:

- o MOV-871A open
- o MOV-871B closed

3) Go to Step 18.

d. Perform the following:

1) Ensure SI pumps A and C
running. IF either pump NOT
running, THEN go to Step 17e.

2) Ensure SI pump C aligned to
discharge line B:

- o MOV-871B open
- o MOV-871A closed

3) Go to Step 18.

e. Manually open valves as
necessary.

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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 MANUAL ACTION MAY BE REQUIRED TO RESTART SAFEGUARDS EQUIPMENT. (REFER TO ATT-8.5, ATTACHMENT LOSS OF OFFSITE POWER)</p> <p>*****</p>		
18	<p>Check CCW Flow to RCP Thermal Barriers:</p> <ul style="list-style-type: none"> o Annunciator A-7, RCP 1A CCW RETURN HI TEMP OR LO FLOW - EXTINGUISHED o Annunciator A-15, RCP 1B CCW RETURN HI TEMP OR LO FLOW - EXTINGUISHED 	<p><u>IF</u> CCW to a RCP is lost, <u>THEN</u> perform the following:</p> <ul style="list-style-type: none"> a. Stop affected RCPs. b. Reset SI. c. Verify adequate power available to run one charging pump (75 kw). d. Start one charging pump at minimum speed for seal injection. e. Adjust HCV-142 to establish either of the following: <ul style="list-style-type: none"> o Labyrinth seal D/P to each RCP greater than 15 inches of water. <p style="text-align: center;">-OR-</p> <ul style="list-style-type: none"> o RCP seal injection flow to each RCP greater than 6 gpm. f. <u>IF</u> large imbalance in seal injection flow exists, <u>THEN</u> consider local adjustment of V-300A and V-300B.

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STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
19	<p>Check If TDAFW Pump Can Be Stopped:</p> <ul style="list-style-type: none"> a. Both MDAFW pumps - RUNNING b. PULL STOP TDAFW pump steam supply valves <ul style="list-style-type: none"> • MOV-3504A • MOV-3505A 	<p>a. Go to Step 20.</p>
*20	<p>Monitor 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> <ul style="list-style-type: none"> a. Stop dumping steam. b. Ensure reheater steam supply valves are closed. c. <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. d. <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. e. <u>IF</u> cooldown continues, <u>THEN</u> close both MSIVs. <p><u>IF</u> temperature greater than 547°F and increasing, <u>THEN</u> dump steam to stabilize and slowly decrease temperature to 547°F.</p>

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STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
21 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"> • MOV-516 for PCV-430 • MOV-515 for PCV-431C <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"> 1) Decrease charging pump flow to minimum. 2) Ensure charging valve to loop B cold leg open (AOV-294).
c. Check PRZR pressure - LESS THAN 2260 PSIG		<p>c. Continue with Step 22. <u>WHEN</u> pressure less than 2260 psig, <u>THEN</u> do Step 21d.</p>
d. Normal PRZR spray valves - CLOSED	<ul style="list-style-type: none"> • PCV-431A • PCV-431B 	<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
22	Monitor RCP Trip Criteria:	
	a. RCP status - ANY RCP RUNNING	a. Go to Step 23.
	b. SI pumps - AT LEAST TWO RUNNING	b. Go to Step 23.
	c. RCS pressure minus maximum S/G pressure - LESS THAN 175 psig [400 psig adverse CNMT]	c. Go to Step 23.
	d. Stop both RCPs	
23	Check If S/G Secondary Side Is Intact:	
	o Pressure in both S/Gs - STABLE OR INCREASING	IF 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.
	o Pressure in both S/Gs - GREATER THAN 110 PSIG	
24	Check If S/G Tubes Are Intact:	Go to E-3, STEAM GENERATOR TUBE RUPTURE, Step 1.
	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	

EOP:

E-0

TITLE:

REACTOR TRIP OR SAFETY INJECTION

REV: 32

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STEP

ACTION/EXPECTED RESPONSE

RESPONSE NOT OBTAINED

25 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
0.5 PSIGc. CNMT sump B level - LESS THAN
8 INCHES

d. CNMT sump A level

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

EOP: E-0	TITLE: REACTOR TRIP OR SAFETY INJECTION	REV: 32 PAGE 18 of 28
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STEP

ACTION/EXPECTED RESPONSE

RESPONSE NOT OBTAINED

26 Check If SI Should Be Terminated:

a. RCS pressure:

- 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 FIG-1.0, FIGURE MIN SUBCOOLING

c. Secondary heat sink:

- 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%

e. Go to ES-1.1, SI TERMINATION. Step 1.

a. Do NOT stop SI pumps. Go to Step 27.

b. Do NOT stop SI pumps. Go to Step 27.

c. IF neither condition met. THEN do NOT stop SI pumps. Go to Step 27.

d. Do NOT stop SI pumps. Perform the following:

- 1) IF normal PRZR spray available, THEN try to stabilize RCS pressure with PRZR spray.

2) Go to Step 27.

EOP: E-0	TITLE: REACTOR TRIP OR SAFETY INJECTION	REV: 32 PAGE 19 of 28
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STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
	<p><u>NOTE:</u> o Conditions should be evaluated for Site Contingency Reporting (Refer to EPIP-1.0, GINNA STATION EVENT EVALUATION AND CLASSIFICATION).</p> <p> o The Critical Safety Function Red Path Summary is available in APPENDIX 1.</p>	
27	Initiate Monitoring of Critical Safety Function Status Trees	
*28	Monitor S/G Levels:	
	<p>a. Narrow range level - GREATER THAN 5%</p> <p>b. Control feed flow to maintain narrow range level between 17% and 50%</p>	<p>a. Maintain total feed flow greater than 200 gpm until narrow range level greater than 5% in at least one S/G.</p> <p>b. <u>IF</u> narrow range level in any S/G continues to increase in an uncontrolled manner, <u>THEN</u> go to E-3, STEAM GENERATOR TUBE RUPTURE, Step 1.</p>
29	Check Secondary Radiation Levels - NORMAL	Go to E-3, STEAM GENERATOR TUBE RUPTURE, Step 1.
	<p>o Steamline radiation monitor (R-31 and R-32)</p> <p>o Dispatch A0 to locally check steamline radiation</p> <p>o Request RP sample S/Gs for activity</p>	

EOP: E-0	TITLE: REACTOR TRIP OR SAFETY INJECTION	REV: 32 PAGE 20 of 28
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STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
<p style="text-align: center;">*****</p> <p style="text-align: center;"><u>CAUTION</u></p> <p>IF OFFSITE POWER IS LOST AFTER SI RESET, THEN MANUAL ACTION MAY BE REQUIRED TO RESTART SAFEGUARDS EQUIPMENT. (REFER TO ATT-8.5, ATTACHMENT LOSS OF OFFSITE POWER)</p> <p style="text-align: center;">*****</p>		
30	Reset SI	
31	Reset CI:	
	<p>a. Depress CI reset pushbutton</p> <p>b. Verify annunciator A-26, CNMT ISOLATION - EXTINGUISHED</p>	<p>b. Perform the following:</p> <p>1) Reset SI.</p> <p>2) Depress CI reset pushbutton.</p>
32	Verify Adequate SW Flow:	
	<p>a. At least three SW pumps - RUNNING</p> <p>b. Dispatch AO to establish normal shutdown alignment (Refer to Attachment SD-1)</p>	<p>a. Manually start SW pumps as power supply permits (257 kw each).</p> <p><u>IF</u> less than three pumps running. <u>THEN</u> ensure SW isolation.</p> <p><u>IF NO</u> SW pumps running. <u>THEN</u> refer to ATT-2.4, ATTACHMENT NO SW PUMPS.</p> <p><u>IF</u> only one SW pump running. <u>THEN</u> refer to AP-SW.2, LOSS OF SERVICE WATER.</p>

EOP: E-0	TITLE: REACTOR TRIP OR SAFETY INJECTION	REV: 32 PAGE 21 of 28
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STEP

ACTION/EXPECTED RESPONSE

RESPONSE NOT OBTAINED

33 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

a. Restore IA supply as follows:

1) IF electric air compressor(s) is desired, THEN perform the following:

a) Close non-safeguards bus tie breakers:

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

b) Verify adequate emergency D/G capacity to run air compressor(s) (75 kw each).

IF NOT, THEN evaluate if CNMT RECIRC fans should be stopped. (Refer to ATT-4.0, ATTACHMENT CNMT RECIRC FANS)

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

d) Go to Step 33b.

2) IF diesel air compressor is desired, THEN restore IA supply using the diesel air compressor. (Refer to ATT-11.2, ATTACHMENT DIESEL AIR COMPRESSOR)

b. Verify SW isolation valves to turbine building - OPEN

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

b. Manually align valves.

This Step continued on the next page.

EOP: E-0	TITLE: REACTOR TRIP OR SAFETY INJECTION	REV: 32 PAGE 22 of 28
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STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
	(Step 33 continued from previous page)	
	c. Verify adequate air compressor(s) - RUNNING	c. Manually start air compressor(s) as power supply permits (75 kw each). <u>IF</u> air compressor(s) can <u>NOT</u> be started, <u>THEN</u> dispatch AO to locally reset compressor(s) as necessary. <u>IF</u> electric air compressor can <u>NOT</u> be started, <u>THEN</u> use diesel air compressor. (Refer to ATT-11.2, ATTACHMENT DIESEL AIR COMPRESSOR)
	d. Check IA supply: o Pressure - GREATER THAN 60 PSIG o Pressure - STABLE OR INCREASING	d. Perform the following: 1) Continue attempts to restore IA (Refer to AP-IA.1, LOSS OF INSTRUMENT AIR). 2) Continue with Step 34. <u>WHEN</u> IA restored, <u>THEN</u> do Steps 33e and f.
	e. Reset both trains of XY relays for IA to CNMT AOV-5392	
	f. Verify IA to CNMT AOV-5392 - OPEN	
34	Check Auxiliary Building Radiation - NORMAL • Plant vent iodine (R-10B) • Plant vent particulate (R-13) • Plant vent gas (R-14) • CCW liquid monitor (R-17) • LTD line monitor (R-9) • CHG pump room (R-4)	Evaluate cause of abnormal conditions. <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.

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STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
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35 Check PRT Conditions

- o PRT level (LI-442) - LESS THAN 84%
- o PRT temperature (TI-439) - LESS THAN 120°F
- o PRT pressure (PI-440A) - LESS THAN 3 PSIG

Evaluate the following flowpaths for cause of abnormal conditions:

- RCP seal return relief
- PRZR PORVs
- PRZR safeties
- Letdown line relief

IF excess letdown previously in service, THEN close AOV-310, excess letdown isolation valve from loop A cold.

CAUTION

RCS PRESSURE SHOULD BE MONITORED. IF RCS PRESSURE DECREASES IN AN UNCONTROLLED MANNER TO LESS THAN 250 PSIG, THEN THE RHR PUMPS MUST BE MANUALLY RESTARTED TO SUPPLY WATER TO THE RCS.

36 Check If RHR Pumps Should Be Stopped:

a. Check RCS pressure:

- 1) Pressure - GREATER THAN 250 PSIG
- 2) Pressure - STABLE OR INCREASING

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

2) Go to Step 37.

b. Stop both RHR pumps and place in AUTO

EOP: E-0	TITLE: REACTOR TRIP OR SAFETY INJECTION	REV: 32 PAGE 24 of 28
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STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
37	<p>Check Normal Power Available To Charging Pumps:</p> <ul style="list-style-type: none"> o Bus 14 normal feed breaker - CLOSED o Bus 16 normal feed breaker - CLOSED 	<p>Verify adequate emergency D/G capacity to run charging pumps (75 kw each).</p> <p><u>IF NOT</u>, <u>THEN</u> evaluate if CNMT RECIRC fans can be stopped (Refer to ATT-4.0, ATTACHMENT CNMT RECIRC FANS).</p>

EOP: E-0	TITLE: REACTOR TRIP OR SAFETY INJECTION	REV: 32 PAGE 25 of 28
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STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
38	<p>Check If Charging Flow Has Been Established:</p> <p>a. Charging pumps - ANY RUNNING</p> <p>b. Charging pump suction aligned to RWST:</p> <ul style="list-style-type: none"> o LCV-112B - OPEN o LCV-112C - CLOSED <p>c. Start charging pumps as necessary and adjust charging flow to restore PRZR level</p>	<p>a. Perform the following:</p> <ol 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 close seal injection needle valve(s) to affected RCP: <ul style="list-style-type: none"> • V-300A for RCP A • V-300B for RCP B 2) Ensure HCV-142 open, demand at 0%. <p>b. Manually align valves.</p> <p><u>IF</u> LCV-112B can <u>NOT</u> be opened, <u>THEN</u> dispatch AO to locally open V-358, manual charging pump suction from RWST (charging pump room).</p> <p><u>IF</u> LCV-112C can <u>NOT</u> be closed, <u>THEN</u> perform the following:</p> <ol style="list-style-type: none"> 1) Verify charging pump A <u>NOT</u> running and place in PULL STOP. 2) Direct AO to close V-268 to isolate charging pumps B and C from VCT (charging pump room).

EOP: E-0	TITLE: REACTOR TRIP OR SAFETY INJECTION	REV: 32 PAGE 26 of 28
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STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
39	Maintain PRZR Pressure Between 1800 PSIG And 2235 PSIG <ul style="list-style-type: none">Reset PRZR heatersUse normal PRZR spray	

STEP

ACTION/EXPECTED RESPONSE

RESPONSE NOT OBTAINED

40 Check If Emergency D/Gs
Should Be Stopped:

a. Verify AC emergency busses
energized by offsite power:

- o Emergency D/G output breakers
- OPEN
- o AC emergency bus voltage -
GREATER THAN 420 VOLTS
- o AC emergency bus normal feed
breakers - CLOSED

a. Perform the following:

1) Verify non-safeguards bus tie
breakers closed:

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

2) Place the following pumps in
PULL STOP:

- EH pumps
- Turning gear oil pump
- HP seal oil backup pump

3) Ensure condenser steam dump
mode control in MANUAL.

4) Restore power to MCCs:

- A from Bus 13
- B from Bus 15
- E from Bus 15
- F from Bus 15

5) Start HP seal oil backup pump.

6) Ensure D/G load within limits.

7) Refer to ATT-8.4, ATTACHMENT
SI/UV for other equipment
lost with loss of offsite
power.

8) Try to restore offsite power
(Refer to ER-ELEC.1.
RESTORATION OF OFFSITE POWER).

b. Stop any unloaded emergency D/G
and place in standby (Refer to
ATT-8.1, ATTACHMENT D/G STOP)

EOP: E-0	TITLE: REACTOR TRIP OR SAFETY INJECTION	REV: 32 PAGE 1 of 1
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E-0 APPENDIX LIST

TITLE

- 1) RED PATH SUMMARY
- 2) FIGURE MIN SUBCOOLING (FIG-1.0)
- 3) ATTACHMENT CI/CVI (ATT-3.0)
- 4) ATTACHMENT SD-1 (ATT-17.0)
- 5) ATTACHMENT CNMT RECIRC FANS (ATT-4.0)
- 6) ATTACHMENT D/G STOP (ATT-8.1)
- 7) ATTACHMENT SI/UV (ATT-8.4)
- 8) ATTACHMENT NO SW PUMPS (ATT-2.4)
- 9) ATTACHMENT LOSS OF OFFSITE POWER (ATT-8.5)
- 10) ATTACHMENT DIESEL AIR COMPRESSOR (ATT-11.2)
- 11) FOLDOUT

EOP: E-0	TITLE: REACTOR TRIP OR SAFETY INJECTION	REV: 32 PAGE 1 of 1
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FOLDOUT PAGE

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. AFW SUPPLY SWITCHOVER CRITERION

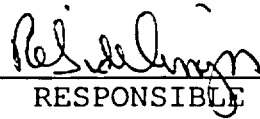
IF CST level decreases to less than 5 feet, THEN switch to alternate AFW water supply (Refer to ER-AFW.1, ALTERNATE WATER SUPPLY TO AFW PUMPS).

EOP: E-1	TITLE: LOSS OF REACTOR OR SECONDARY COOLANT	REV: 26 PAGE 1 of 22
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ROCHESTER GAS AND ELECTRIC CORPORATION

GINNA STATION

CONTROLLED COPY NUMBER 23


RESPONSIBLE MANAGER

8-13-2002
EFFECTIVE DATE

CATEGORY 1.0

REVIEWED BY: _____

EOP: E-1	TITLE: LOSS OF REACTOR OR SECONDARY COOLANT	REV: 26 PAGE 2 of 22
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A. PURPOSE - This procedure provides actions to recover from a loss of reactor or secondary coolant.

B. ENTRY CONDITIONS/SYMPTOMS

1. ENTRY CONDITIONS - This procedure is entered from:

- a. E-0, REACTOR TRIP OR SAFETY INJECTION, and FR-H.1, RESPONSE TO LOSS OF SECONDARY HEAT SINK, when a PRZR PORV is stuck open and its block valve can not be closed.
- b. E-0, REACTOR TRIP OR SAFETY INJECTION, with any of the following symptoms: high containment radiation, high containment pressure, or high containment recirculation sump level.
- c. E-0, REACTOR TRIP OR SAFETY INJECTION, ECA-2.1, UNCONTROLLED DEPRESSURIZATION OF BOTH STEAM GENERATORS, and FR-H.1, RESPONSE TO LOSS OF SECONDARY HEAT SINK, when RCS pressure is less than the shutoff head pressure of the RHR pumps or is decreasing.
- d. ES-1.1, SI TERMINATION, and FR-I.2, RESPONSE TO LOW PRESSURIZER LEVEL, if SI has to be reinitiated.
- e. E-2, FAULTED STEAM GENERATOR ISOLATION, after identification and isolation of a faulted S/G.
- f. ECA-0.2, LOSS OF ALL AC POWER RECOVERY WITH SI REQUIRED, after normal injection mode conditions are established.
- g. ECA-1.2, LOCA OUTSIDE CONTAINMENT, when a LOCA outside containment is isolated.
- h. FR-C.1, RESPONSE TO INADEQUATE CORE COOLING, and FR-C.2, RESPONSE TO DEGRADED CORE COOLING, after core cooling has been reestablished.
- i. FR-H.1, RESPONSE TO LOSS OF SECONDARY HEAT SINK, after secondary heat sink has been reestablished and all PRZR PORVs are closed.

EOP: E-1	TITLE: LOSS OF REACTOR OR SECONDARY COOLANT	REV: 26 PAGE 3 of 22
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STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED								
<p style="text-align: center;">*****</p> <p style="text-align: center;"><u>CAUTION</u></p> <p>IF RWST LEVEL DECREASES TO LESS THAN 28%, THEN THE SI SYSTEM SHOULD BE ALIGNED FOR COLD LEG RECIRCULATION USING ES-1.3. TRANSFER TO COLD LEG RECIRCULATION, STEP 1.</p> <p style="text-align: center;">*****</p>										
<p><u>NOTE:</u></p> <ul style="list-style-type: none"> o FOLDOUT page should be open AND monitored periodically. o Critical Safety Function Status Trees should be monitored. (Refer to Appendix 1 for Red Path Summary.) o Conditions should be evaluated for Site Contingency Reporting (Refer to EPIP-1.0, GINNA STATION EVENT EVALUATION AND CLASSIFICATION). 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. 										
<p>1 Monitor RCP Trip Criteria:</p> <table border="0"> <tbody> <tr> <td>a. RCP status - ANY RCP RUNNING</td> <td>a. Go to Step 2.</td> </tr> <tr> <td>b. SI pumps - AT LEAST TWO RUNNING</td> <td>b. Go to Step 2.</td> </tr> <tr> <td>c. RCS pressure minus maximum S/G pressure - LESS THAN 175 psig [400 psig adverse CNMT]</td> <td>c. Go to Step 2.</td> </tr> <tr> <td>d. Stop both RCPs</td> <td></td> </tr> </tbody> </table>			a. RCP status - ANY RCP RUNNING	a. Go to Step 2.	b. SI pumps - AT LEAST TWO RUNNING	b. Go to Step 2.	c. RCS pressure minus maximum S/G pressure - LESS THAN 175 psig [400 psig adverse CNMT]	c. Go to Step 2.	d. Stop both RCPs	
a. RCP status - ANY RCP RUNNING	a. Go to Step 2.									
b. SI pumps - AT LEAST TWO RUNNING	b. Go to Step 2.									
c. RCS pressure minus maximum S/G pressure - LESS THAN 175 psig [400 psig adverse CNMT]	c. Go to Step 2.									
d. Stop both RCPs										

EOP: E-1	TITLE: LOSS OF REACTOR OR SECONDARY COOLANT	REV: 26 PAGE 4 of 22
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STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
2	<p>Check If S/G Secondary Side <u>Is</u> Intact:</p> <ul style="list-style-type: none"> o Pressure in both S/Gs - STABLE OR INCREASING o Pressure in both S/Gs - GREATER THAN 110 PSIG 	<p><u>IF</u> any S/G pressure decreasing in an uncontrolled manner <u>OR</u> completely depressurized, <u>THEN</u> verify faulted S/G isolated unless needed for RCS cooldown:</p> <ul style="list-style-type: none"> • Steamlines • Feedlines <p><u>IF NOT</u>, <u>THEN</u> go to E-2, FAULTED STEAM GENERATOR ISOLATION, Step 1.</p>
<p><u>NOTE</u>: TDAFW pump flow control AOVs may drift open on loss of IA.</p>		
* 3	<p>Monitor Intact S/G Levels:</p> <ul style="list-style-type: none"> a. Narrow range level - GREATER THAN 5% [25% adverse CNMT] b. Control feed flow to maintain narrow range level between 17% [25% adverse CNMT] and 50% 	<ul style="list-style-type: none"> a. Maintain total feed flow greater than 200 gpm until narrow range level greater than 5% [25% adverse CNMT] in at least one S/G. b. <u>IF</u> narrow range level in any S/G continues to increase in an uncontrolled manner, <u>THEN</u> go to E-3, STEAM GENERATOR TUBE RUPTURE, Step 1.
* 4	<p>Monitor If Secondary Radiation Levels Are Normal</p> <ul style="list-style-type: none"> o Steamline radiation monitor (R-31 and R-32) o Request RP sample S/Gs for activity 	<p><u>IF</u> steamline radiation monitors <u>NOT</u> available, <u>THEN</u> dispatch AO to locally check steamline radiation.</p> <p><u>IF</u> abnormal radiation levels detected in any S/G, <u>THEN</u> go to E-3, STEAM GENERATOR TUBE RUPTURE, Step 1.</p>

EOP: E-1	TITLE: LOSS OF REACTOR OR SECONDARY COOLANT	REV: 26 PAGE 5 of 22
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STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
<p>*****</p> <p style="text-align: center;"><u>CAUTION</u></p> <p>IF ANY PRZR PORV OPENS BECAUSE OF HIGH PRZR PRESSURE, IT SHOULD BE CLOSED AFTER PRESSURE DECREASES TO LESS THAN 2335 PSIG (REFER TO STEP 5B).</p> <p>*****</p>		
<p>* 5 Monitor PRZR PORV Status:</p>		
a. Power to PORV block valves - AVAILABLE		<p>a. Restore power to block valves unless block valve was closed to isolate an open PORV:</p> <ul style="list-style-type: none"> • MOV-515, MCC D position 6C • MOV-516, MCC C position 6C
b. PORVs - CLOSED		<p>b. <u>IF</u> PRZR pressure less than 2335 psig, <u>THEN</u> manually close PORVs.</p> <p><u>IF</u> any PORV can <u>NOT</u> be closed, <u>THEN</u> manually close its block valve. <u>IF</u> block valve can <u>NOT</u> be closed, <u>THEN</u> dispatch AO to locally check breaker.</p> <ul style="list-style-type: none"> • MOV-515, MCC D position 6C • MOV-516, MCC C position 6C
c. Block valves - AT LEAST ONE OPEN		<p>c. Open one block valve unless it was closed to isolate an open PORV.</p>

EOP: E-1	TITLE: LOSS OF REACTOR OR SECONDARY COOLANT	REV: 26 PAGE 6 of 22
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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 MANUAL ACTION MAY BE REQUIRED TO RESTART SAFEGUARDS EQUIPMENT. (REFER TO ATT-8.5, ATTACHMENT LOSS OF OFFSITE POWER)</p> <p>*****</p>		
6	Reset SI	
7	Reset CI:	
	<p>a. Depress CI reset pushbutton</p> <p>b. Verify annunciator A-26, CNMT ISOLATION - EXTINGUISHED</p>	<p>b. Perform the following:</p> <p>1) Reset SI.</p> <p>2) Depress CI reset pushbutton.</p>

EOP: E-1	TITLE: LOSS OF REACTOR OR SECONDARY COOLANT	REV: 26 PAGE 7 of 22
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STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
	<p>8 Verify Adequate SW Flow:</p> <p>a. <u>Check</u> at least two SW pumps - RUNNING</p> <p>b. Dispatch AO to establish normal shutdown alignment (Refer to Attachment SD-1)</p>	<p>a. Manually start SW pumps as power supply permits (257 kw each).</p> <p><u>IF</u> less than two SW pumps running, <u>THEN</u> perform the following:</p> <ol style="list-style-type: none"> 1) Ensure SW isolation. 2) Dispatch AO to establish normal shutdown alignment (Refer to Attachment SD-1) 3) <u>IF NO</u> SW pumps running, <u>THEN</u> refer to ATT-2.4, ATTACHMENT NO SW PUMPS. 4) <u>IF</u> only one SW pump running, <u>THEN</u> refer to AP-SW.2, LOSS OF SERVICE WATER. 5) Go to Step 10.

EOP: E-1	TITLE: LOSS OF REACTOR OR SECONDARY COOLANT	REV: 26 PAGE 8 of 22
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STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
9	Establish IA to CNMT:	
	<ul style="list-style-type: none"> 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 b. Verify turbine building SW isolation valves - OPEN <ul style="list-style-type: none"> • MOV-4613 and MOV-4670 • MOV-4614 and MOV-4664 c. Verify adequate air compressors - RUNNING d. Check IA supply: <ul style="list-style-type: none"> 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 	<ul style="list-style-type: none"> a. Perform the following: <ul 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). <u>IF NOT, THEN</u> evaluate if CNMT RECIRC fans should be stopped (Refer to Attachment CNMT RECIRC FANS). 3) <u>WHEN</u> bus 15 restored, <u>THEN</u> reset control room lighting. b. Manually align valves. 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. Perform the following: <ul style="list-style-type: none"> 1) Continue attempts to restore IA (Refer to AP-IA.1, LOSS OF INSTRUMENT AIR). 2) Continue with Step 10. <u>WHEN</u> IA restored, <u>THEN</u> do Steps 9e and f.

EOP: E-1	TITLE: LOSS OF REACTOR OR SECONDARY COOLANT	REV: 26 PAGE 9 of 22
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STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
10	<p>Check Normal Power Available To Charging Pumps:</p> <ul style="list-style-type: none">o Bus 14 normal feed breaker - CLOSEDo Bus 16 normal feed breaker - CLOSED	<p>Verify adequate emergency D/G capacity to run charging pumps (75 kw each).</p> <p><u>IF NOT, THEN</u> evaluate if CNMT RECIRC fans can be stopped (Refer to Attachment CNMT RECIRC FANS).</p>

EOP: E-1	TITLE: LOSS OF REACTOR OR SECONDARY COOLANT	REV: 26 PAGE 10 of 22
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STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
11	<p>Check If Charging Flow Has Been Established:</p> <p>a. Charging pumps - ANY RUNNING</p> <p>b. Charging pump suction aligned to RWST:</p> <ul style="list-style-type: none"> o LCV-112B - OPEN o LCV-112C - CLOSED <p>c. Start charging pumps as necessary and adjust charging flow to restore PRZR level</p>	<p>a. Perform the following:</p> <ol 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 close seal injection needle valve(s) to affected RCP: <ul style="list-style-type: none"> • V-300A for RCP A • V-300B for RCP B 2) Ensure HCV-142 open, demand at 0%. <p>b. Manually align valves as necessary.</p> <p><u>IF</u> LCV-112B can <u>NOT</u> be opened, <u>THEN</u> dispatch AO to locally open manual charging pump suction from RWST (V-358 located in charging pump room).</p> <p><u>IF</u> LCV-112C can <u>NOT</u> be closed, <u>THEN</u> perform the following:</p> <ol style="list-style-type: none"> 1) Verify charging pump A <u>NOT</u> running and place in PULL STOP. 2) Direct AO to close V-268 to isolate charging pumps B and C from VCT (V-268 located in charging pump room).

EOP: E-1	TITLE: LOSS OF REACTOR OR SECONDARY COOLANT	REV: 26 PAGE 11 of 22
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STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
12	Check If SI Should Be Terminated:	
a.	RCS pressure:	a. Do <u>NOT</u> stop SI pumps. Go to Step 13.
	o Pressure - GREATER THAN 1625 psig [1825 psig adverse CNMT]	
	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 13.
c.	Secondary heat sink:	c. <u>IF</u> neither condition satisfied, <u>THEN</u> do <u>NOT</u> stop SI pumps. Go to Step 13.
	o Total feed flow to intact S/Gs - GREATER THAN 200 GPM	
	-OR-	
	o Narrow range level in at least one intact S/G - GREATER THAN 5% [25% adverse CNMT]	
d.	PRZR level - GREATER THAN 5% [30% adverse CNMT]	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 13.
e.	Go to ES-1.1, SI TERMINATION, Step 1.	

EOP:

E-1

TITLE:

LOSS OF REACTOR OR SECONDARY COOLANT

REV: 26

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STEP

ACTION/EXPECTED RESPONSE

RESPONSE NOT OBTAINED

***13 Monitor If CNMT Spray Should
Be Stopped:**

- a. CNMT spray pumps - RUNNING
- b. Check the following:
 - o CNMT pressure - LESS THAN
4 PSIG
 - o Sodium hydroxide tank level -
LESS THAN 55%
- c. Reset CNMT spray
- d. Check NaOH flow (FI-930) - NO
FLOW
- e. Stop CNMT spray pumps and place
in AUTO
- f. Close CNMT spray pump discharge
valves
 - MOV-860A
 - MOV-860B
 - MOV-860C
 - MOV-860D

a. Go to Step 14.

b. Continue with Step 14. WHEN
BOTH conditions satisfied, THEN
do Steps 13c through f.

d. Place NaOH tank outlet valve
switches to CLOSE.

- AOV-836A
- AOV-836B

EOP: E-1	TITLE: LOSS OF REACTOR OR SECONDARY COOLANT	REV: 26 PAGE 13 of 22
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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 OFFSITE POWER IS LOST AFTER SI RESET, THEN MANUAL ACTION MAY BE REQUIRED TO RESTART SAFEGUARDS EQUIPMENT. (REFER TO ATT-8.5, ATTACHMENT LOSS OF OFFSITE POWER)</p> <p>o RCS PRESSURE SHOULD BE MONITORED. IF RCS PRESSURE DECREASES IN AN UNCONTROLLED MANNER TO LESS THAN 250 PSIG [465 PSIG ADVERSE CNMT], THEN THE RHR PUMPS MUST BE MANUALLY RESTARTED TO SUPPLY WATER TO THE RCS.</p> <p>*****</p>		
*14	<p>Monitor If RHR Pumps Should Be Stopped:</p> <p>a. Check RCS pressure:</p> <p>1) Pressure - GREATER THAN 250 psig [465 psig adverse CNMT]</p> <p>2) RCS pressure - STABLE OR INCREASING</p> <p>b. Stop RHR pumps and place in AUTO</p>	<p>1) Go to Step 16.</p> <p>2) Go to Step 15.</p>
15	<p>Check RCS And S/G Pressures</p> <p>a. Check pressures in both S/Gs - STABLE OR INCREASING</p> <p>b. Check pressures in both S/Gs - GREATER THAN 110 PSIG</p> <p>c. Check RCS pressure - STABLE OR DECREASING</p>	<p>a. Return to Step 1.</p> <p>b. Monitor RCS pressure. IF RCS pressure does <u>NOT</u> increase after faulted S/G dryout, <u>THEN</u> go to Step 16.</p> <p>c. Return to Step 1.</p>

EOP: E-1	TITLE: LOSS OF REACTOR OR SECONDARY COOLANT	REV: 26 PAGE 14 of 22
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STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
16	<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"> o Emergency D/G output breakers - OPEN o AC emergency bus voltage - GREATER THAN 420 VOLTS o AC emergency bus normal feed breakers - CLOSED <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"> 1) Close non-safeguards bus tie breakers as necessary: <ul style="list-style-type: none"> • Bus 13 to Bus 14 tie • Bus 15 to Bus 16 tie 2) Place the following pumps in PULL STOP: <ul style="list-style-type: none"> • EH pumps • Turning gear oil pump • HP seal oil backup pump 3) Ensure condenser steam dump mode control in MANUAL. 4) Restore power to MCCs: <ul style="list-style-type: none"> • A from Bus 13 • B from Bus 15 • E from Bus 15 • F from Bus 15 5) Start HP seal oil backup pump. 6) Ensure D/G load within limits. 7) <u>WHEN</u> bus 15 restored, <u>THEN</u> reset control room lighting breaker. 8) Refer to Attachment SI/UV for other equipment lost with loss of offsite power. 9) Try to restore offsite power (Refer to ER-ELEC.1, RESTORATION OF OFFSITE POWER).

EOP: E-1	TITLE: LOSS OF REACTOR OR SECONDARY COOLANT	REV: 26 PAGE 15 of 22
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STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
17	<p>Check If RHR Should Be Throttled:</p> <ul style="list-style-type: none"> a. Check RHR Pumps - ANY RUNNING b. Check RWST level - LESS THAN 70% c. RHR flow - LESS THAN 1500 GPM PER OPERATING PUMP 	<ul style="list-style-type: none"> a. Go to step 18. b. Continue with Step 18. <u>WHEN</u> RWST level less than 70%. <u>THEN</u> perform step 17b. c. Manually adjust RHR Hx outlet valves equally to reduce flow to less than 1500 gpm per operating pump <ul style="list-style-type: none"> • RHR Hx A, HCV-625 • RHR Hx B, HCV-624 <p><u>IF</u> flow can <u>NOT</u> be reduced manually, <u>THEN</u> dispatch an AO with locked valve key to locally adjust RHR Hx outlet valve handwheels equally to reduce flow.</p> <ul style="list-style-type: none"> • RHR Hx A, HCV-625 handwheel • RHR Hx B, HCV-624 handwheel

LOP: E-1	TITLE: LOSS OF REACTOR OR SECONDARY COOLANT	REV: 26 PAGE 16 of 22
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STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
18	<p>Verify CNMT Sump Recirculation Capability:</p> <p>a. Check RHR and CCW systems:</p> <ol style="list-style-type: none"> 1) Power available to emergency AC busses and MCCs required for CNMT sump recirculation <ul style="list-style-type: none"> o Bus 14 and bus 18 - ENERGIZED o MCC C - ENERGIZED o Bus 16 and bus 17 - ENERGIZED o MCC D - ENERGIZED 2) RHR pumps and valves - OPERABLE 3) CCW pumps and Hx - OPERABLE <p>b. Check SW pumps - AT LEAST 2 PUMPS AVAILABLE</p> <p>c. Dispatch AO to check AUX BLDG sub-basement for RHR system leakage (AUX BLDG sub-basement key may be required)</p>	<p>a. Restore power to at least one train of emergency AC busses. <u>IF</u> at least one train of cold leg recirculation capability can <u>NOT</u> be verified, <u>THEN</u> go to ECA-1.1, LOSS OF EMERGENCY COOLANT RECIRCULATION, Step 1.</p> <p>b. Attempt to restore at least 2 SW pumps to operable. <u>IF</u> only 1 SW pump available, <u>THEN</u> refer to Attachment MIN SW for additional guidance.</p> <p>c. <u>IF</u> any RHR pump seal leakage indicated, <u>THEN</u> leakage should be evaluated and isolated if necessary.</p>

EOP: E-1	TITLE: LOSS OF REACTOR OR SECONDARY COOLANT	REV: 26 PAGE 17 of 22
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STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
19 Evaluate Plant Status:		
a. Check auxiliary building radiation - NORMAL	<ul style="list-style-type: none"> Plant vent iodine (R-10B) Plant vent particulate (R-13) Plant vent gas (R-14) CCW liquid monitor (R-17) LTDN line monitor (R-9) CHG pump room (R-4) 	a. Notify RP and refer to appropriate AR-RMS procedure.
b. Direct RP to obtain following samples:	<ul style="list-style-type: none"> RCS boron RCS activity CNMT hydrogen CNMT sump boron 	<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.
c. Verify adequate Rx head cooling:	<ol style="list-style-type: none"> 1) Verify at least one control rod shroud fan - RUNNING 2) Verify one Rx compartment cooling fan - RUNNING 	<ol style="list-style-type: none"> 1) Manually start one fan as power supply permits (45 kw) 2) Perform the following: <ul style="list-style-type: none"> o Dispatch AO to reset UV relays at MCC C and MCC D. o Manually start one fan as power supply permits (23 kw)

EOP: E-1	TITLE: LOSS OF REACTOR OR SECONDARY COOLANT	REV: 26 PAGE 18 of 22
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STEP

ACTION/EXPECTED RESPONSE

RESPONSE NOT OBTAINED

20 Check If RCS Cooldown And
Depressurization Is Required:

- a. RCS pressure - GREATER THAN
250 psig [465 psig adverse CNMT]
- b. Go to ES-1.2, POST LOCA COOLDOWN
AND DEPRESSURIZATION, Step 1

- a. IF RHR pump flow greater than
475 gpm. THEN go to Step 21.

EOP: E-1	TITLE: LOSS OF REACTOR OR SECONDARY COOLANT	REV: 26 PAGE 19 of 22
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STEP

ACTION/EXPECTED RESPONSE

RESPONSE NOT OBTAINED

NOTE: IF D/Gs supplying emergency AC busses, THEN non-essential loads may be shed as necessary to allow start of additional SW pumps.

21 Establish Adequate SW Flow:

a. Verify at least two SW pumps -
RUNNING

a. Start additional SW pumps as power supply permits (257 kw each). IF only 1 SW pump operable, THEN perform the following:

1) Ensure Attachment MIN SW is in progress.

2) Go to Step 22.

b. Verify AUX BLDG SW isolation valves - OPEN

b. Manually align valves.

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

c. Dispatch AO to check BOTH CCW Hx - IN SERVICE

c. Locally place BOTH CCW Hxs in service

d. Determine required SW flow to CCW HXs per table:

SW DISCHARGE ALIGNMENT	CCW HXs IN SERVICE	REQUIRED SW FLOW
Normal	2	Total of 5000 - 6000 gpm equally divided to both HXs
Normal	1	5000 - 6000 gpm to in-service HX
Alternate	2	30-33" d/p across each HX
Alternate	1	95-100" d/p across in-service HX

This Step continued on the next page.

EOP: E-1	TITLE: LOSS OF REACTOR OR SECONDARY COOLANT	REV: 26 PAGE 20 of 22
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STEP

ACTION/EXPECTED RESPONSE

RESPONSE NOT OBTAINED

(Step 21 continued from previous page)

e. Direct AO to adjust SW flow to required value

o IF on normal SW discharge:

- V-4619, CCW HX A
- V-4620, CCW HX B

-OR-

o IF on alternate SW discharge:

- V-4619C, CCW HX A
- V-4620B, CCW HX B

e. IF the required SW flow can NOT be obtained, THEN perform the following:

1) Isolate SW to screenhouse and air conditioning headers.

- MOV-4609/MOV-4780 - AT LEAST ONE CLOSED
- MOV-4663/MOV-4733 - AT LEAST ONE CLOSED

2) Direct AO to locally adjust SW flow to required value.

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

- SFP Hx A (V-4622) (for alternate SW discharge use V-4622A)
- SFP Hx B (V-8689)

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

EOP: E-1	TITLE: LOSS OF REACTOR OR SECONDARY COOLANT	REV: 26 PAGE 21 of 22
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STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
22	Establish CCW flow to RHR Hxs:	
	a. Check both CCW pumps - RUNNING	a. Perform the following: <ul style="list-style-type: none"> 1) Start CCW pumps as power supply permits (122 kw each) 2) <u>IF</u> both CCW pumps are running. <u>THEN</u> go to step 22b. 3) <u>IF</u> only one CCW pump is running. <u>THEN</u> perform the following: <ul style="list-style-type: none"> a) Direct AO to isolate CCW to boric acid evaporator <ul style="list-style-type: none"> o Close V-760A b) Manually open CCW MOV to only one operable RHR Loop <ul style="list-style-type: none"> o Open MOV-738A
		-OR-
		o Open MOV-738B
		c) Go to step 23.
	b. Manually open CCW valves to RHR Hxs <ul style="list-style-type: none"> • MOV-738A • MOV-738B 	b. Dispatch AO to locally open valves.

EOP: E-1	TITLE: LOSS OF REACTOR OR SECONDARY COOLANT	REV: 26 PAGE 22 of 22
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STEP

ACTION/EXPECTED RESPONSE

RESPONSE NOT OBTAINED

23 Check If Transfer To Cold Leg
Recirculation Is Required:

a. RWST level - LESS THAN 28%

a. Return to Step 17.

b. Go to ES-1.3. TRANSFER TO COLD
LEG RECIRCULATION, Step 1

-END-

EOP: E-1	TITLE: LOSS OF REACTOR OR SECONDARY COOLANT	REV: 26 PAGE 1 of 1
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E-1 APPENDIX LIST

TITLE

- 1) RED PATH SUMMARY
- 2) FIGURE MIN SUBCOOLING (FIG-1.0)
- 3) ATTACHMENT CNMT RECIRC FANS (ATT-4.0)
- 4) ATTACHMENT D/G STOP (ATT-8.1)
- 5) ATTACHMENT SD-1 (ATT-17.0)
- 6) ATTACHMENT SI/UV (ATT-8.4)
- 7) ATTACHMENT MIN SW (ATT-2.1)
- 8) ATTACHMENT NO SW PUMPS (ATT-2.4)
- 9) ATTACHMENT LOSS OF OFFSITE POWER (ATT-8.5)
- 10) FOLDOUT

EOP: E-1	TITLE: LOSS OF REACTOR OR SECONDARY COOLANT	REV: 26 PAGE 1 of 1
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RED PATH SUMMARY

- a. SUBCRITICALITY - Nuclear power greater than 5%
- b. CORE COOLING - Core exit T/Cs greater than 1200°F
 -OR-
 Core exit T/Cs greater than 700°F AND
 RVLIS level (no RCPs) less than 52% [55%
 adverse CNMT]
- c. HEAT SINK - Narrow range level in all S/Gs less than 5%
 [25% adverse CNMT] AND total feedwater flow
 less than 200 gpm
- d. INTEGRITY - Cold leg temperatures decrease greater than
 100°F in last 60 minutes AND RCS cold leg
 temperature less than 285°F
- e. CONTAINMENT - CNMT pressure greater than 60 psig

EOP: E-1	TITLE: LOSS OF REACTOR OR SECONDARY COOLANT	REV: 26 PAGE 1 of 1
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FOLDOUT PAGE

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 REINITIATION CRITERIA

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

o RCS subcooling based on core exit T/Cs - LESS THAN 0° F USING FIGURE MIN SUBCOOLING

- OR -

o PRZR level - CHARGING CAN NOT CONTROL LEVEL GREATER THAN 5% [30% adverse CNMT]

3. SI TERMINATION CRITERIA

IF ALL conditions listed below occur, THEN go to ES-1.1, SI TERMINATION, Step 1:

a. RCS subcooling based on core exit T/Cs - GREATER THAN 0° F USING FIGURE MIN SUBCOOLING

b. Total feed flow to intact S/Gs - GREATER THAN 200 GPM

- OR -

Narrow range level in at least one intact S/G - GREATER THAN 5% [25% adverse CNMT]

c. RCS pressure:

o GREATER THAN 1625 PSIG [1825 psig adverse CNMT]

o STABLE OR INCREASING

d. PRZR level - GREATER THAN 5% [30% adverse CNMT]

4. SECONDARY INTEGRITY CRITERIA

IF any S/G pressure is decreasing in an uncontrolled manner or is completely depressurized AND has not been isolated, THEN go to E-2, FAULTED S/G ISOLATION, Step 1.

5. E-3 TRANSITION CRITERIA

IF any S/G level increased in an uncontrolled manner or any S/G has abnormal radiation, THEN manually start SI pumps as necessary AND go to E-3, STEAM GENERATOR TUBE RUPTURE, Step 1.

6. COLD LEG RECIRCULATION SWITCHOVER CRITERION

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

7. 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).

EOP: E-3	TITLE: STEAM GENERATOR TUBE RUPTURE	REV: 32 PAGE 1 of 42
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ROCHESTER GAS AND ELECTRIC CORPORATION

GINNA STATION

CONTROLLED COPY NUMBER 23

Robert Quinn
RESPONSIBLE MANAGER

8-13-2002
EFFECTIVE DATE

CATEGORY 1.0

REVIEWED BY: _____

EOP: E-3	TITLE: STEAM GENERATOR TUBE RUPTURE	REV: 32 PAGE 2 of 42
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A. PURPOSE - This procedure provides actions to terminate leakage of reactor coolant into the secondary system following a steam generator tube rupture (SGTR), this procedure should also be used for a SGTR in one S/G and a fault in the other S/G.

B. ENTRY CONDITIONS/SYMPTOMS

1. ENTRY CONDITIONS - This procedure is entered from:

- a. E-0, REACTOR TRIP OR SAFETY INJECTION, when condenser air ejector radiation or blowdown radiation is abnormal, or
- b. E-0, REACTOR TRIP OR SAFETY INJECTION, E-1, LOSS OF REACTOR OR SECONDARY COOLANT, E-2, FAULTED STEAM GENERATOR ISOLATION, and FR-H.3, RESPONSE TO STEAM GENERATOR HIGH LEVEL, when secondary radiation is abnormal, or
- c. E-0, REACTOR TRIP OR SAFETY INJECTION, E-1, LOSS OF REACTOR OR SECONDARY COOLANT, E-2, FAULTED STEAM GENERATOR ISOLATION, ES-1.2, POST LOCA COOLDOWN AND DEPRESSURIZATION, ECA-3.3, SGTR WITHOUT PRESSURIZER PRESSURE CONTROL, when an intact S/G narrow range level increases in an uncontrolled manner.
- d. ECA-3.3, SGTR WITHOUT PRESSURIZER PRESSURE CONTROL, when pressurizer pressure control is restored.
- e. Any FOLDOUT page that has E-3 transition criteria whenever either S/G level increases in an uncontrolled manner or either S/G has abnormal radiation.

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STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
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- NOTE:
- o FOLDOUT page should be open AND monitored periodically.
 - o Critical Safety Function Status Trees should be monitored (Refer to Appendix 1 for Red Path Summary).
 - o Personnel should be available for sampling during this procedure.
 - o Conditions should be evaluated for Site Contingency Reporting (EPIP-1.0, GINNA STATION EVENT EVALUATION AND CLASSIFICATION).
 - 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 Monitor RCP Trip Criteria:**

- | | |
|---|------------------|
| a. RCP status - ANY RCP RUNNING | a. Go to Step 2. |
| b. SI pumps - AT LEAST TWO RUNNING | b. Go to Step 2. |
| c. RCS pressure minus maximum S/G pressure - LESS THAN 175 psig [400 psig adverse CNMT] | c. Go to Step 2. |
| d. Stop both RCPs | |

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
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.....

CAUTION

IF OFFSITE POWER IS LOST AFTER SI RESET, THEN MANUAL ACTION MAY BE REQUIRED TO RESTART SAFEGUARDS EQUIPMENT. (REFER TO ATT-8.5, ATTACHMENT LOSS OF OFFSITE POWER)

.....

2 Identify Ruptured S/G(s):

Perform the following:

- o Unexpected increase in either S/G narrow range level

- a. Reset SI

-OR-

- b. Continue with Steps 10 through 16. WHEN ruptured S/G(s) identified. THEN do Steps 3 through 9.

- o High radiation indication on main steamline radiation monitor

- R-31 for S/G A
- R-32 for S/G B

-OR-

- o AO reports local indication of high steamline radiation

-OR-

- o RP reports high radiation from S/G activity sample

EOP: E-3	TITLE: STEAM GENERATOR TUBE RUPTURE	REV: 32 PAGE 5 of 42
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STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
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CAUTION

- o- IF THE TDAFW PUMP IS THE ONLY AVAILABLE SOURCE OF FEED FLOW, STEAM SUPPLY TO THE TDAFW PUMP MUST BE MAINTAINED FROM ONE S/G.
- o AT LEAST ONE S/G SHALL BE MAINTAINED AVAILABLE FOR RCS COOLDOWN.

3 Isolate Flow From Ruptured S/G(s):

- | | |
|--|---|
| <p>a. Adjust ruptured S/G ARV controller to 1050 psig in AUTO</p> <p>b. Check ruptured S/G ARV - CLOSED</p> | <p>b. <u>WHEN</u> ruptured S/G pressure less than 1050 psig, <u>THEN</u> verify S/G ARV closed. <u>IF NOT</u> closed, <u>THEN</u> place controller in MANUAL and close S/G ARV.</p> <p><u>IF</u> S/G ARV can <u>NOT</u> be closed, <u>THEN</u> dispatch AO to locally isolate.</p> |
| <p>c. Close ruptured S/G TDAFW pump steam supply valve and place in PULL STOP</p> <ul style="list-style-type: none"> • S/G A, MOV-3505A • S/G B, MOV-3504A | <p>c. Dispatch AO with locked valve key to locally isolate steam from ruptured S/G to TDAFW pump.</p> <ul style="list-style-type: none"> • S/G A, V-3505 • S/G B, V-3504 |
| <p>d. Verify ruptured S/G blowdown valve - CLOSED</p> <ul style="list-style-type: none"> • S/G A, AOV-5738 • S/G B, AOV-5737 | <p>d. Place S/G blowdown and sample valve isolation switch to CLOSE.</p> <p><u>IF</u> blowdown can <u>NOT</u> be isolated manually, <u>THEN</u> dispatch AO to locally isolate blowdown.</p> <ul style="list-style-type: none"> • S/G A, V-5701 • S/G B, V-5702 |

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STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
4	<p>Complete Ruptured S/G Isolation:</p> <p>a. Close ruptured S/G MSIV - RUPTURED S/G MSIV CLOSED</p> <p>b. Dispatch A0 to complete ruptured S/G isolation (Refer to Attachment RUPTURED S/G part A)</p>	<p>a. Perform the following:</p> <ol style="list-style-type: none"> 1) Close intact S/G MSIV. 2) Place intact S/G ARV controller at 1005 psig in AUTO. 3) Adjust condenser steam dump controller to 1050 psig in AUTO. 4) Place condenser steam dump mode selector switch to MANUAL. 5) Adjust reheat steam supply controller cam to close reheat steam supply valves. 6) Ensure turbine stop valves - CLOSED. 7) Dispatch A0 to complete ruptured S/G isolation (Refer to Attachment RUPTURED S/G, parts A and B).

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STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
<p>*****</p> <p style="text-align: center;"><u>CAUTION</u></p> <p>IF ANY RUPTURED S/G IS FAULTED, FEED FLOW TO THAT S/G SHOULD REMAIN ISOLATED DURING SUBSEQUENT RECOVERY ACTIONS UNLESS NEEDED FOR RCS COOLDOWN.</p> <p>*****</p>		
5	Check Ruptured S/G Level:	
	<p>a. Narrow range level - GREATER THAN 5% [25% adverse CNMT]</p> <p>b. Close MDAFW pump discharge valve to ruptured S/G</p> <ul style="list-style-type: none"> • S/G A, MOV-4007 • S/G B, MOV-4008 <p>c. Pull stop MDAFW pump for ruptured S/G</p> <p>d. Close TDAFW pump flow control valve to ruptured S/G</p> <ul style="list-style-type: none"> • S/G A, AOV-4297 • S/G B, AOV-4298 <p>e. Verify MDAFW pump crosstie valves - CLOSED</p> <ul style="list-style-type: none"> • MOV-4000A • MOV-4000B 	<p>a. <u>IF</u> ruptured S/G <u>NOT</u> faulted, <u>THEN</u> perform the following:</p> <p>1) Maintain feed flow to ruptured S/G until level greater than 5% [25% adverse CNMT].</p> <p>2) Continue with Step 6. <u>WHEN</u> ruptured S/G level greater than 5% [25% adverse CNMT], <u>THEN</u> do Steps 5b through e.</p> <p>b. Dispatch A0 to locally close valve.</p> <p>d. Dispatch A0 with locked valve key to locally close TDAFW pump manual feedwater isolation valve to ruptured S/G.</p> <ul style="list-style-type: none"> • S/G A, V-4005 • S/G B, V-4006 <p>e. Manually close valves.</p>

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STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
6	Verify Ruptured S/G Isolated:	
	<ul style="list-style-type: none"> a. Check ruptured MSIV - CLOSED b. Check TDAFW pump steam supply from ruptured S/G - ISOLATED c. Ruptured S/G pressure - GREATER THAN 300 PSIG 	<ul style="list-style-type: none"> a. Ensure air ejector/gland steam supply and flange heating steam isolated. (Refer to ATTACHMENT RUPTURED S/G, part B). b. Continue efforts to isolate steam supply from ruptured S/G: <ul style="list-style-type: none"> • S/G A, MOV-3505A <u>OR</u> V-3505 • S/G B, MOV-3504A <u>OR</u> V-3504 c. Go to ECA-3.1, SGTR WITH LOSS OF REACTOR COOLANT - SUBCOOLED RECOVERY DESIRED, Step 1.
7	Establish Condenser Steam Dump Pressure Control:	
	<ul style="list-style-type: none"> a. Verify condenser available: <ul style="list-style-type: none"> o Intact S/G MSIV - OPEN o Annunciator G-15, STEAM DUMP ARMED - LIT b. Adjust condenser steam dump controller HC-484 to maintain intact S/G pressure and verify in AUTO c. Place steam dump mode selector switch to MANUAL 	<ul style="list-style-type: none"> a. Adjust S/G ARV controllers to maintain intact S/G pressure in AUTO and go to Step 8.

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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 MANUAL ACTION MAY BE REQUIRED TO RESTART SAFEGUARDS EQUIPMENT. (REFER TO ATT-8.5, ATTACHMENT LOSS OF OFFSITE POWER)</p> <p>.....</p> <p>8 Reset SI</p>		

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STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
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CAUTION

RUPTURED S/G LEVEL SHALL BE MAINTAINED GREATER THAN 5% [25% ADVERSE CNMT]
DURING THE RCS COOLDOWN, UNLESS THE RUPTURED S/G IS ALSO FAULTED.

NOTE: Following initiation of controlled cooldown or depressurization, RCP trip criteria is no longer applicable.

9 Initiate RCS Cooldown:

- a. Determine required core exit temperature from below table

RUPTURED SG PRESSURE	REQUIRED CORE EXIT TEMPERATURE (°F)
1100 PSIG	525 [505 adverse CNMT]
1000 PSIG	510 [490 adverse CNMT]
900 PSIG	500 [475 adverse CNMT]
800 PSIG	485 [460 adverse CNMT]
700 PSIG	465 [440 adverse CNMT]
600 PSIG	450 [420 adverse CNMT]
500 PSIG	425 [395 adverse CNMT]
400 PSIG	405 [370 adverse CNMT]
300 PSIG	375 [330 adverse CNMT]

- b. IF ruptured S/G MSIV closed, THEN initiate dumping steam to condenser from intact S/G at maximum rate

- b. Manually or locally initiate steam dump from intact S/G at maximum rate using S/G ARV.

IF no intact S/G available, THEN perform the following:

- o Use faulted S/G.

-OR-

- o IF a ruptured S/G must be used, THEN go to ECA-3.1, SGTR WITH LOSS OF REACTOR COOLANT - SUBCOOLED RECOVERY DESIRED, Step 1.

- c. Core exit T/Cs - LESS THAN REQUIRED TEMPERATURE

- c. Continue with Step 10. WHEN core exit T/Cs less than required, THEN do Step 9d.

- d. Stop RCS cooldown and stabilize core exit T/Cs less than required temperature

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STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
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NOTE: TDAFW pump flow control AOVs may drift open on loss of IA.

10- Monitor Intact S/G Level:

- | | |
|---|--|
| <p>a. Narrow range level - GREATER THAN 5% [25% adverse CNMT]</p> | <p>a. Maintain total feed flow greater than 200 gpm until narrow range level greater than 5% [25% adverse CNMT] in at least one S/G.</p> |
| <p>b. Control feed flow to maintain narrow range level between 17% [25% adverse CNMT] and 50%</p> | <p>b. <u>IF</u> narrow range level in the intact S/G continues to increase in an uncontrolled manner, <u>THEN</u> go to ECA-3.1, SGTR WITH LOSS OF REACTOR COOLANT - SUBCOOLED RECOVERY DESIRED, Step 1.</p> |

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STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
<p>*****</p> <p style="text-align: center;"><u>CAUTION</u></p> <p>IF ANY PRZR PORV OPENS BECAUSE OF HIGH PRZR PRESSURE, IT SHOULD BE CLOSED AFTER PRESSURE DECREASES TO LESS THAN 2335 PSIG (REFER TO STEP 11B).</p> <p>*****</p>		
11 Monitor PRZR PORVs And Block Valves:		
a. Power to PORV block valves - AVAILABLE		<p>a. Restore power to block valves unless block valve was closed to isolate an open PORV:</p> <ul style="list-style-type: none"> • MOV-515, MCC D position 6C • MOV-516, MCC C position 6C
b. PORVs - CLOSED		<p>b. <u>IF</u> PRZR pressure less than 2335 psig, <u>THEN</u> manually close PORVs.</p> <p><u>IF</u> any PORV can <u>NOT</u> be closed, <u>THEN</u> manually close its block valve. <u>IF</u> block valve can <u>NOT</u> be closed, <u>THEN</u> go to ECA-3.1, SGTR WITH LOSS OF REACTOR COOLANT - SUBCOOLED RECOVERY DESIRED, Step 1.</p>
c. Block valves - AT LEAST ONE OPEN		<p>c. Open one block valve unless it was closed to isolate an open PORV.</p>

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STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
12	Reset CI: a. Depress CI reset pushbutton b. Verify annunciator A-26, CNMT ISOLATION - EXTINGUISHED	b. Perform the following: 1) Reset SI. 2) Depress CI reset pushbutton.

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STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
13	<p>Monitor All AC Busses - BUSSES ENERGIZED BY OFFSITE POWER</p> <ul style="list-style-type: none"> o Normal feed breakers to all 480 volt busses - CLOSED o 480 volt bus voltage - GREATER THAN 420 VOLTS o Emergency D/G output breakers - OPEN 	<p>Perform the following:</p> <ul style="list-style-type: none"> a. <u>IF</u> any AC emergency bus normal feed breaker open, <u>THEN</u> ensure associated D/G breaker closed. b. Perform the following as necessary: <ul 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) Place the following pumps in PULL STOP: <ul style="list-style-type: none"> • EH pumps • Turning gear oil pump • HP seal oil backup pump 3) Restore power to MCCs. <ul style="list-style-type: none"> • A from Bus 13 • B from Bus 15 • E from Bus 15 • F from Bus 15 4) Start HP seal oil backup pump. 5) Start CNMT RECIRC fans as necessary. 6) Ensure D/G load within limits. 7) <u>WHEN</u> bus 15 restored, <u>THEN</u> reset control room lighting. c. Try to restore offsite power to all AC busses (Refer to ER-ELEC.1, RESTORATION OF OFFSITE POWER).

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STEP

ACTION/EXPECTED RESPONSE

RESPONSE NOT OBTAINED

14 Verify Adequate SW Flow:

a. Check at least two SW pumps -
RUNNING

a. Manually start SW pumps as power
supply permits (257 kw each).

IF less than two SW pumps
running. THEN:

1) Ensure SW isolation.

2) Dispatch AO to establish
normal shutdown alignment
(Refer to Attachment SD-1)

3) IF NO SW pumps running. THEN
refer to ATT-2.4, ATTACHMENT
NO SW PUMPS.

4) IF only one SW pump running,
THEN refer to AP-SW.2, LOSS
OF SERVICE WATER.

5) Go to Step 16.

b. Dispatch AO to establish normal
shutdown alignment (Refer to
Attachment SD-1)

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STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
15	Establish IA to CNMT:	
a.	Verify non-safeguards busses energized <ul style="list-style-type: none"> Bus 13 normal feed - CLOSED -OR- Bus 15 normal feed - CLOSED 	a. Perform the following: <ol style="list-style-type: none"> Close non-safeguards bus tie breakers: <ul style="list-style-type: none"> Bus 13 to Bus 14 tie Bus 15 to Bus 16 tie Verify adequate emergency D/G capacity to run air compressors (75 kw each). <p><u>IF NOT. THEN</u> evaluate if CNMT RECIRC fans should be stopped (Refer to Attachment CNMT RECIRC FANS).</p>
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 adequate 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"> Pressure - GREATER THAN 60 PSIG Pressure - STABLE OR INCREASING 	d. Perform the following: <ol style="list-style-type: none"> Continue attempts to restore IA (Refer to AP-IA.1, LOSS OF INSTRUMENT AIR). Continue with Step 16. <u>WHEN</u> IA restored, <u>THEN</u> do Steps 15e and f.
e.	Reset both trains of XY relays for IA to CNMT AOV-5392	
f.	Verify IA to CNMT AOV-5392 - OPEN	

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STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
<p>*****</p> <p style="text-align: center;"><u>CAUTION</u></p> <p>RCS PRESSURE SHOULD BE MONITORED. IF RCS PRESSURE DECREASES IN AN UNCONTROLLED MANNER TO LESS THAN 250 PSIG [465 PSIG ADVERSE CNMT], THEN THE RHR PUMPS MUST BE MANUALLY RESTARTED TO SUPPLY WATER TO THE RCS.</p> <p>*****</p>		
16	<p>Check If RHR Pumps Should Be Stopped:</p> <p>a. Check RCS pressure - GREATER THAN 250 psig [465 psig adverse CNMT]</p> <p>b. Stop RHR pumps and place both in AUTO</p>	<p>a. Go to Step 17.</p>

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STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
17	Establish Charging Flow:	
	<p>a. Charging pumps - ANY RUNNING</p> <p>b. Align charging pump suction to RWST:</p> <ul style="list-style-type: none"> o LCV-112B - OPEN o LCV-112C - CLOSED <p>c. Start charging pumps as necessary and establish 75 gpm total charging flow</p> <ul style="list-style-type: none"> • Charging line flow • Seal injection 	<p>a. Perform the following:</p> <ol 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 valves to affected RCP. • V-300A for RCP A • V-300B for RCP B 2) Ensure HCV-142 demand at 0%. <p>b. <u>IF</u> LCV-112B can <u>NOT</u> be opened, <u>THEN</u> dispatch AO to locally open manual charging pump suction from RWST (V-358 located in charging pump room).</p> <p><u>IF</u> LCV-112C can <u>NOT</u> be closed, <u>THEN</u> perform the following:</p> <ol style="list-style-type: none"> 1) Verify charging pump A <u>NOT</u> running and place in PULL STOP. 2) Direct AO to close V-268 to isolate charging pumps B and C from VCT (V-268 located in charging pump room).

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STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
18	<p>Check If RCS Cooldown Should Be Stopped:</p> <ul style="list-style-type: none"> a. Core exit T/Cs - LESS THAN REQUIRED TEMPERATURE b. Stop RCS cooldown c. Stabilize core exit T/Cs - LESS THAN REQUIRED TEMPERATURE 	<ul style="list-style-type: none"> a. Do <u>NOT</u> proceed until core exit T/Cs less than required temperature.
19	<p>Check Ruptured S/G Pressure - STABLE OR INCREASING</p>	<p><u>IF</u> pressure continues to decrease to less than 250 psi above the pressure of the intact S/G, <u>THEN</u> go to ECA-3.1, SGTR WITH LOSS OF REACTOR COOLANT - SUBCOOLED RECOVERY DESIRED, Step 1.</p>
20	<p>Check RCS Subcooling Based On Core Exit T/Cs - GREATER THAN 20°F USING FIGURE MIN SUBCOOLING</p>	<p>Go to ECA-3.1, SGTR WITH LOSS OF REACTOR COOLANT - SUBCOOLED RECOVERY DESIRED, Step 1 .</p>

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STEP

ACTION/EXPECTED RESPONSE

RESPONSE NOT OBTAINED

NOTE: SI ACCUMs may inject during RCS depressurization.

21. Depressurize RCS To Minimize
Break Flow And Refill PRZR:

a. Check the following:

- o Ruptured S/G level - LESS THAN 90% [80% adverse CNMT]
- o Any RCP - RUNNING
- o IA to CNMT - AVAILABLE

b. Spray PRZR with maximum available spray until ANY of the following conditions satisfied:

- o PRZR level - GREATER THAN 75% [65% adverse CNMT]

-OR-

- o RCS pressure - LESS THAN SATURATION USING FIGURE MIN SUBCOOLING

-OR-

- o BOTH of the following:

- 1) RCS pressure - LESS THAN RUPTURED S/G PRESSURE
- 2) PRZR level - GREATER THAN 5% [30% adverse CNMT]

c. Close normal PRZR spray valves:

- 1) Adjust normal spray valve controller to 0% DEMAND
- 2) Verify PRZR spray valves - CLOSED
 - PCV-431A
 - PCV-431B

d. Verify auxiliary spray valve (AOV-296) - CLOSED

e. Go to Step 24

a. Go to Step 22.

c. Stop associated RCP(s).

d. Decrease charging speed to minimum and ensure charging valve to loop B cold leg open (AOV-294).

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STEP

ACTION/EXPECTED RESPONSE

RESPONSE NOT OBTAINED

CAUTION

- o THE PRT MAY RUPTURE IF A PRZR PORV IS USED TO DEPRESSURIZE THE RCS. THIS MAY RESULT IN ABNORMAL CNMT CONDITIONS.
 - o CYCLING OF THE PRZR PORV SHOULD BE MINIMIZED.
 - o THE UPPER HEAD REGION MAY VOID DURING RCS DEPRESSURIZATION IF RCPS ARE NOT RUNNING. THIS MAY RESULT IN A RAPIDLY INCREASING PRZR LEVEL.
- *****

- NOTE:
- o If auxiliary spray is in use, spray flow may be increased by closing normal charging valve AOV-294 and normal PRZR spray valves.
 - o When using a PRZR PORV select one with an operable block valve.

22 Depressurize RCS Using PRZR
PORV To Minimize Break Flow
And Refill PRZR:

- a. Verify IA to CNMT - AVAILABLE
- b. PRZR PORVs - AT LEAST ONE
AVAILABLE

a. Refer to Attachment N2 PORVS to
operate PORVs.

- b. IF auxiliary spray available,
THEN return to Step 21b.

IF auxiliary spray can NOT be
established, THEN go to ECA-3.3,
SGTR WITHOUT PRESSURIZER
PRESSURE CONTROL, Step 1.

This Step continued on the next page.

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STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
	(Step 22 continued from previous page)	
c.	Open one PRZR PORV until ANY of the following conditions satisfied:	c. <u>IF</u> auxiliary spray available, <u>THEN</u> return to step 21b.
	o PRZR level - GREATER THAN 75% [65% adverse CNMT]	1) <u>IF</u> auxiliary spray can <u>NOT</u> be established, <u>THEN</u> go to ECA-3.3, SGTR WITHOUT PRESSURIZER PRESSURE CONTROL, Step 1.
	-OR-	
	o RCS pressure - LESS THAN SATURATION USING FIGURE MIN SUBCOOLING	
	-OR-	
	o BOTH of the following:	
	1) RCS pressure - LESS THAN RUPTURED S/G PRESSURE	
	2) PRZR level - GREATER THAN 5% [30% adverse CNMT]	
d.	Close PRZR PORVs	d. <u>IF</u> either PRZR PORV can <u>NOT</u> be closed, <u>THEN</u> close associated block valve.

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STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
23 Check RCS Pressure - INCREASING		<p>Close block valve for the PRZR PORV that was opened.</p> <p><u>IF</u> pressure continues to decrease, <u>THEN</u> perform the following:</p> <p>a. Monitor the following conditions for indication of leakage from PRZR PORV:</p> <ul style="list-style-type: none"> o PORV outlet temp (TI-438) <u>NOT</u> decreasing. o PRT pressure, level or temperature continue to increase. <p>b. Go to ECA-3.1, SGTR WITH LOSS OF REACTOR COOLANT - SUBCOOLED RECOVERY DESIRED, Step 1.</p>

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STEP

ACTION/EXPECTED RESPONSE

RESPONSE NOT OBTAINED

CAUTION

SI MUST BE TERMINATED WHEN TERMINATION CRITERIA ARE SATISFIED TO PREVENT OVERFILLING OF THE RUPTURED S/G.

24 Check If SI Flow Should Be Terminated:

a. RCS subcooling based on core exit T/Cs - GREATER THAN 0°F USING FIGURE MIN SUBCOOLING

a. Do NOT stop SI pumps. Go to ECA-3.1, SGTR WITH LOSS OF REACTOR COOLANT - SUBCOOLED RECOVERY DESIRED, Step 1.

b. Secondary heat sink:

o Total feed flow to S/G(s) - GREATER THAN 200 GPM AVAILABLE

b. IF neither condition satisfied, THEN do NOT stop SI pumps. Go to ECA-3.1, SGTR WITH LOSS OF REACTOR COOLANT - SUBCOOLED RECOVERY DESIRED, Step 1.

-OR-

o Narrow range level in at least one intact S/G - GREATER THAN 5% [25% adverse CNMT]

c. RCS pressure - STABLE OR INCREASING

c. Do NOT stop SI pumps. Go to ECA-3.1, SGTR WITH LOSS OF REACTOR COOLANT - SUBCOOLED RECOVERY DESIRED, Step 1.

d. PRZR level - GREATER THAN 5% [30% adverse CNMT]

d. Do NOT stop SI pumps. Return to Step 6.

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STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
25	Stop SI Pumps And Place In AUTO	
26	Establish Required Charging Line Flow:	
	a. Charging pumps - ANY RUNNING	a. Perform the following:
		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 isolate seal injection to affected RCP:
		• RCP A, V-300A • RCP B, V-300B
		2) Ensure HCV-142 open.
		3) Start one charging pump.
	b. Establish 20 gpm charging line flow	

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STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
<p>*27 Monitor SI Reinitiation Criteria:</p>		
	<p>a. RCS subcooling based on core exit T/Cs - GREATER THAN 0°F USING FIGURE MIN SUBCOOLING</p> <p>b. PRZR level - GREATER THAN 5% [30% adverse CNMT]</p>	<p>a. Manually start SI pumps as necessary and go to ECA-3.1. SGTR WITH LOSS OF REACTOR COOLANT - SUBCOOLED RECOVERY DESIRED, Step 1.</p> <p>b. Control charging flow to maintain PRZR level.</p> <p>IF PRZR level can <u>NOT</u> be maintained, <u>THEN</u> manually start SI pumps as necessary and go to ECA-3.1, SGTR WITH LOSS OF REACTOR COOLANT - SUBCOOLED RECOVERY DESIRED, Step 1.</p>

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STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
28	<p>Check If SI ACCUMs Should Be Isolated:</p> <ul style="list-style-type: none"> a. Check the following: <ul style="list-style-type: none"> o RCS subcooling based on core exit T/Cs - GREATER THAN 0°F USING FIGURE MIN SUBCOOLING o PRZR level - GREATER THAN 5% [30% adverse CNMT] b. Dispatch AO with locked valve key to locally close breakers for SI ACCUM discharge valves <ul style="list-style-type: none"> • MOV-841, MCC C position 12F • MOV-865, MCC D position 12C c. Close SI ACCUM discharge valves <ul style="list-style-type: none"> • MOV-841 • MOV-865 d. Locally reopen breakers for MOV-841 and MOV-865 	<ul style="list-style-type: none"> a. Manually operate SI pumps as necessary and go to ECA-3.1, SGTR WITH LOSS OF REACTOR COOLANT - SUBCOOLED RECOVERY DESIRED, Step 1. c. Vent any unisolated ACCUMs: <ul style="list-style-type: none"> 1) Open vent valves for unisolated SI ACCUMs. <ul style="list-style-type: none"> • ACCUM A, AOV-834A • ACCUM B, AOV-834B 2) Open HCV-945.

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STEP

ACTION/EXPECTED RESPONSE

RESPONSE NOT OBTAINED

29 Verify Adequate SW Flow To
CCW Hx:

a. Verify at least three SW pumps -
RUNNING

a. Manually start pumps as power
supply permits (257 kw each).
IF less than two SW pumps can be
operated, THEN perform the
following:

1) IF NO SW pumps running, THEN
refer to ATT-2.4, ATTACHMENT
NO SW PUMPS.

2) IF only one SW pump running,
THEN refer to AP-SW.2, LOSS
OF SERVICE WATER.

3) Go to Step 36.

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

b. Manually align valves.

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

This Step continued on the next page.

STEP

ACTION/EXPECTED RESPONSE

RESPONSE NOT OBTAINED

(Step 29 continued from previous page)

c. Verify CNMT RECIRC fan
annunciator C-2, HIGH
TEMPERATURE ALARM - EXTINGUISHED

c. Perform the following:

1) Determine required SW flow to
CCW HXs per table:

SW DISCHARGE ALIGNMENT	CCW HXs IN SERVICE	REQUIRED SW FLOW
Normal	2	Total of 5000 - 6000 gpm equally divided to both HXs
Normal	1	5000 - 6000 gpm to in-service HX
Alternate	2	30-33" d/p across each HX
Alternate	1	95-100" d/p across in-service HX

2) Direct AO to adjust SW flow
to required value.

o IF on normal SW discharge:

- V-4619, CCW Hx A
- V-4620, CCW Hx B

-OR-

o IF on alternate SW
discharge:

- V-4619C, CCW Hx A
- V-4620B, CCW Hx B

EOP: E-3	TITLE: STEAM GENERATOR TUBE RUPTURE	REV: 32 PAGE 30 of 42
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STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
30	<p>Check If Normal CVCS Operation Can Be Established</p> <p>a. Verify IA restored:</p> <ul style="list-style-type: none"> o IA to CNMT (AOV-5392) - OPEN o IA pressure - GREATER THAN 60 PSIG <p>b. Verify instrument bus D - ENERGIZED</p> <p>c. CCW pumps - ANY RUNNING</p> <p>d. Charging pump - ANY RUNNING</p>	<p>a. Continue with Step 36. <u>WHEN</u> IA restored, <u>THEN</u> do Steps 30 through 35.</p> <p>b. Energize MCC B. <u>IF</u> MCC B <u>NOT</u> available, <u>THEN</u> perform the following:</p> <ul style="list-style-type: none"> 1) Verify MCC A energized. 2) Place instrument bus D on maintenance supply. <p>c. Perform the following:</p> <ul style="list-style-type: none"> 1) <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 2) Manually start one CCW pump. <p>d. Continue with Step 36. <u>WHEN</u> any charging pump running, <u>THEN</u> do Steps 31 through 35.</p>

EOP: E-3	TITLE: STEAM GENERATOR TUBE RUPTURE	REV: 32 PAGE 31 of 42
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STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
31	Check If Seal Return Flow Should Be Established:	
a.	Verify RCP #1 seal outlet temperature - LESS THAN 235°F	a. Go to Step 32.
b.	Verify RCP seal outlet valves - OPEN <ul style="list-style-type: none"> • AOV-270A • AOV-270B 	b. Manually open valves as necessary.
c.	Reset both trains of XY relays for RCP seal return isolation valve MOV-313	
d.	Open RCP seal return isolation valve MOV-313	d. Perform the following: <ol style="list-style-type: none"> 1) Place MOV-313 switch to OPEN. 2) Dispatch AO with key to RWST gate to locally open MOV-313.
e.	Verify RCP #1 seal leakoff flow - LESS THAN 6.0 GPM	e. Perform the following: <ol style="list-style-type: none"> 1) Trip the affected RCP 2) Allow 4 minutes for pump coast down. <u>THEN</u> close the affected RCP seal discharge valve <ul style="list-style-type: none"> • RCP A, AOV-270A • RCP B, AOV-270B <p><u>IF</u> both RCP seal discharge valves are shut, <u>THEN</u> go to Step 32.</p>
f.	Verify RCP #1 seal leakoff flow - GREATER THAN 0.8 GPM	f. Refer to AP-RCP.1, RCP SEAL MALFUNCTION.

EOP: E-3	TITLE: STEAM GENERATOR TUBE RUPTURE	REV: 32 PAGE 32 of 42
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STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
32	Verify PRZR Level - GREATER THAN 13% [40% adverse CNMT]	Continue with Step 34. <u>WHEN</u> PRZR level increases to greater than 13% [40% adverse CNMT]. <u>THEN</u> do Step 33.
33	Establish Normal Letdown: <ul style="list-style-type: none"> a. Establish charging line flow to REGEN Hx - GREATER THAN 20 GPM b. Place the following switches to CLOSE: <ul style="list-style-type: none"> • Letdown orifice valves (AOV-200A, AOV-200B, and AOV-202) • Letdown isolation valve AOV-371 • Loop B cold leg to REGEN Hx AOV-427 c. Place letdown controllers in MANUAL at 40% open <ul style="list-style-type: none"> • TCV-130 • PCV-135 d. Reset both trains of XY relays for AOV-371 and AOV-427 e. Open AOV-371 and AOV-427 f. Open letdown orifice valves as necessary g. Place TCV-130 in AUTO at 105°F h. Place PCV-135 in AUTO at 250 psig i. Adjust charging pump speed and HCV-142 as necessary 	<p><u>IF</u> RCP seal return has been established. <u>THEN</u> establish excess letdown as follows:</p> <ul style="list-style-type: none"> o Place excess letdown divert valve, AOV-312, to NORMAL. o Ensure CCW from excess letdown open, (AOV-745). o Open excess letdown isolation valve AOV-310. o Slowly open HCV-123 to maintain excess letdown temperature less than 195°F and pressure less than 100 psig. o Adjust charging pump speed as necessary. <p><u>IF</u> RCP seal return <u>NOT</u> established. <u>THEN</u> consult TSC to determine if excess letdown should be placed in service.</p>

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STEP

ACTION/EXPECTED RESPONSE

RESPONSE NOT OBTAINED

34 Check VCT Makeup System:

a. Adjust boric acid flow control valve in AUTO to 9.5 gpm

b. Adjust RMW flow control valve in AUTO to 40 gpm

c. Verify the following:

1) RMW mode selector switch in AUTO

2) RMW control armed - RED LIGHT LIT

d. Check VCT level:

o Level - GREATER THAN 20%

-OR-

o Level - STABLE OR INCREASING

c. Adjust controls as necessary.

d. Manually increase VCT makeup flow as follows:

1) Ensure BA transfer pumps and RMW pumps running. IF NOT, THEN reset MCC C and MCC D UV lockouts as necessary.

2) Place RMW flow control valve HCV-111 in MANUAL and increase RMW flow.

3) Increase boric acid flow as necessary.

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STEP

ACTION/EXPECTED RESPONSE

RESPONSE NOT OBTAINED

35 Check Charging Pump Suction
Aligned To VCT:

a. VCT level - GREATER THAN 20%

a. IF VCT level can NOT be
maintained greater than 5%, THEN
perform the following:

1) Ensure charging pump suction
aligned to RWST

o LCV-112B open

o LCV-112C closed

2) Continue with Step 36. WHEN
VCT level greater than 40%,
THEN do Step 35b.

b. Verify charging pumps aligned to
VCT

o LCV-112C - OPEN

o LCV-112B - CLOSED

b. Manually align valves as
necessary.

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
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CAUTION

RCS AND RUPTURED S/G PRESSURES MUST BE MAINTAINED LESS THAN 1050 PSIG.

***36 Control RCS Pressure And Charging Flow To Minimize RCS-To-Secondary Leakage:**

- a. Perform appropriate action(s) from table:

PRZR LEVEL	RUPTURED S/G NARROW RANGE LEVEL		
	INCREASING	DECREASING	OFFSCALE HIGH
LESS THAN 13% [40% ADVERSE CNMT]	<ul style="list-style-type: none"> o Increase charging flow o Depressurize RCS using Step 36b 	Increase charging flow	<ul style="list-style-type: none"> o Increase charging flow o Maintain RCS and ruptured S/G pressure equal
BETWEEN 13% [40% ADVERSE CNMT] AND 50%	Depressurize RCS using Step 36b	Energize PRZR heaters	Maintain RCS and ruptured S/G pressure equal
BETWEEN 50% AND 75% [65% ADVERSE CNMT]	<ul style="list-style-type: none"> o Depressurize RCS using Step 36b o Decrease charging flow 	Energize PRZR heaters	Maintain RCS and ruptured S/G pressure equal
GREATER THAN 75% [65% ADVERSE CNMT]	o Decrease charging flow	Energize PRZR heaters	Maintain RCS and ruptured S/G pressure equal

- b. Control pressure using normal PRZR spray, if available, to obtain desired results for Step 36a

- b. IF letdown is in service, THEN use auxiliary spray (AOV-296). IF NOT, THEN use one PRZR PORV.

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STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
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37 Monitor If CNMT Spray Should
Be Stopped:

- | | |
|--|---|
| a. CNMT spray pumps - ANY RUNNING | a. Go to Step 38. |
| b. Verify CNMT pressure - LESS THAN
4 PSIG | b. Continue with Step 38. <u>WHEN</u>
CNMT pressure less than 4 psig.
<u>THEN</u> do Steps 37c through f. |
| c. Reset CNMT spray | |
| d. Check NaOH flow (FI-930) - NO
FLOW | d. Place NaOH tank outlet valve
switches to CLOSE.

• AOV-836A
• AOV-836B |
| e. Stop CNMT spray pumps and place
in AUTO | |
| f. Close CNMT spray pump discharge
valves

• MOV-860A
• MOV-860B
• MOV-860C
• MOV-860D | |

STEP

ACTION/EXPECTED RESPONSE

RESPONSE NOT OBTAINED

38 Check If Emergency D/Gs
Should Be Stopped:

- a. Verify AC emergency busses energized by offsite power:
 - o Emergency D/G output breakers - OPEN
 - o AC emergency bus voltage - GREATER THAN 420 VOLTS
 - o AC emergency bus normal feed breakers - CLOSED
- b. Stop any unloaded emergency D/G and place in standby (Refer to Attachment D/G STOP)

- a. Try to restore offsite power (Refer to ER-ELEC.1, RESTORATION OF OFFSITE POWER).

39 Minimize Secondary System
Contamination:

- a. Isolate reject from hotwell to CST:
 - o Place hotwell level controller (LC-107) in MANUAL at 50%
 - o Verify hotwell level - STABLE
- b. Check status of local actions to complete ruptured S/G isolation (Refer to Attachment RUPTURED S/G)

- a. IF hotwell level increasing. THEN direct RP to sample hotwells for activity.

EOP:

E-3

TITLE:

STEAM GENERATOR TUBE RUPTURE

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STEP

ACTION/EXPECTED RESPONSE

RESPONSE NOT OBTAINED

40 Energize PRZR Heaters As
Necessary To Saturate PRZR
Water At Ruptured S/G Pressure

41 Check RCP Cooling:

Establish normal cooling to RCPs
(Refer to Attachment SEAL COOLING).

a. Check CCW to RCPs:

- o Annunciator A-7, RCP 1A CCW
RETURN HIGH TEMP OR LOW FLOW
- EXTINGUISHED

- o Annunciator A-15, RCP 1B CCW
RETURN HIGH TEMP OR LOW FLOW
- EXTINGUISHED

b. Check RCP seal injection:

- o Labyrinth seal D/Ps - GREATER
THAN 15 INCHES OF WATER

-OR-

- o RCP seal injection flow to
each RCP - GREATER THAN 6 GPM

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STEP

ACTION/EXPECTED RESPONSE

RESPONSE NOT OBTAINED

CAUTION

IF RCP SEAL COOLING HAD PREVIOUSLY BEEN LOST, THEN THE AFFECTED RCP SHOULD NOT BE STARTED PRIOR TO A STATUS EVALUATION.

42 Check RCP Status:

a. RCPs - AT LEAST ONE RUNNING

a. Perform the following:

1) Try to start one RCP:

a) Ensure conditions for starting an RCP.

o Bus 11A or 11B energized.

o Refer to Attachment RCP START.

b) IF RVLIS level (no RCPs) less than 95%, THEN perform the following:

o Increase PRZR level to greater than 65% [82% adverse CNMT].

o Dump steam to establish RCS subcooling based on core exit T/Cs to greater than 20°F using Figure MIN SUBCOOLING.

o Energize PRZR heaters as necessary to saturate PRZR water

c) Start one RCP.

2) IF an RCP can NOT be started, THEN verify natural circulation (Refer to Attachment NC).

IF natural circulation can NOT be verified, THEN increase dumping steam.

b. Stop all but one RCP

EOP: E-3	TITLE: STEAM GENERATOR TUBE RUPTURE	REV: 32 PAGE 40 of 42
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STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
	<p><u>NOTE:</u> Adverse CNMT conditions or loss of forced air cooling may result in failure of NIS detectors.</p>	
43	<p>Check If Source Range Detectors Should Be Energized:</p>	
	<p>a. Source range channels - DEENERGIZED</p>	<p>a. Go to Step 43e.</p>
	<p>b. Check intermediate range flux - EITHER CHANNEL LESS THAN 10-10 AMPS</p>	<p>b. Perform the following:</p> <ol style="list-style-type: none"> 1) <u>IF</u> neither intermediate range channel is decreasing, <u>THEN</u> initiate boration. 2) Continue with Step 44. <u>WHEN</u> flux is LESS THAN 10-10 amps on any operable channel, <u>THEN</u> do Steps 43c through e.
	<p>c. Check the following:</p> <ol style="list-style-type: none"> o Both intermediate range channels - LESS THAN 10-10 AMPS <p style="text-align: center;">-OR-</p> <ol style="list-style-type: none"> o Greater than 20 minutes since reactor trip 	<p>c. Continue with Step 44. <u>WHEN</u> either condition met, <u>THEN</u> do Steps 43d and e.</p>
	<p>d. Verify source range detectors - ENERGIZED</p>	<p>d. Manually energize source range detectors by depressing P-6 permissive defeat pushbuttons (2 of 2).</p> <p><u>IF</u> source ranges can <u>NOT</u> be restored, <u>THEN</u> refer to ER-NIS.1, SR MALFUNCTION and go to Step 44.</p>
	<p>e. Transfer Rk-45 recorder to one source range and one intermediate range channel</p>	

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STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
44	<p>Establish Normal Shutdown Alignment:</p> <ul style="list-style-type: none"> a. Check condenser - AVAILABLE b. Perform the following: <ul style="list-style-type: none"> o Open generator disconnects <ul style="list-style-type: none"> • 1G13A71 • 9X13A73 o Place voltage regulator to OFF o Open turbine drain valves o Rotate reheater steam supply controller cam to close valves o Place reheater dump valve switches to HAND o Stop all but one condensate pump c. Verify adequate Rx head cooling: <ul style="list-style-type: none"> 1) Verify at least one control rod shroud fan - RUNNING 2) Verify one Rx compartment cooling fan - RUNNING d. Verify Attachment SD-1 - COMPLETE 	<ul style="list-style-type: none"> a. Dispatch A0 to perform Attachment SD-2. 1) Manually start one fan as power supply permits (45 kw) 2) Perform the following: <ul style="list-style-type: none"> o Dispatch A0 to reset UV relays at MCC C and MCC D. o Manually start one fan as power supply permits (23 kw)

EOP: E-3	TITLE: STEAM GENERATOR TUBE RUPTURE	REV: 32 PAGE 42 of 42
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STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
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45 Consult TSC To Determine
Appropriate Post-SGTR
Cooldown Procedure:

- o Go to ES-3.1, POST-SGTR COOLDOWN
USING BACKFILL, Step 1

-OR-

- o Go to ES-3.2, POST-SGTR COOLDOWN
USING BLOWDOWN, Step 1

-OR-

- o Go to ES-3.3, POST-SGTR COOLDOWN
USING STEAM DUMP, Step 1

-END-

EOP: E-3	TITLE: STEAM GENERATOR TUBE RUPTURE	REV: 32 PAGE 1 of 1
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E-3 APPENDIX LIST

TITLE

- 1) RED PATH SUMMARY
- 2) FIGURE MIN SUBCOOLING (FIG-1.0)
- 3) ATTACHMENT CNMT RECIRC FANS (ATT-4.0)
- 4) ATTACHMENT D/G STOP (ATT-8.1)
- 5) ATTACHMENT N2 PORVS (ATT-12.0)
- 6) ATTACHMENT NC (ATT-13.0)
- 7) ATTACHMENT SEAL COOLING (ATT-15.2)
- 8) ATTACHMENT RCP START (ATT-15.0)
- 9) ATTACHMENT RUPTURED S/G (ATT-16.0)
- 10) ATTACHMENT SD-1 (ATT-17.0)
- 11) ATTACHMENT SD-2 (ATT-17.1)
- 12) ATTACHMENT NO SW PUMPS (ATT-2.4)
- 13) ATTACHMENT LOSS OF OFFSITE POWER (ATT-8.5)
- 14) FOLDOUT

EOP: E-3	TITLE: STEAM GENERATOR TUBE RUPTURE	REV: 32 PAGE 1 of 1
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FOLDOUT PAGE

1. SI REINITIATION CRITERIA

Following SI termination, IF either condition listed below occurs, THEN start SI pumps manually as necessary and go to ECA-3.1, SGTR WITH LOSS OF REACTOR COOLANT - SUBCOOLED RECOVERY DESIRED, Step 1:

- o RCS subcooling based on core exit T/Cs - LESS THAN 0°F USING REQUIREMENTS OF FIGURE MIN SUBCOOLING.

OR

- o PRZR level - CHARGING CAN NOT CONTROL LEVEL GREATER THAN 5% [30% adverse CNMT].

2. SECONDARY INTEGRITY CRITERIA

IF any S/G pressure is decreasing in an uncontrolled manner or is completely depressurized AND has not been isolated, THEN go to E-2, FAULTED S/G ISOLATION, Step 1, UNLESS faulted S/G needed for RCS cooldown.

3. COLD LEG RECIRCULATION SWITCHOVER CRITERION

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

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).

5. MULTIPLE S/G TUBE RUPTURE CRITERIA

IF any intact S/G level increases in in an uncontrolled manner OR IF any intact S/G has abnormal radiation, THEN go to ECA-3.1, SGTR WITH LOSS OF REACTOR COOLANT - SUBCOOLED RECOVERY DESIRED, Step 1.

EOP: ES-1.1	TITLE: SI TERMINATION	REV: 23 PAGE 1 of 24
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ROCHESTER GAS AND ELECTRIC CORPORATION

GINNA STATION

CONTROLLED COPY NUMBER 23


RESPONSIBLE MANAGER

8-13-2002
EFFECTIVE DATE

CATEGORY 1.0

REVIEWED BY: _____

LOP	TITLE:	REV: 23
ES-1.1	SI TERMINATION	PAGE 2 of 24

A. PURPOSE - This procedure provides the necessary instructions to terminate safety injection and stabilize plant conditions.

B. ENTRY CONDITIONS/SYMPTOMS

1. ENTRY CONDITIONS - This procedure is entered from:

- a. E-0, REACTOR TRIP OR SAFETY INJECTION, and E-1, LOSS OF REACTOR OR SECONDARY COOLANT, when specified termination criteria are satisfied.
- b. FR-H.1, RESPONSE TO LOSS OF SECONDARY HEAT SINK, after secondary heat sink has been reestablished and SI has been terminated.

TOP: ES-1.1	TITLE: SI TERMINATION	REV: 23 PAGE 3 of 24
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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 MANUAL ACTION MAY BE REQUIRED TO RESTART SAFEGUARDS EQUIPMENT. (REFER TO ATT-8.5, ATTACHMENT LOSS OF OFFSITE POWER)</p> <p>*****</p> <p><u>NOTE:</u> o FOLDOUT page should be open AND monitored periodically.</p> <p> o Critical Safety Function Status Trees should be monitored (Refer to Appendix I for Red Path Summary).</p> <p> 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.</p> <p>1 Reset SI</p> <p>2 Reset CI:</p> <p> a. Depress CI reset pushbutton</p> <p> b. Verify annunciator A-26, CNMT ISOLATION - EXTINGUISHED</p> <p> b. Perform the following:</p> <p> 1) Reset SI.</p> <p> 2) Depress CI reset pushbutton.</p> <p>3 Maintain PRZR Pressure Between 1800 PSIG And 2235 PSIG</p> <p> o Reset PRZR heaters</p> <p> o Use normal PRZR spray</p>		

TOP: ES-1.1	TITLE: SI TERMINATION	REV: 23 PAGE 4 of 24
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STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
4	Verify Adequate SW Flow:	
a.	Check at least two SW pumps - RUNNING	<p>a. Manually start SW pumps as power supply permits (257 kw each).</p> <p><u>IF</u> less than two SW pumps running, <u>THEN</u> perform the following:</p> <ol style="list-style-type: none"> 1) Ensure SW isolation. 2) Dispatch AO to establish normal shutdown alignment (Refer to Attachment SD-1). 3) <u>IF NO</u> SW pumps running, <u>THEN</u> refer to ATT-2.4, ATTACHMENT NO SW PUMPS. 4) <u>IF</u> only one SW pump running, <u>THEN</u> refer to AP-SW.2, LOSS OF SERVICE WATER. 5) Go to Step 7.
b	Dispatch AO to establish normal shutdown alignment (Refer to Attachment SD-1)	

TOP: ES-1.1	TITLE: SI TERMINATION	REV: 23 PAGE 5 of 24
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STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
5	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). <u>IF NOT</u>, <u>THEN</u> evaluate if CNMT RECIRC fans should be stopped (Refer to Attachment CNMT RECIRC FANS). 3) <u>WHEN</u> bus 15 restored, <u>THEN</u> reset control room lighting.
b.	Verify SW isolation valves to turbine building - OPEN <ul style="list-style-type: none"> • MOV-4613 and MOV-4670 • MOV-4614 and MOV-4664 	b. Manually align valves.
c.	Verify adequate air compressor(s) - 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 6. <u>WHEN</u> IA restored, <u>THEN</u> do Steps 5e and f.
e.	Reset both trains of XY relays for IA to CNMT AOV-5392	
f.	Verify IA to CNMT AOV-5392 - OPEN	

TOP: ES-1.1	TITLE: SI TERMINATION	REV: 23 PAGE 6 of 24
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STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
6	<p>Check If Charging Flow Has Been Established:</p> <p>a. Charging pumps - ANY RUNNING</p> <p>b. Charging pump suction aligned to RWST:</p> <ul style="list-style-type: none"> o LCV-112B - OPEN o LCV-112C - CLOSED <p>c. Start charging pumps as necessary and adjust charging flow to restore PRZR level</p>	<p>a. Perform the following:</p> <ol 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 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%. <p>b. Manually align valves as necessary.</p> <p><u>IF</u> LCV-112B can <u>NOT</u> be opened, <u>THEN</u> dispatch AO to locally open manual charging pump suction from RWST (V-358 located in charging pump room).</p> <p><u>IF</u> LCV-112C can <u>NOT</u> be closed, <u>THEN</u> perform the following:</p> <ol style="list-style-type: none"> 1) Verify charging pump A <u>NOT</u> running and place in PULL STOP. 2) Direct AO to close V-268 to isolate charging pumps B and C from VCT (V-268 located in charging pump room).

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STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
	<p>7 Stop SI And RHR Pumps And Place In AUTO</p> <p>* 8 Monitor SI Reinitiation Criteria:</p> <p>a. RCS subcooling based on core exit T/Cs - GREATER THAN 0°F USING FIGURE MIN SUBCOOLING</p> <p>b. PRZR level - GREATER THAN 5% [30% adverse CNMT]</p>	<p>a. Manually start SI pumps as necessary and go to E-1, LOSS OF REACTOR OR SECONDARY COOLANT, Step 1.</p> <p>b. Control charging flow to maintain PRZR level.</p> <p><u>IF</u> PRZR level can <u>NOT</u> be maintained, <u>THEN</u> manually start SI pumps as necessary and go to E-1, LOSS OF REACTOR OR SECONDARY COOLANT, Step 1.</p>

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STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
* 9	Monitor If CNMT Spray Should Be Stopped:	
a.	CNMT spray pumps - RUNNING	a. Go to Step 10.
b.	Check CNMT pressure - LESS THAN 4 PSIG	b. Continue with Step 10. <u>WHEN</u> CNMT pressure less than 4 psig, <u>THEN</u> do Steps 9c through f.
c.	Reset CNMT spray	
d.	Check NaOH flow (FI-930) - NO FLOW	d. Place NaOH tank outlet valve switches to CLOSE. • AOV-836A • AOV-836B
e.	Stop CNMT spray pumps and place in AUTO	
f.	Close CNMT spray pump discharge valves • MOV-860A • MOV-860B • MOV-860C • MOV-860D	

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STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
10	Verify MRPI Indicates - ALL CONTROL AND SHUTDOWN RODS ON - BOTTOM	<p><u>IF</u> one or more control rods <u>NOT</u> fully inserted, <u>THEN</u> perform the following:</p> <ul style="list-style-type: none"> a. Place RMW mode selector switch to BORATE. b. Adjust boric acid flow control valve, FCV-110A, for desired flowrate. c. Set boric acid integrator to desired amount (650 gallons for each control rod not fully inserted). d. Place RMW control to start and verify flow. <u>IF</u> flow can <u>NOT</u> be established, <u>THEN</u> refer to ER-CVCS.1, REACTOR MAKEUP CONTROL MALFUNCTION.
11	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 - OPEN o Annunciator G-15, STEAM DUMP ARMED - 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. 	<ul style="list-style-type: none"> a. Place S/G ARV controllers in AUTO at desired pressure and go to Step 12.

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STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
12	Verify Adequate SW Flow To CCW Hx:	
a.	Verify at least two SW pumps - RUNNING	a. Manually start pumps as power supply permits (257 kw each). <u>IF</u> less than two SW pumps can be operated, <u>THEN</u> perform the following: 1) <u>IF NO</u> SW pumps running, <u>THEN</u> refer to ATT-2.4, ATTACHMENT NO SW PUMPS. 2) <u>IF</u> only one SW pump running, <u>THEN</u> refer to AP-SW.2, LOSS OF SERVICE WATER. 3) Go to Step 18.
b.	Verify AUX BLDG SW isolation valves - OPEN • MOV-4615 and MOV-4734 • MOV-4616 and MOV-4735	b. Manually align valves.
c.	Verify CNMT RECIRC fan annunciator C-2, HIGH TEMPERATURE ALARM - EXTINGUISHED	c. Manually start an additional SW pump as power supply permits (257 kw each).

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STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
13	Check If Normal CVCS Operation Can Be Established	
a.	Verify IA restored:	a. Continue with Step 18. <u>WHEN</u> IA can be restored, THEN do Steps 13 through 17.
	o IA to CNMT (AOV-5392) - OPEN	
	o IA pressure - GREATER THAN 60 PSIG	
b.	Verify instrument bus D - ENERGIZED	b. Energize MCC B. <u>IF</u> MCC B <u>NOT</u> available, <u>THEN</u> perform the following:
		1) Verify MCC A energized.
		2) Place instrument bus D on maintenance supply.
c.	CCW pumps - ANY RUNNING	c. Perform the following:
		1) <u>IF</u> any RCP #1 seal outlet temperature offscale high, <u>THEN</u> isolate CCW to thermal barrier of affected RCP(s).
		• RCP A, MOV-749A and MOV-759A • RCP B, MOV-749B and MOV-759B
		2) Manually start one CCW pump.
d.	Charging pump - ANY RUNNING	d. Continue with Step 18. <u>WHEN</u> any charging pump running, <u>THEN</u> do Steps 14 through 17.

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STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
14	Verify PRZR Level - GREATER THAN 13% [40% adverse CNMT]	Continue with Step 16. <u>WHEN</u> PRZR level increases to greater than 13% [40% adverse CNMT], <u>THEN</u> do Step 15.
15	Establish Normal Letdown: <ul style="list-style-type: none"> a. Establish charging line flow to REGEN Hx - GREATER THAN 20 GPM b. Place the following switches to CLOSE: <ul style="list-style-type: none"> • Letdown orifice valves (AOV-200A, AOV-200B, and AOV-202) • AOV-371, letdown isolation valve • AOV-427, loop B cold leg to REGEN Hx c. Place letdown controllers in MANUAL at 40% open <ul style="list-style-type: none"> • TCV-130 • PCV-135 d. Reset both trains of XY relays for AOV-371 and AOV-427 e. Open AOV-371 and AOV-427 f. Open letdown orifice valves as necessary g. Place TCV-130 in AUTO at 105°F h. Place PCV-135 in AUTO at 250 psig i. Adjust charging pump speed and HCV-142 as necessary to control PRZR level 	<p><u>IF</u> RCP seal return has been established, <u>THEN</u> establish excess letdown as follows:</p> <ul style="list-style-type: none"> o Place excess letdown divert valve, AOV-312, to NORMAL. o Ensure CCW from excess letdown open, (AOV-745). o Open excess letdown isolation valve AOV-310. o Slowly open HCV-123 to maintain excess letdown temperature less than 195°F and pressure less than 100 psig. o Adjust charging pump speed as necessary. <p><u>IF</u> RCP seal return <u>NOT</u> established, <u>THEN</u> consult Plant Staff to determine if excess letdown should be placed in service.</p>

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STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
16	Check VCT Makeup System:	
a.	Adjust boric acid flow control valve in AUTO to 9.5 gpm	
b.	Adjust RMW flow control valve in AUTO to 40 gpm	
c.	Verify the following:	c. Adjust controls as necessary.
	1) RMW mode selector switch in AUTO	
	2) RMW control armed - RED LIGHT LIT	
d.	Check VCT level:	d. Manually increase VCT makeup flow as follows:
	o Level - GREATER THAN 20%	
	-OR-	
	o Level - STABLE OR INCREASING	
		1) Ensure BA transfer pumps and RMW pumps running. <u>IF NOT</u> , <u>THEN</u> dispatch AO to locally reset MCC C and MCC D UV lockouts as necessary.
		2) Place RMW flow control valve HCV-111 in MANUAL and increase RMW flow.
		3) Increase boric acid flow as necessary.

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STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
17 Check Charging Pump Suction Aligned To VCT:		
a. VCT level - GREATER THAN 20%		a. <u>IF</u> VCT level can <u>NOT</u> be maintained greater than 5%, <u>THEN</u> perform the following: 1) Ensure charging pump suction aligned to RWST o LCV-112B open o LCV-112C closed 2) Continue with Step 18. <u>WHEN</u> VCT level greater than 40%, <u>THEN</u> do Step 17b.
b. Verify charging pumps aligned to VCT o LCV-112C - OPEN o LCV-112B - CLOSED		b. Manually align valves as necessary.
18 Check RCS Hot Leg Temperatures - STABLE		Control steam dump and total feed flow as necessary to stabilize RCS temperature.

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STEP

ACTION/EXPECTED RESPONSE

RESPONSE NOT OBTAINED

NOTE: o WHEN using a PRZR PORV, THEN select one with an operable block valve.

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

19 Control PRZR Heaters And Operate Normal Spray To Stabilize RCS Pressure

IF normal spray NOT available and letdown is in service, THEN perform the following:

a. Verify Regen Hx Chg outlet temp to PRZR Vapor temp ΔT less than 320°F. IF NOT, THEN control pressure using one PRZR PORV and go to Step 20.

b. Control pressure using auxiliary spray.

IF auxiliary spray NOT available, THEN use one PRZR PORV.

NOTE: TDAFW pump flow control AOVs may drift open on loss of IA.

*20 Monitor Intact S/G Levels:

- a. Narrow range level - GREATER THAN 5% [25% adverse CNMT]
- b. Control feed flow to maintain narrow range level between 17% [25% adverse CNMT] and 50%

a. Maintain total feed flow greater than 200 gpm until narrow range level greater than 5% [25% adverse CNMT] in at least one S/G.

b. IF narrow range level in any S/G continues to increase, THEN stop feed flow to that S/G.

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STEP

ACTION/EXPECTED RESPONSE

RESPONSE NOT OBTAINED

NOTE: SW should be aligned to CCW Hxs before restoring RCP seal cooling.

21: Check RCP Cooling:

Establish normal cooling to RCPs
(Refer to Attachment SEAL COOLING).

a. Check CCW to RCPs:

- o Annunciator A-7, RCP 1A CCW
RETURN HIGH TEMP OR LOW FLOW
- EXTINGUISHED
- o Annunciator A-15, RCP 1B CCW
RETURN HIGH TEMP OR LOW FLOW
- EXTINGUISHED

b. Check RCP seal injection:

- o Labyrinth seal D/Ps - GREATER
THAN 15 INCHES WATER

-OR-
- o RCP seal injection flow to
each RCP - GREATER THAN 6 GPM

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STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
22	Check If Seal Return Flow Should Be Established:	
a.	Verify RCP #1 seal outlet temperature - LESS THAN 235°F	a. Go to Step 23.
b.	Verify RCP seal outlet valves - OPEN <ul style="list-style-type: none"> • AOV-270A • AOV-270B 	b. Manually open valves as necessary.
c.	Reset both trains of XY relays for RCP seal return isolation valve MOV-313	
d.	Open RCP seal return isolation valve MOV-313	d. Perform the following: <ol style="list-style-type: none"> 1) Place MOV-313 switch to OPEN. 2) Dispatch AO with key to RWST gate to locally open MOV-313.
e.	Verify RCP #1 seal leakoff flow - LESS THAN 6.0 GPM	e. Perform the following: <ol style="list-style-type: none"> 1) Trip the affected RCP 2) Allow 4 minutes for pump coast down, <u>THEN</u> close the affected RCP seal discharge valve. <ul style="list-style-type: none"> • RCP A, AOV-270A • RCP B, AOV-270B <p><u>IF</u> both RCP seal discharge valves are shut, <u>THEN</u> go to Step 23.</p>
f.	Verify RCP #1 seal leakoff flow GREATER THAN 0.8 GPM	f. Refer to AP-RCP.1, RCP SEAL MALFUNCTION.

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STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
23	<p>Verify All AC Busses - ENERGIZED BY OFFSITE POWER</p> <ul style="list-style-type: none"> o Normal feed breakers to all 480 volt busses - CLOSED o 480 volt bus voltage - GREATER THAN 420 VOLTS o Emergency D/G output breakers - OPEN 	<p>Perform the following:</p> <ul style="list-style-type: none"> a. <u>IF</u> any AC emergency bus normal feed breaker open, <u>THEN</u> ensure associated D/G breaker closed. b. Perform the following as necessary: <ul 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) Reset Bus 13 and Bus 15 lighting breakers. 3) Dispatch AO to locally reset and start two IA compressors. 4) Place the following pumps in PULL STOP: <ul style="list-style-type: none"> • EH pumps • Turning gear oil pump • HP seal oil backup pump 5) Restore power to MCCs. <ul style="list-style-type: none"> • A from Bus 13 • B from Bus 15 • E from Bus 15 • F from Bus 15 6) Start HP seal oil backup pump. 7) Start CNMT RECIRC fans as necessary. 8) Ensure D/G load within limits. 9) Refer to Attachment SI/UV for other equipment lost with loss of offsite power. c. Try to restore offsite power to all AC busses (Refer to ER-ELEC.1, RESTORATION OF OFFSITE POWER).

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STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
<p><u>NOTE:</u> Adverse CNMT conditions or loss of forced air cooling may result in failure of NIS detectors.</p>		
24	Check If Source Range Channels Should Be Energized:	
a.	Source range channels - DEENERGIZED	a. Go to Step 24e.
b.	Check intermediate range flux - EITHER CHANNEL LESS THAN 10 ⁻¹⁰ AMPS	b. Perform the following: <ul style="list-style-type: none"> 1) <u>IF</u> neither intermediate range channel is decreasing, <u>THEN</u> initiate boration. 2) Continue with Step 25. <u>WHEN</u> flux is LESS THAN 10⁻¹⁰ amps on any operable channel, <u>THEN</u> do Steps 24c, d and e.
c.	Check the following: <ul style="list-style-type: none"> o Both intermediate range channels - LESS THAN 10⁻¹⁰ AMPS <p style="text-align: center;">-OR-</p> <ul style="list-style-type: none"> o Greater than 20 minutes since reactor trip 	c. Continue with step 25. <u>WHEN</u> either condition met, <u>THEN</u> do Steps 24d and e.
d.	Verify source range detectors - ENERGIZED	d. Manually energize source range detectors by depressing P-6 permissive defeat pushbuttons (2 of 2). <p><u>IF</u> source ranges can <u>NOT</u> be restored, <u>THEN</u> refer to ER-NIS.1, SR MALFUNCTION, and go to Step 25.</p>
e.	Transfer Rk-45 recorder to one source range and one intermediate range channel	

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STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
25	<p>Check If Emergency D/Gs Should Be Stopped:</p> <ul style="list-style-type: none"> a. Verify AC emergency busses energized by offsite power: <ul style="list-style-type: none"> o Emergency D/G output breakers - OPEN o AC emergency bus voltage - GREATER THAN 420 VOLTS o AC emergency bus normal feed breakers - CLOSED b. Stop any unloaded emergency D/G and place in standby (Refer to Attachment D/G STOP) 	<ul style="list-style-type: none"> a. Try to restore offsite power (Refer to ER-ELEC.1, RESTORATION OF OFFSITE POWER).

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STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
<p>*****</p> <p style="text-align: center;"><u>CAUTION</u></p> <p>IF RCP SEAL COOLING HAD PREVIOUSLY BEEN LOST, THEN THE AFFECTED RCP SHOULD NOT BE STARTED PRIOR TO A STATUS EVALUATION.</p> <p>*****</p>		
26	Check RCP Status - AT LEAST ONE RUNNING	<p>Perform the following:</p> <ul style="list-style-type: none"> a. <u>IF</u> RVLIS level (no RCPs) less than 95%, <u>THEN</u> perform the following: <ul style="list-style-type: none"> o Increase PRZR level to greater than 65% (82% adverse CNMT). o Dump steam to establish RCS subcooling based on core exit T/Cs to greater than 20°F using Figure MIN SUBCOOLING. o Energize PRZR heaters as necessary to saturate PRZR water. b. Establish conditions for starting an RCP: <ul style="list-style-type: none"> o Verify bus 11A or 11B energized. o Refer to Attachment RCP START. c. Start one RCP. <p><u>IF</u> an RCP can <u>NOT</u> be started, <u>THEN</u> verify natural circulation (Refer to Attachment NC).</p> <p><u>IF</u> natural circulation <u>NOT</u> verified, <u>THEN</u> increase dumping steam from intact S/Gs.</p>

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STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
27	Establish Normal Shutdown Alignment:	
	a. Check condenser - AVAILABLE	a. Dispatch AO to perform Attachment SD-2.
	b. Perform the following:	
	o Open generator disconnects	
	• 1G13A71	
	• 9X13A73	
	o Place voltage regulator to OFF	
	o Open turbine drain valves	
	o Rotate reheater steam supply controller cam to close valves	
	o Place reheater dump valve switches to HAND	
	o Stop all but one condensate pump	
	c. Verify adequate Rx head cooling:	
	1) Verify at least one control rod shroud fan - RUNNING	1) Manually start one fan as power supply permits (45 kw)
	2) Verify one Rx compartment cooling fan - RUNNING	2) Perform the following:
		o Dispatch AO to reset UV relays at MCC C and MCC D.
		o Manually start one fan as power supply permits (23 kw)
	d. Verify Attachment SD-1 - COMPLETE	

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STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
28	Maintain Plant Conditions Stable:	
	a. RCS pressure - BETWEEN 1800 PSIG AND 2235 PSIG	a. Control PRZR heaters and spray as necessary.
	b. PRZR level - BETWEEN 35% AND 40%	b. Control charging as necessary.
	c. Intact S/G narrow range levels - BETWEEN 17% AND 52%	c. Control S/G feed flow as necessary.
	d. RCS cold leg temperature - STABLE	d. Control dumping steam as necessary. <u>IF</u> cooldown continues, <u>THEN</u> close both MSIVs.
*29	Monitor SI Reinitiation Criteria:	
	a. RCS subcooling based on core exit T/Cs - GREATER THAN 0°F USING FIGURE MIN SUBCOOLING	a. Manually start SI pumps as necessary and go to E-1, LOSS OF REACTOR OR SECONDARY COOLANT, Step 1.
	b. PRZR level - GREATER THAN 5% [30% adverse CNMT]	b. Control charging flow to maintain PRZR level. <u>IF</u> PRZR level can <u>NOT</u> be maintained, <u>THEN</u> manually start SI pumps as necessary and go to E-1, LOSS OF REACTOR OR SECONDARY COOLANT, Step 1.

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ES-1.1 APPENDIX LIST

TITLE

- 1) RED PATH SUMMARY
- 2) FIGURE MIN SUBCOOLING (FIG-1.0)
- 3) ATTACHMENT CNMT RECIRC FANS (ATT-4.0)
- 4) ATTACHMENT D/G STOP (ATT-8.1)
- 5) ATTACHMENT NC (ATT-13.0)
- 6) ATTACHMENT SEAL COOLING (ATT-15.2)
- 7) ATTACHMENT RCP START (ATT-15.0)
- 8) ATTACHMENT SD-1 (ATT-17.0)
- 9) ATTACHMENT SD-2 (ATT-17.1)
- 10) ATTACHMENT SI/UV (ATT-8.4)
- 11) ATTACHMENT NO SW PUMPS (ATT-2.4)
- 12) ATTACHMENT RETURN TO NORMAL OPERATIONS (ATT-26.0)
- 13) ATTACHMENT LOSS OF OFFSITE POWER (ATT-8.5)
- 14) FOLDOUT

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RED PATH SUMMARY

- a. SUBCRITICALITY - Nuclear power greater than 5%
- b. CORE COOLING - Core exit T/Cs greater than 1200°F
 -OR-
 Core exit T/Cs greater than 700°F AND
 RVLIS level (no RCPs) less than 52% [55%
 adverse CNMT]
- c. HEAT SINK - Narrow range level in all S/Gs less than 5%
 [25% adverse CNMT] AND total feedwater flow
 less than 200 gpm
- d. INTEGRITY - Cold leg temperatures decrease greater than
 100°F in last 60 minutes AND RCS cold leg
 temperature less than 285°F
- e. CONTAINMENT - CNMT pressure greater than 60 psig

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FOLDOUT PAGE

1. SI REINITIATION CRITERIA

IF EITHER condition listed below occurs, THEN manually start SI pumps as necessary and go to E-1, LOSS OF REACTOR OR SECONDARY COOLANT, Step 1:

- o RCS subcooling based on core exit T/Cs - LESS THAN 0°F USING FIGURE MIN SUBCOOLING
- OR -
- o PRZR level - CHARGING CAN NOT CONTROL LEVEL GREATER THAN 5% [30% adverse CNMT]

2. SECONDARY INTEGRITY CRITERIA

IF any S/G pressure is decreasing in an uncontrolled manner or is completely depressurized AND has not been isolated, THEN go to E-2, FAULTED S/G ISOLATION, Step 1.

3. AFW SUPPLY SWITCHOVER CRITERION

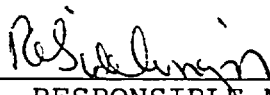
IF CST level decreases to less than 5 feet, THEN switch to alternate AFW water supply (Refer to ER-AFW.1, ALTERNATE WATER SUPPLY TO AFW PUMPS).

EOP: ES-1.3	TITLE: TRANSFER TO COLD LEG RECIRCULATION	REV: 34 PAGE 1 of 22
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ROCHESTER GAS AND ELECTRIC CORPORATION

GINNA STATION

CONTROLLED COPY NUMBER 23


RESPONSIBLE MANAGER

8-13-2002
EFFECTIVE DATE

CATEGORY 1.0

REVIEWED BY: _____

EOP: ES-1.3	TITLE: TRANSFER TO COLD LEG RECIRCULATION	REV: 34 PAGE 2 of 22
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A. PURPOSE - This procedure provides the necessary instructions for transferring the Safety Injection system and Containment Spray system to recirculation modes of operation.

B. ENTRY CONDITIONS/SYMPTOMS

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

- a. E-1, LOSS OF REACTOR OR SECONDARY COOLANT, or,
- b. ECA-0.2, LOSS OF ALL AC POWER RECOVERY WITH SI REQUIRED, or,
- c. ECA-2.1, UNCONTROLLED DEPRESSURIZATION OF BOTH STEAM GENERATORS, or,
- d. FR-C.1, RESPONSE TO INADEQUATE CORE COOLING, or,
- e. FR-C.2, RESPONSE TO DEGRADED CORE COOLING, or,
- f. FR-C.3, RESPONSE TO SATURATED CORE COOLING, or,
- g. FR-H.1, RESPONSE TO LOSS OF SECONDARY HEAT SINK, or,
- h. FR-Z.1, RESPONSE TO HIGH CONTAINMENT PRESSURE, on low RWST level.
- i. Other procedures whenever RWST level reaches the switchover setpoint (28%).

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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 OFFSITE POWER IS LOST AFTER SI RESET, THEN MANUAL ACTION MAY BE REQUIRED TO RESTART SAFEGUARDS EQUIPMENT. (REFER TO ATT-8.5, ATTACHMENT LOSS OF OFFSITE POWER)</p> <p>o CONSULT WITH RADIATION PROTECTION BEFORE DISPATCHING PERSONNEL TO AUXILIARY BUILDING. SWITCHOVER TO RECIRCULATION MAY CAUSE HIGH RADIATION LEVELS.</p> <p>*****</p> <p><u>NOTE:</u> o FOLDOUT page should be open and monitored periodically.</p> <p>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.</p>		
* 1	Verify RWST level - GREATER THAN 15%	<u>IF</u> sump recirculation <u>NOT</u> in progress. <u>THEN</u> pull-stop all pumps taking suction from RWST, <u>EXCEPT</u> one SI pump <u>AND</u> go to ECA-1.1, LOSS OF EMERGENCY COOLANT RECIRCULATION, Step 1.
2	Verify CNMT Sump B Level - AT LEAST 113 INCHES	<u>IF</u> RWST level is less than 28% <u>AND</u> CNMT sump B level is less than 113 inches. <u>THEN</u> go to ECA-1.2, LOCA OUTSIDE CONTAINMENT, Step 1.
<p><u>NOTE:</u> Steps 3 through 13 should be performed without delay. FR procedures should not be implemented prior to completion of these steps.</p>		
3	Reset SI	

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STEP

ACTION/EXPECTED RESPONSE

RESPONSE NOT OBTAINED

NOTE: IF D/Gs supplying emergency AC busses, THEN non-essential loads may be shed as necessary to allow start of additional SW pumps.

4 Establish Adequate SW Flow:

a. Verify at least two SW pumps -
RUNNING

a. Start additional SW pumps as power supply permits (257 kw each). IF only 1 SW pump operable, THEN perform the following:

1) Ensure SW aligned to one CCW Hx per Attachment MIN SW.

2) Go to Step 5.

b. Verify AUX BLDG SW isolation valves - OPEN

b. Manually align valves.

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

c. Dispatch AO to Check BOTH CCW Hxs - IN SERVICE

c. Locally place BOTH CCW Hxs in service

d. Determine required SW flow to CCW HXs per table:

SW DISCHARGE ALIGNMENT	CCW HXs IN SERVICE	REQUIRED SW FLOW
Normal	2	Total of 5000 - 6000 gpm equally divided to both HXs
Normal	1	5000 - 6000 gpm to in-service HX
Alternate	2	30-33" d/p across each HX
Alternate	1	95-100" d/p across in-service HX

This Step continued on the next page.

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STEP

ACTION/EXPECTED RESPONSE

RESPONSE NOT OBTAINED

(Step 4 continued from previous page)

e. Direct AO to adjust SW flow to required value

o IF on normal SW discharge:

- V-4619, CCW HX A
- V-4620, CCW HX B

-OR-

o IF on alternate SW discharge:

- V-4619C, CCW HX A
- V-4620B, CCW HX B

e. IF the required SW flow can NOT be obtained, THEN perform the following:

1) Isolate SW to screenhouse and air conditioning headers.

- MOV-4609/MOV-4780 - AT LEAST ONE CLOSED
- MOV-4663/MOV-4733 - AT LEAST ONE CLOSED

2) Direct AO to locally adjust SW flow to required value.

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

- SFP Hx A (V-4622) (for alternate SW discharge use V-4622A)
- SFP Hx B (V-8689)

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

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TRANSFER TO COLD LEG RECIRCULATION

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STEP

ACTION/EXPECTED RESPONSE

RESPONSE NOT OBTAINED

5 Establish CCW flow to RHR Hxs:

a. Check both CCW pumps - RUNNING

a. Perform the following:

- 1) Start CCW pumps as power supply permits (122 kw each).
 - 2) IF both CCW pumps are running, THEN go to step 5b.
 - 3) IF only one CCW pump is running, THEN perform the following:
 - a) Direct AO to isolate CCW to boric acid evaporator
 - o Close V-760A
 - b) Manually open CCW MOV to only one operable RHR loop.
 - o Open MOV-738A
- OR-
- o Open MOV-738B
 - c) Go to step 6.

b. Open CCW valves to RHR Hxs

b. Dispatch AO to locally open valves.

- MOV-738A
- MOV-738B

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STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
<p>*****</p> <p style="text-align: center;"><u>CAUTION</u></p> <p>o THE RHR HX OUTLET VALVES (HCV-624 AND HCV-625) WILL FAIL OPEN ON LOSS OF INSTRUMENT AIR PRESSURE.</p> <p>o CONSULT WITH RADIATION PROTECTION BEFORE DISPATCHING PERSONNEL TO AUXILIARY BUILDING. SWITCHOVER TO RECIRCULATION MAY CAUSE HIGH RADIATION LEVELS.</p> <p>*****</p>		
6 Check RHR Flow:	<p>o RHR flow - LESS THAN 1500 GPM PER OPERATING PUMP</p>	<p>Manually adjust RHR Hx outlet valves equally to reduce flow to less than 1500 gpm per operating pump</p> <ul style="list-style-type: none"> • RHR Hx A, HCV-625 • RHR Hx B, HCV-624 <p><u>IF</u> flow can <u>NOT</u> be reduced manually, <u>THEN</u> dispatch an AO with locked valve key to locally adjust RHR Hx outlet valve handwheels equally to reduce flow.</p> <ul style="list-style-type: none"> • RHR Hx A, HCV-625 handwheel • RHR Hx B, HCV-624 handwheel

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STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
7	Check IF Unnecessary Pumps Can Be Stopped:	
a.	Three SI pumps - RUNNING	a. Go to Step 7c.
b.	Stop SI pump C and place both switches in PULL STOP	
c.	Stop both RHR pumps and place in PULL STOP	
d.	Both CNMT spray pumps - RUNNING	d. Pull stop any idle CNMT spray pump and go to Step 7f.
e.	Pull stop one CNMT spray pump	
f.	Check CNMT pressure - LESS THAN 28 PSIG.	f. Go to Step 8.
g.	Place NaOH Tank outlet valve switches to OPEN.	
	<ul style="list-style-type: none"> • AOV-836A • AOV-836B 	
h.	Reset CNMT spray	
i.	Close discharge valves for idle CNMT spray pump(s)	
	<ul style="list-style-type: none"> o Pump A <ul style="list-style-type: none"> • MOV-860A • MOV-860B o Pump B <ul style="list-style-type: none"> • MOV-860C • MOV-860D 	

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STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
8 Verify RHR System Alignment:		
a.	Verify the following valves - CLOSED <ul style="list-style-type: none"> o RHR suction valves from loop A hot leg <ul style="list-style-type: none"> • MOV-700 • MOV-701 o RHR discharge valves to loop B cold leg <ul style="list-style-type: none"> • MOV-720 • MOV-721 	a. Ensure at least one suction valve and one discharge valve closed.
b.	Verify RHR pump suction crosstie valves - OPEN <ul style="list-style-type: none"> • MOV-704A • MOV-704B 	b. Manually open valves. If valves can <u>NOT</u> be opened, <u>THEN</u> dispatch A0 to locally open valves.
c.	Verify the following valves - OPEN <ul style="list-style-type: none"> o RHR pump discharge to Rx vessel deluge valves <ul style="list-style-type: none"> • MOV-852A • MOV-852B o RHR suction from sump B (inside CNMT) <ul style="list-style-type: none"> • MOV-851A • MOV-851B 	c. Ensure at least one valve in each set open.
d.	Verify RCDT pump suction valves from sump B - CLOSED <ul style="list-style-type: none"> • MOV-1813A • MOV-1813B 	d. Manually close valves.

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STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
<p>*****</p> <p style="text-align: center;"><u>CAUTION</u></p> <p>RHR FLOW INDICATED ON FI-626 SHOULD BE LIMITED TO 1500 GPM PER OPERATING PUMP TO ENSURE OPTIMUM PUMP PERFORMANCE.</p> <p>*****</p>		
9	Initiate RHR Sump Recirculation:	
a.	Close RWST outlet valve to RHR pump suction, MOV-856 (turn on DC power key switch)	a. Dispatch AO to locally close valve and continue with Step 9b.
b.	Open both RHR suction valves from sump B (outside CNMT)	b. <u>IF</u> only one valve will open, <u>THEN</u> perform the following:
	o MOV-850A - OPEN	1) Initiate only one train of RHR recirculation (Refer to Attachment RHR NPSH for further guidance).
	o MOV-850B - OPEN	2) Go to 9e.
		<u>IF</u> neither valve will open, <u>THEN</u> refer to Attachment RHR PRESS REDUCTION for further guidance.
c.	Check MOV-738A AND MOV-738B - BOTH OPEN	c. Perform the following:
		1) <u>IF</u> MOV-738A open, <u>THEN</u> start RHR Pump A and go to step 9e.
		2) <u>IF</u> MOV-738B open, <u>THEN</u> start RHR Pump B and go to step 9e.
d.	Start both RHR pumps	
e.	Verify at least one RHR pump - RUNNING	e. <u>IF</u> no RHR pump can be started, <u>THEN</u> go to ECA-1.1, LOSS OF EMERGENCY COOLANT RECIRCULATION, Step 1.

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STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
<p>*****</p> <p style="text-align: center;"><u>CAUTION</u></p> <p>SUMP RECIRCULATION FLOW TO RCS MUST BE MAINTAINED AT ALL TIMES, EXCEPT DURING ALIGNMENT FOR HIGH HEAD RECIRCULATION.</p> <p>*****</p> <p><u>NOTE:</u> The TSC should be requested to establish periodic monitoring of the AUX BLDG sub-basement, as radiological conditions permit, to monitor RHR pump operation.</p>		
10	Check RWST Level - LESS THAN 15%	DO <u>NOT</u> continue with this procedure until RWST level is less than 15%.
11	Stop All Pumps Supplied From RWST:	
	a. Stop all SI pumps and place in PULL STOP	
	b. Stop all charging pumps	
	c. Stop operating CNMT spray pump and place in PULL STOP	
	d. Check CNMT pressure - LESS THAN 28 PSIG	d. Go to Step 12.
	e. Reset CNMT spray if necessary	
	f. Close CNMT spray pump discharge valves	
	<ul style="list-style-type: none"> • MOV-860A • MOV-860B • MOV-860C • MOV-860D 	

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STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
<p>*****</p> <p style="text-align: center;"><u>CAUTION</u></p> <p>RHR FLOW MUST BE MAINTAINED LESS THAN 1500 GPM PER OPERATING RHR PUMP AS DETERMINED BY THE TOTAL OF FI-931A, FI-931B AND FI-626 INDICATIONS.</p> <p>*****</p>		
12	Align SI And CNMT Spray For Sump Recirculation:	
a.	Verify SI pump suction valves from BASTs - CLOSED	a. Ensure at least one valve in each flowpath closed.
	<ul style="list-style-type: none"> • MOV-826A and MOV-826B • MOV-826C and MOV-826D 	
b.	Close RWST outlet valves to SI and CNMT spray pumps (turn on DC power key switches)	b. Ensure at least one valve closed.
	<ul style="list-style-type: none"> • MOV-896A • MOV-896B 	
c.	Close SI pump RECIRC valves	c. Ensure at least one valve closed.
	<ul style="list-style-type: none"> • MOV-898 • MOV-897 	
d.	Verify SI pump suction valves from RWST - OPEN	d. Ensure at least one valve open.
	<ul style="list-style-type: none"> • MOV-825A • MOV-825B 	
e.	Align operating RHR pump flow path(s) to SI and CNMT spray pump suction.	e. Ensure at least one flowpath aligned from RHR pump(s) to SI and CS pump suction header (Refer to Attachment RHR SYSTEM).
	<ul style="list-style-type: none"> o <u>IF</u> RHR Pump A operating, <u>THEN</u> open MOV-857A and MOV-857C o <u>IF</u> RHR Pump B operating, <u>THEN</u> open MOV-857B 	<p><u>IF</u> neither flow path can be aligned, <u>THEN</u> refer to Attachment RHR PRESS REDUCTION for further guidance.</p>

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STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
<p>*****</p> <p style="text-align: center;"><u>CAUTION</u></p> <p>SI PUMPS SHOULD BE STOPPED IF RCS PRESSURE IS GREATER THAN THEIR SHUTOFF HEAD PRESSURE.</p> <p>*****</p> <p><u>NOTE:</u> Operation of SI pump C is preferred since it delivers to both RCS loops.</p> <p>13 Verify Adequate RCS Makeup Flow:</p> <div style="display: flex; justify-content: space-between;"> <div style="width: 48%;"> <p>a. RCS pressure - LESS THAN 225 psig [425 psig adverse CNMT]</p> <p>b. RHR injection flow adequate:</p> <ul style="list-style-type: none"> o Core exit T/Cs - LESS THAN REQUIREMENTS OF FIGURE RHR INJECTION o Check RVLIS level (no RCPS) - GREATER THAN 52% [55% adverse CNMT] </div> <div style="width: 48%;"> <p>a. Perform the following:</p> <p>1) Check RCS conditions:</p> <ul style="list-style-type: none"> o RCS subcooling based on core exit T/Cs greater than Figure MIN SUBCOOLING. o PRZR level greater than 5% [30% adverse CNMT]. <p><u>IF</u> either condition <u>NOT</u> met, <u>THEN</u> start one SI pump.</p> <p>2) Go to Step 14.</p> <p>b. Start one SI pump.</p> </div> </div>		

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STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
<p>*****</p> <p style="text-align: center;"><u>CAUTION</u></p> <p>IF A CNMT SPRAY PUMP IS STARTED, THEN CNMT PRESSURE SHOULD BE CLOSELY MONITORED. CNMT PRESSURE SHOULD NOT BE REDUCED TO LESS THAN 22 PSIG.</p> <p>*****</p>		
*14	Check If CNMT Spray Is Required:	
a.	CNMT pressure - GREATER THAN 28 PSIG	a. Perform the following:
		1) <u>IF</u> CNMT spray previously actuated and NaOH tank level greater than 55%, <u>THEN</u> consult TSC to determine if CNMT spray should be restarted.
		2) Go to Step 15.
b.	Verify CNMT spray pump discharge valves - OPEN	b. Manually open valve(s) for selected pump.
	<ul style="list-style-type: none"> • MOV-860A • MOV-860B • MOV-860C • MOV-860D 	<ul style="list-style-type: none"> • CS pump A, MOV-860A or MOV-860B • CS pump B, MOV-860C or MOV-860D
c.	Start selected CNMT spray pump	c. <u>IF</u> the selected CNMT spray pump will not start, <u>THEN</u> align and start the other CNMT spray pump. <u>IF</u> neither pump will start, <u>THEN</u> continue with Step 15. <u>WHEN</u> a CNMT spray pump can be started, <u>THEN</u> do steps 14d, e and f.
d.	Adjust RHR flow to maintain less than 1500 gpm per operating RHR pump as indicated by the total of FI-931A, FI-931B and FI-626 indications.	
This Step continued on the next page.		

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STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
	(Step 14 continued from previous page)	
e. Verify NaOH flow (FI-930)		e. <u>IF</u> NaOH flow <u>NOT</u> indicated, <u>THEN</u> place switches for NaOH tank outlet valves to OPEN. <ul style="list-style-type: none"> • AOV-836A • AOV-836B
f. <u>WHEN</u> CNMT pressure decreases to 22 psig, <u>THEN</u> perform the following:		
1) Reset CNMT spray		
2) Check NaOH tank outlet valves - CLOSED		2) Place NaOH tank outlet valve controllers to MANUAL and close valves.
<ul style="list-style-type: none"> • AOV-836A • AOV-836B 		
3) Stop CNMT spray pumps and place in PULL STOP		
4) Close CNMT spray pump discharge valves		
<ul style="list-style-type: none"> • MOV-860A • MOV-860B • MOV-860C • MOV-860D 		
15 Verify Adequate Core Cooling:		<u>IF</u> both RHR pumps running, <u>THEN</u> ensure two SI pumps running.
o Core exit T/Cs - STABLE OR DECREASING		<u>IF</u> only one RHR pump running, <u>THEN</u> perform the following:
o RVLIS level (no RCPs) - STABLE OR INCREASING		a. Ensure one SI pump running.
o RVLIS level (no RCPs) - GREATER THAN 52% [55% adverse CNMT]		b. <u>WHEN</u> CNMT spray pumps stopped, <u>THEN</u> start one additional SI pump.

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STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
<p><u>NOTE:</u> TDAFW pump flow control AOVs may drift open on loss of IA.</p> <p>*16` Monitor Intact S/G Levels:</p> <div> <div> <p>a. Narrow range level - GREATER THAN 5% [25% adverse CNMT]</p> <p>b. Control feed flow to maintain narrow range level between 17% [25% adverse CNMT] and 50%</p> </div> <div> <p>a. Maintain total feed flow greater than 200 gpm until narrow range level greater than 5% [25% adverse CNMT] in at least one S/G.</p> </div> </div>		

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STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
17	<p>Establish Normal Shutdown Alignment:</p> <ul style="list-style-type: none"> a. Check condenser - AVAILABLE b. Perform the following: <ul style="list-style-type: none"> o Open generator disconnects <ul style="list-style-type: none"> • 1G13A71 • 9X13A73 o Place voltage regulator to OFF o Open turbine drain valves o Rotate reheater steam supply controller cam to close valves o Place reheater dump valve switches to HAND o Stop all but one condensate pump c. Verify adequate Rx head cooling: <ul style="list-style-type: none"> 1) Verify at least one control rod shroud fan - RUNNING 2) Verify one Rx compartment cooling fan - RUNNING d. Verify Attachment SD-1 - COMPLETE 	<ul style="list-style-type: none"> a. Dispatch AO to perform Attachment SD-2. 1) Manually start one fan as power supply permits (45 kw) 2) Perform the following: <ul style="list-style-type: none"> o Dispatch AO to reset UV relays at MCC C and MCC D. o Manually start one fan as power supply permits (23 kw)

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STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
18	<p>Check If Emergency D/Gs Should Be Stopped:</p> <ul style="list-style-type: none"> a. Verify AC emergency busses energized by offsite power: <ul style="list-style-type: none"> o Emergency D/G output breakers - OPEN o AC emergency bus voltage - GREATER THAN 420 VOLTS o AC emergency bus normal feed breakers - CLOSED b. Stop any unloaded emergency D/G and place in standby (Refer to Attachment D/G STOP) 	<ul style="list-style-type: none"> a. Try to restore offsite power (Refer to ER-ELEC.1, RESTORATION OF OFFSITE POWER).

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STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
19	<p>Check If SI ACCUMs Should Be Isolated:</p> <ul style="list-style-type: none"> a. Both RCS hot leg temperatures - LESS THAN 400°F b. Dispatch AO with locked valve key to locally close breakers for SI ACCUM discharge valves <ul style="list-style-type: none"> • MOV-841, MCC C position 12F • MOV-865, MCC D position 12C c. Close SI ACCUM discharge valves <ul style="list-style-type: none"> • ACCUM A, MOV-841 • ACCUM B, MOV-865 d. Locally reopen breakers for MOV-841 and MOV-865 	<ul style="list-style-type: none"> a. Continue with Step 20. <u>WHEN</u> both RCS hot leg temperatures less than 400°F, <u>THEN</u> do Steps 19b through d. c. Vent any unisolated ACCUMs: <ul style="list-style-type: none"> 1) Open vent valves for unisolated SI ACCUMs. <ul style="list-style-type: none"> • ACCUM A, AOV-834A • ACCUM B, AOV-834B 2) Open HCV-945.

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STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
<p>*****</p> <p style="text-align: center;"><u>CAUTION</u></p> <p>IF FUEL DAMAGE IS SUSPECTED, MAINTAIN S/G PRESSURE SLIGHTLY GREATER THAN RCS PRESSURE.</p> <p>*****</p>		
20	Check If Intact S/Gs Should Be Depressurized To RCS Pressure:	
	a. RCS pressure - LESS THAN INTACT S/G PRESSURES	a. Go to Step 21.
	b. Direct RP to sample S/Gs for activity	
	c. Request TSC perform a dose projection on steaming S/Gs	
	d. Dose projection for each S/G - ACCEPTABLE	d. Do <u>NOT</u> dump steam from a S/G with an unacceptable dose projection.
	e. Dump steam to condenser from intact S/G(s) until S/G pressure less than RCS pressure	e. <u>IF</u> steam dump to condenser <u>NOT</u> available. <u>THEN</u> dump steam using intact S/G ARVs until S/G pressure less than RCS pressure.
21	Consult TSC to Determine If Rx Vessel Head Should Be Vented	

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STEP

ACTION/EXPECTED RESPONSE

RESPONSE NOT OBTAINED

NOTE: This procedure should be continued while obtaining CNMT hydrogen sample in Step 22.

22 Check CNMT Hydrogen Concentration:

- a. Direct RP to start CNMT hydrogen monitors as necessary
- b. Hydrogen concentration - LESS THAN 0.5%
- b. Consult TSC to determine if hydrogen recombiners should be placed in service.

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

23 Check Event Duration - GREATER THAN 19 HOURS AFTER EVENT INITIATION

Consult TSC to evaluate long term plant status.

24 Secure CNMT Spray

- a. Reset CNMT spray
- b. Place NaOH Tank outlet valve switches in AUTO
 - AOV-836A
 - AOV-836B
- c. Place CNMT spray pumps in PULL STOP
- d. Close discharge valves for idle CNMT spray pumps
 - o Pump A
 - MOV-860A
 - MOV-860B
 - o Pump B
 - MOV-860C
 - MOV-860D

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STEP

ACTION/EXPECTED RESPONSE

RESPONSE NOT OBTAINED

25 Verify Two SI Pumps - RUNNING

Manually start pumps.

26 Check Core Exit T/Cs - LESS
THAN REQUIREMENTS OF FIGURE
RHR INJECTION

Perform the following:

- a. Manually open both PRZR PORVs
and block valves.
- b. Verify core exit T/Cs decreasing
to less than requirements of
Figure RHR INJECTION. IF NOT,
THEN dump steam from intact S/Gs
until core exit T/Cs less than
required.

27 Consult TSC To Evaluate Long
Term Plant Status

-END-

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ES-1.3 APPENDIX LIST

TITLE

- 1) RED PATH SUMMARY
- 2) FIGURE RHR INJECTION (FIG-5.0)
- 3) FIGURE MIN SUBCOOLING (FIG-1.0)
- 4) ATTACHMENT D/G STOP (ATT-8.1)
- 5) ATTACHMENT SD-1 (ATT-17.0)
- 6) ATTACHMENT SD-2 (ATT-17.1)
- 7) ATTACHMENT RHR NPSH (ATT-14.3)
- 8) ATTACHMENT RHR SYSTEM (ATT-14.5)
- 9) ATTACHMENT MIN SW (ATT-2.1)
- 10) ATTACHMENT RHR PRESS REDUCTION (ATT-14.6)
- 11) ATTACHMENT LOSS OF OFFSITE POWER (ATT-8.5)
- 12) FOLDOUT

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FOLDOUT PAGE

1. ECA-1.1 TRANSITION CRITERIA

IF emergency coolant recirculation is established and subsequently lost, THEN go to ECA-1.1, LOSS OF EMERGENCY COOLANT RECIRCULATION, Step 1.

2. AFW SUPPLY SWITCHOVER CRITERION

IF CST level decreases to less than 5 feet, THEN switch to alternate AFW water supply (Refer to ER-AFW.1, ALTERNATE WATER SUPPLY TO AFW PUMPS).