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JOSEPH A. WIDAY  
VICE PRESIDENT & PLANT MANAGER  
GINNA STATION

February 28, 2001

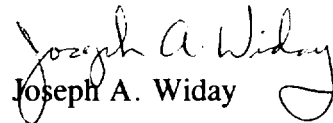
U.S. Nuclear Regulatory Commission  
Document Control Desk  
Attn: Guy S. Vissing  
Project Directorate I  
Washington, D.C. 20555

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

Dear Mr. Vissing:

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 Index  
FIG Index  
E-1, Rev 21  
E-3, Rev 27  
ECA-3.3, Rev 24  
FIG-4.0, Rev 2

ALC2

REPORT NO. 01  
REPORT: NPSP0200  
DOC TYPE: PRE

GINNA NUCLEAR POWER PLANT  
PROCEDURES INDEX  
EMERGENCY PROCEDURE

02/28/01 PAGE: 1

PARAMETERS: DOC TYPES - PRE PRECA PRFIG 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	027	05/18/00	05/01/98	05/01/03	EF
E-1	LOSS OF REACTOR OR SECONDARY COOLANT	021	02/28/01	05/01/98	05/01/03	EF
E-2	FAULTED STEAM GENERATOR ISOLATION	009	12/20/00	05/01/98	05/01/03	EF
E-3	STEAM GENERATOR TUBE RUPTURE	027	02/28/01	05/01/98	05/01/03	EF
TOTAL FOR PRE	4					

REPORT NO. 01  
REPORT: NPSP0200  
DOC TYPE: PRECA

GINNA NUCLEAR POWER PLANT  
PROCEDURES INDEX  
EMERGENCY CONTINGENCY ACTIONS PROC

02/28/01 PAGE: 2

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

PROCEDURE NUMBER	PROCEDURE TITLE	REV	EFFECT DATE	LAST REVIEW	NEXT REVIEW	ST
ECA-0.0	LOSS OF ALL AC POWER	022	05/18/00	05/01/98	05/01/03	EF
ECA-0.1	LOSS OF ALL AC POWER RECOVERY WITHOUT SI REQUIRED	017	12/02/99	05/01/98	05/01/03	EF
ECA-0.2	LOSS OF ALL AC POWER RECOVERY WITH SI REQUIRED	012	10/18/99	05/01/98	05/01/03	EF
ECA-1.1	LOSS OF EMERGENCY COOLANT RECIRCULATION	018	12/02/99	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	020	03/31/00	05/01/98	05/01/03	EF
ECA-3.1	SGTR WITH LOSS OF REACTOR COOLANT SUBCOOLED RECOVERY DESIRED	019	03/31/00	05/01/98	05/01/03	EF
ECA-3.2	SGTR WITH LOSS OF REACTOR COOLANT SATURATED RECOVERY DESIRED	022	03/31/00	05/01/98	05/01/03	EF
ECA-3.3	SGTR WITHOUT PRESSURIZER PRESSURE CONTROL	024	02/28/01	05/01/98	05/01/03	EF
TOTAL FOR PRECA	9					

REPORT NO. 01  
REPORT: NPSP0200  
DOC TYPE: PRFIG

GINNA NUCLEAR POWER PLANT  
PROCEDURES INDEX  
EOP FIGURE PROCEDURES

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


PROCEDURE NUMBER	PROCEDURE TITLE	REV	EFFECT DATE	LAST REVIEW	NEXT REVIEW	ST
FIG-1.0	FIGURE MIN SUBCOOLING	000	05/01/98	05/01/98	05/01/03	EF
FIG-2.0	FIGURE SDM	002	10/13/00	05/01/98	05/01/03	EF
FIG-3.0	FIGURE NAT CIRC C/D WITH SHROUD FANS	000	05/01/98	05/01/98	05/01/03	EF
FIG-3.1	FIGURE NAT CIRC C/D WITHOUT SHROUD FANS	001	02/08/01	05/01/98	05/01/03	EF
FIG-3.2	FIGURE NC C/D WITH VOID IN UPPER HEAD	000	05/01/98	05/01/98	05/01/03	EF
FIG-4.0	FIGURE RCP SEAL LEAKOFF	002	02/28/01	05/01/98	05/01/03	EF
FIG-5.0	FIGURE RHR INJECTION	000	05/01/98	05/01/98	05/01/03	EF
FIG-6.0	FIGURE MIN RCS INJECTION	000	05/01/98	05/01/98	05/01/03	EF
FIG-7.0	FIGURE INTACT S/G PRESSURE	001	05/18/98	05/01/98	05/01/03	EF
FIG-8.0	FIGURE TSAT	000	05/01/98	05/01/98	05/01/03	EF
FIG-9.0	FIGURE TECH SPEC C/D	001	02/15/01	05/01/98	05/01/03	EF
FIG-9.1	FIGURE C/D LIMITS	000	05/01/98	05/01/98	05/01/03	EF
FIG-10.0	FIGURE LIMIT A	000	05/01/98	05/01/98	05/01/03	EF
FIG-11.0	FIGURE SOAK LIMITS	000	05/01/98	05/01/98	05/01/03	EF
FIG-12.0	FIGURE CNMT HYDROGEN	000	05/01/98	05/01/98	05/01/03	EF
FIG-13.0	FIGURE BACK PRESSURE	000	05/01/98	05/01/98	05/01/03	EF
FIG-14.0	FIGURE IA ISOL	000	05/01/98	05/01/98	05/01/03	EF
TOTAL FOR PRFIG	17					

EOP: E-1	TITLE: LOSS OF REACTOR OR SECONDARY COOLANT	REV: 21 PAGE 1 of 21
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ROCHESTER GAS AND ELECTRIC CORPORATION

GINNA STATION

CONTROLLED COPY NUMBER 23

  
RESPONSIBLE MANAGER

2-28-2001  
EFFECTIVE DATE

CATEGORY 1.0

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

EOP:  E-1	TITLE:  LOSS OF REACTOR OR SECONDARY COOLANT	REV: 21  PAGE 2 of 21
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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.

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STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED								
<p>*****</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>*****</p> <p><u>NOTE:</u></p> <ul style="list-style-type: none"> <li>o FOLDOUT page should be open AND monitored periodically.</li> <li>o Critical Safety Function Status Trees should be monitored. (Refer  to Appendix 1 for Red Path Summary.)</li> <li>o Conditions should be evaluated for Site Contingency Reporting  (Refer to EPIP-1.0, GINNA STATION EVENT EVALUATION AND  CLASSIFICATION).</li> <li>o Adverse CNMT values should be used whenever CNMT pressure is  greater than 4 psig or CNMT radiation is greater than <math>10^{+05}</math> R/hr.</li> </ul> <p>1 Monitor RCP Trip Criteria:</p> <table border="0"> <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> </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										

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STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
2	<p>Check If S/G Secondary Side Is Intact:</p> <ul style="list-style-type: none"> <li>o Pressure in both S/Gs - STABLE OR INCREASING</li> <li>o Pressure in both S/Gs - GREATER THAN 110 PSIG</li> </ul>	<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"> <li>• Steamlines</li> <li>• Feedlines</li> </ul> <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 valves fail open on loss of IA.</p>		
* 3	<p>Monitor Intact S/G Levels:</p> <ul style="list-style-type: none"> <li>a. Narrow range level - GREATER THAN 5% [25% adverse CNMT]</li> <li>b. Control feed flow to maintain narrow range level between 17% [25% adverse CNMT] and 50%</li> </ul>	<ul style="list-style-type: none"> <li>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.</li> <li>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.</li> </ul>
* 4	<p>Monitor If Secondary Radiation Levels Are Normal</p> <ul style="list-style-type: none"> <li>o Steamline radiation monitor (R-31 and R-32)</li> <li>o Request RP sample S/Gs for activity</li> </ul>	<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: 21  PAGE 5 of 21
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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>		
	<p>a. Power to PORV block valves - AVAILABLE</p> <p>b. PORVs - CLOSED</p> <p>c. Block valves - AT LEAST ONE OPEN</p>	<p>a. Restore power to block valves unless block valve was closed to isolate an open PORV:</p> <ul style="list-style-type: none"> <li>• MOV-515, MCC D position 6C</li> <li>• MOV-516, MCC C position 6C</li> </ul> <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"> <li>• MOV-515, MCC D position 6C</li> <li>• MOV-516, MCC C position 6C</li> </ul> <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: 21  PAGE 6 of 21
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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 SELECTED SW PUMPS AND ONE CCW PUMP WILL AUTO START ON EMERGENCY D/G. MANUAL ACTION WILL BE REQUIRED TO RESTART SAFEGUARDS EQUIPMENT.</p> <p>*****</p>		
6	Reset SI	
7	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.
8	Verify Adequate SW Flow:	
	a. Check at least two SW pumps - RUNNING          b. Dispatch A0 to establish normal shutdown alignment (Refer to Attachment SD-1)	a. Manually start SW pumps as power supply permits (257 kw each).  <u>IF</u> less than two SW pumps running, <u>THEN</u> perform the following:  1) Ensure SW isolation.  2) Dispatch A0 to establish normal shutdown alignment (Refer to Attachment SD-1)  3) Go to Step 10.

## STEP

## ACTION/EXPECTED RESPONSE

## RESPONSE NOT OBTAINED

## 9 Establish IA to CNMT:

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

o Bus 13 normal feed - CLOSED

-OR-

o Bus 15 normal feed - CLOSED

- b. Verify turbine building SW isolation valves - OPEN

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

- c. Verify adequate air compressors - RUNNING

- d. Check IA supply:

- o Pressure - GREATER THAN 60 PSIG
- o Pressure - STABLE OR INCREASING

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

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

- a. Perform the following:

- 1) Close non-safeguards bus tie breakers:

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

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

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

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

- b. Manually align valves.

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

- d. Perform the following:

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

- 2) Continue with Step 10. WHEN IA restored, THEN do Steps 9e and f.

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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"> <li>o Bus 14 normal feed breaker - CLOSED</li> <li>o Bus 16 normal feed breaker - CLOSED</li> </ul>	<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 Attachment CNMT RECIRC FANS).</p>

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

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STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
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.	

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STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
<b>*13</b>	Monitor If CNMT Spray Should Be Stopped:	
	a. CNMT spray pumps - RUNNING	a. Go to Step 14.
	b. Check the following:	b. Continue with Step 14. <u>WHEN</u> BOTH conditions satisfied, <u>THEN</u> do Steps 13c through f.
	o CNMT pressure - LESS THAN 4 PSIG	
	o Sodium hydroxide tank level - LESS THAN 55%	
	c. Reset CNMT spray	
	d. Check NaOH tank outlet valves - CLOSED	d. Place NaOH tank outlet valve controllers to MANUAL and close valves.
	• 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
<p>*****</p> <p style="text-align: center;"><u>CAUTION</u></p> <p>o IF OFFSITE POWER IS LOST AFTER SI RESET, THEN SELECTED SW PUMPS AND ONE CCW PUMP WILL AUTO START ON EMERGENCY D/G. MANUAL ACTION WILL BE REQUIRED TO RESTART SAFEGUARDS EQUIPMENT.</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>		
<b>*14</b>	Monitor If RHR Pumps Should Be Stopped:	
	a. Check RCS pressure:	
	1) Pressure - GREATER THAN 250 psig [465 psig adverse CNMT]	1) Go to Step 16.
	2) RCS pressure - STABLE OR INCREASING	2) Go to Step 15.
	b. Stop RHR pumps and place in AUTO	
<b>15</b>	Check RCS And S/G Pressures	
	a. Check pressures in both S/Gs - STABLE OR INCREASING	a. Return to Step 1.
	b. Check pressures in both S/Gs - GREATER THAN 110 PSIG	b. Monitor RCS pressure. IF RCS pressure does <u>NOT</u> increase after faulted S/G dryout, <u>THEN</u> go to Step 16.
	c. Check RCS pressure - STABLE OR DECREASING	c. Return to Step 1.



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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"> <li>o Emergency D/G output breakers - OPEN</li> <li>o AC emergency bus voltage - GREATER THAN 420 VOLTS</li> <li>o AC emergency bus normal feed breakers - CLOSED</li> </ul> <p>b. Stop any unloaded emergency D/G and place in standby (Refer to Attachment D/G STOP)</p>	<p>a. Perform the following:</p> <ol style="list-style-type: none"> <li>1) Close non-safeguards bus tie breakers as necessary: <ul style="list-style-type: none"> <li>• Bus 13 to Bus 14 tie</li> <li>• Bus 15 to Bus 16 tie</li> </ul> </li> <li>2) Place the following pumps in PULL STOP: <ul style="list-style-type: none"> <li>• EH pumps</li> <li>• Turning gear oil pump</li> <li>• HP seal oil backup pump</li> </ul> </li> <li>3) Ensure condenser steam dump mode control in MANUAL.</li> <li>4) Restore power to MCCs: <ul style="list-style-type: none"> <li>• A from Bus 13</li> <li>• B from Bus 15</li> <li>• E from Bus 15</li> <li>• F from Bus 15</li> </ul> </li> <li>5) Start HP seal oil backup pump.</li> <li>6) Ensure D/G load within limits.</li> <li>7) <u>WHEN</u> bus 15 restored, <u>THEN</u> reset control room lighting breaker.</li> <li>8) Refer to Attachment SI/UV for other equipment lost with loss of offsite power.</li> <li>9) Try to restore offsite power (Refer to ER-ELEC.1, RESTORATION OF OFFSITE POWER).</li> </ol>

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STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
17	Check If RHR Should Be Throttled:	
a.	Check RHR Pumps - ANY RUNNING	a. Go to step 18.
b.	Check RWST level - LESS THAN 70%	b. Continue with Step 18. <u>WHEN</u> RWST level less than 70%, <u>THEN</u> perform step 17b.
c.	RHR flow - LESS THAN 1500 GPM PER OPERATING PUMP	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"> <li>• RHR Hx A, HCV-625</li> <li>• RHR Hx B, HCV-624</li> </ul> <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"> <li>• RHR Hx A, HCV-625 handwheel</li> <li>• RHR Hx B, HCV-624 handwheel</li> </ul>

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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"> <li>1) Power available to emergency AC busses and MCCs required for CNMT sump recirculation <ul style="list-style-type: none"> <li>o Bus 14 and bus 18 - ENERGIZED</li> <li>o MCC C - ENERGIZED</li> <li>o Bus 16 and bus 17 - ENERGIZED</li> <li>o MCC D - ENERGIZED</li> </ul> </li> <li>2) RHR pumps and valves - OPERABLE</li> <li>3) CCW pumps and Hx - OPERABLE</li> </ol> <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: 21  PAGE 16 of 21
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STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
	<p>19 Evaluate Plant Status:</p> <p>a. Check auxiliary building radiation - NORMAL</p> <ul style="list-style-type: none"> <li>• Plant vent iodine (R-10B)</li> <li>• Plant vent particulate (R-13)</li> <li>• Plant vent gas (R-14)</li> <li>• CCW liquid monitor (R-17)</li> <li>• LTDN line monitor (R-9)</li> <li>• CHG pump room (R-4)</li> </ul> <p>b. Direct RP to obtain following samples:</p> <ul style="list-style-type: none"> <li>• RCS boron</li> <li>• RCS activity</li> <li>• CNMT hydrogen</li> <li>• CNMT sump boron</li> </ul> <p>c. Verify adequate Rx head cooling:</p> <p>1) Verify at least one control rod shroud fan - RUNNING</p> <p>2) Verify one Rx compartment cooling fan - RUNNING</p>	
		<p>a. Notify RP and refer to appropriate AR-RMS procedure.</p> <p><u>IF</u> the cause is a loss of RCS inventory outside CNMT, <u>THEN</u> go to ECA-1.2, LOCA OUTSIDE CONTAINMENT, Step 1.</p> <p>1) Manually start one fan as power supply permits (45 kw)</p> <p>2) Perform the following:</p> <ul style="list-style-type: none"> <li>o Dispatch AO to reset UV relays at MCC C and MCC D.</li> <li>o Manually start one fan as power supply permits (23 kw)</li> </ul>

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STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
20	<p>Check If RCS Cooldown And Depressurization Is Required:</p> <p>a. RCS pressure - GREATER THAN 250 psig [465 psig adverse CNMT]</p> <p>b. Go to ES-1.2, POST LOCA COOLDOWN AND DEPRESSURIZATION, Step 1</p>	<p>a. <u>IF</u> RHR pump flow greater than 475 gpm, <u>THEN</u> go to Step 21.</p>

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STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
<p><u>NOTE:</u> IF D/Gs supplying emergency AC busses, THEN non-essential loads may be shed as necessary to allow start of additional SW pumps.</p>		
<p>21 Establish Adequate SW Flow:</p>		
a. Verify at least two SW pumps - RUNNING		a. Start additional SW pumps as power supply permits (257 kw each). <u>IF</u> only 1 SW pump operable, <u>THEN</u> 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.

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STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
	(Step 21 continued from previous page)	
	c. Dispatch A0 to perform the following:	
	1) Check BOTH CCW Hx - INSERVICE	1) Perform the following: <ul style="list-style-type: none"> <li>a) Locally place BOTH CCW Hxs in service</li> <li>b) Locally adjust total SW flow equally to available CCW Hxs to between 5000 gpm and 6000 gpm <ul style="list-style-type: none"> <li>• V-4619</li> <li>• V-4620</li> </ul> </li> </ul>
	2) Verify total SW flow to CCW Hxs - GREATER THAN 5000 GPM	2) Perform the following: <ul style="list-style-type: none"> <li>a) Isolate SW to screenhouse and air conditioning headers. <ul style="list-style-type: none"> <li>• MOV-4609/MOV-4780 - AT LEAST ONE CLOSED</li> <li>• MOV-4663/MOV-4733 - AT LEAST ONE CLOSED</li> </ul> </li> <li>b) Direct A0 to locally adjust total SW flow equally to available CCW Hxs to between 5000 gpm and 6000 gpm (V-4619 and V-4620).</li> <li>c) Direct A0 to locally isolate SW return from SFP Hxs: <ul style="list-style-type: none"> <li>• SFP Hx A (V-4622)</li> <li>• SFP Hx B (V-8689)</li> </ul> </li> <li>d) Verify SW portions of Attachment SD-1 are complete.</li> </ul>

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STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
22	Establish CCW flow to RHR Hxs:	
a.	Check both CCW pumps - RUNNING	<p>a. Perform the following:</p> <ol style="list-style-type: none"> <li>1) Start CCW pumps as power supply permits (124 kw each)</li> <li>2) <u>IF</u> both CCW pumps are running, <u>THEN</u> go to step 22b.</li> <li>3) <u>IF</u> only one CCW pump is running, <u>THEN</u> perform the following: <ol style="list-style-type: none"> <li>a) Direct AO to isolate CCW to boric acid evaporator <ol style="list-style-type: none"> <li>o Close V-760A</li> </ol> </li> <li>b) Manually open CCW MOV to only one operable RHR Loop <ol style="list-style-type: none"> <li>o Open MOV-738A</li> </ol> </li> </ol> <p style="text-align: center;">-OR-</p> <ol style="list-style-type: none"> <li>o Open MOV-738B</li> </ol> </li> <li>c) Go to step 23.</li> </ol>
b.	Manually open CCW valves to RHR Hxs	b. Dispatch AO to locally open valves.
	<ul style="list-style-type: none"> <li>• MOV-738A</li> <li>• MOV-738B</li> </ul>	



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STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
23	<p>Check If Transfer To Cold Leg Recirculation Is Required:</p> <p>a. RWST level - LESS THAN 28%</p> <p>b. Go to ES-1.3, TRANSFER TO COLD LEG RECIRCULATION, Step 1</p>	<p>a. Return to Step 17.</p> <p>-END-</p>

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### E-1 APPENDIX LIST

- |    | <u>TITLE</u>                          |
|----|---------------------------------------|
| 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) | FOLDOUT                               |



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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

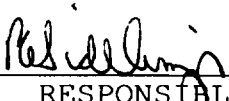
IF CST level decreases to less than 5 feet, THEN switch to alternate AFW water supply (Refer to ER-AFW.1, ALTERNATE WATER SUPPLY TO AFW PUMPS).

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ROCHESTER GAS AND ELECTRIC CORPORATION

GINNA STATION

CONTROLLED COPY NUMBER 23

  
RESPONSIBLE MANAGER

2-28-2001  
EFFECTIVE DATE

CATEGORY 1.0

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

EOP:  E-3	TITLE:  STEAM GENERATOR TUBE RUPTURE	REV: 27  PAGE 2 of 41
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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								
<p><u>NOTE:</u></p> <ul style="list-style-type: none"><li>o FOLDOUT page should be open AND monitored periodically.</li><li>o Critical Safety Function Status Trees should be monitored (Refer to Appendix 1 for Red Path Summary).</li><li>o Personnel should be available for sampling during this procedure.</li><li>o Conditions should be evaluated for Site Contingency Reporting (EPIP-1.0, GINNA STATION EVENT EVALUATION AND CLASSIFICATION).</li><li>o Adverse CNMT values should be used whenever CNMT pressure is greater than 4 psig or CNMT radiation is greater than <math>10^{+05}</math> R/hr.</li></ul>										
<p><b>* 1 Monitor RCP Trip Criteria:</b></p> <table><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										

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
<p>*****</p> <p style="text-align: center;"><u>CAUTION</u></p> <p>IF OFFSITE POWER IS LOST AFTER SI RESET, THEN SELECTED SW PUMPS AND ONE CCW PUMP WILL AUTO START ON EMERGENCY D/G. MANUAL ACTION WILL BE REQUIRED TO RESTART SAFEGUARDS EQUIPMENT.</p> <p>*****</p>		
2	Identify Ruptured S/G(s):	Perform the following:
	<ul style="list-style-type: none"> <li>o Unexpected increase in either S/G narrow range level</li> </ul>	a. Reset SI
	-OR-	
	<ul style="list-style-type: none"> <li>o High radiation indication on main steamline radiation monitor</li> </ul>	b. Continue with Steps 10 through 16. <u>WHEN</u> ruptured S/G(s) identified, <u>THEN</u> do Steps 3 through 9.
	<ul style="list-style-type: none"> <li>• R-31 for S/G A</li> <li>• R-32 for S/G B</li> </ul>	
	-OR-	
	<ul style="list-style-type: none"> <li>o AO reports local indication of high steamline radiation</li> </ul>	
	-OR-	
	<ul style="list-style-type: none"> <li>o RP reports high radiation from S/G activity sample</li> </ul>	



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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 THE TDAFW PUMP IS THE ONLY AVAILABLE SOURCE OF FEED FLOW, STEAM SUPPLY TO THE TDAFW PUMP MUST BE MAINTAINED FROM ONE S/G.</p> <p>o AT LEAST ONE S/G SHALL BE MAINTAINED AVAILABLE FOR RCS COOLDOWN.</p> <p>*****</p>		
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>c. Close ruptured S/G TDAFW pump steam supply valve and place in PULL STOP</p> <p>• S/G A, MOV-3505A</p> <p>• S/G B, MOV-3504A</p> <p>d. Verify ruptured S/G blowdown valve - CLOSED</p> <p>• S/G A, AOV-5738</p> <p>• S/G B, AOV-5737</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. Dispatch AO with locked valve key to locally isolate steam from ruptured S/G to TDAFW pump.</p> <p>• S/G A, V-3505</p> <p>• S/G B, V-3504</p> <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> <p>• S/G A, V-5701</p> <p>• S/G B, V-5702</p>

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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 AO 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"> <li>1) Close intact S/G MSIV.</li> <li>2) Place intact S/G ARV controller at 1005 psig in AUTO.</li> <li>3) Adjust condenser steam dump controller to 1050 psig in AUTO.</li> <li>4) Place condenser steam dump mode selector switch to MANUAL.</li> <li>5) Adjust reheat steam supply controller cam to close reheat steam supply valves.</li> <li>6) Ensure turbine stop valves - CLOSED.</li> <li>7) Dispatch AO to complete ruptured S/G isolation (Refer to Attachment RUPTURED S/G, parts A and B).</li> </ol>

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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"> <li>• S/G A, MOV-4007</li> <li>• S/G B, MOV-4008</li> </ul> <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"> <li>• S/G A, AOV-4297</li> <li>• S/G B, AOV-4298</li> </ul> <p>e. Verify MDAFW pump crosstie valves - CLOSED</p> <ul style="list-style-type: none"> <li>• MOV-4000A</li> <li>• MOV-4000B</li> </ul>	<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"> <li>• S/G A, V-4005</li> <li>• S/G B, V-4006</li> </ul> <p>e. Manually close valves.</p>

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STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
6	Verify Ruptured S/G Isolated:	
a.	Check ruptured MSIV - CLOSED	a. Ensure air ejector/gland steam supply and flange heating steam isolated. (Refer to ATTACHMENT RUPTURED S/G, part B).
b.	Check TDAFW pump steam supply from ruptured S/G - ISOLATED	b. Continue efforts to isolate steam supply from ruptured S/G:  • S/G A, MOV-3505A <u>OR</u> V-3505 • S/G B, MOV-3504A <u>OR</u> V-3504
c.	Ruptured S/G pressure - GREATER THAN 300 PSIG	c. Go to ECA-3.1, SGTR WITH LOSS OF REACTOR COOLANT - SUBCOOLED RECOVERY DESIRED, Step 1.
7	Establish Condenser Steam Dump Pressure Control:	
a.	Verify condenser available:  o Intact S/G MSIV - OPEN  o Annunciator G-15, STEAM DUMP ARMED - LIT	a. Adjust S/G ARV controllers to maintain intact S/G pressure in AUTO and go to Step 8.
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	

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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 SELECTED SW PUMPS AND ONE CCW PUMP WILL AUTO START ON EMERGENCY D/G. MANUAL ACTION WILL BE REQUIRED TO RESTART SAFEGUARDS EQUIPMENT.</p> <p>*****</p>		
8	Reset SI	

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STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED																				
<p>*****</p> <p style="text-align: center;"><u>CAUTION</u></p> <p>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.</p> <p>*****</p> <p><u>NOTE:</u> Following initiation of controlled cooldown or depressurization, RCP trip criteria is no longer applicable.</p>																						
9	Initiate RCS Cooldown:																					
	a. Determine required core exit temperature from below table																					
	<table border="1"> <thead> <tr> <th>RUPTURED SG PRESSURE</th> <th>REQUIRED CORE EXIT TEMPERATURE (°F)</th> </tr> </thead> <tbody> <tr><td>1100 PSIG</td><td>525 [505 adverse CNMT]</td></tr> <tr><td>1000 PSIG</td><td>510 [490 adverse CNMT]</td></tr> <tr><td>900 PSIG</td><td>500 [475 adverse CNMT]</td></tr> <tr><td>800 PSIG</td><td>485 [460 adverse CNMT]</td></tr> <tr><td>700 PSIG</td><td>465 [440 adverse CNMT]</td></tr> <tr><td>600 PSIG</td><td>450 [420 adverse CNMT]</td></tr> <tr><td>500 PSIG</td><td>425 [395 adverse CNMT]</td></tr> <tr><td>400 PSIG</td><td>405 [370 adverse CNMT]</td></tr> <tr><td>300 PSIG</td><td>375 [330 adverse CNMT]</td></tr> </tbody> </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]	
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400 PSIG	405 [370 adverse CNMT]																					
300 PSIG	375 [330 adverse CNMT]																					
	b. IF ruptured S/G MSIV closed, <u>THEN</u> 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.  <u>IF</u> no intact S/G available, <u>THEN</u> perform the following:  o Use faulted S/G.  -OR-  o <u>IF</u> a ruptured S/G must be used, <u>THEN</u> 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. <u>WHEN</u> core exit T/Cs less than required, <u>THEN</u> 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
	<p><u>NOTE:</u> TDAFW pump flow control valves fail open on loss of IA.  </p>	
10	Monitor Intact S/G Level:	
	a. Narrow range level - GREATER THAN 5% [25% adverse CNMT]	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. Control feed flow to maintain narrow range level between 17% [25% adverse CNMT] and 50%	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.

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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	a. Restore power to block valves unless block valve was closed to isolate an open PORV: <ul style="list-style-type: none"> <li>• MOV-515, MCC D position 6C</li> <li>• MOV-516, MCC C position 6C</li> </ul>
	b. PORVs - CLOSED	b. <u>IF</u> PRZR pressure less than 2335 psig, <u>THEN</u> manually close PORVs. <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	c. Open one block valve unless it was closed to isolate an open PORV.



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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"> <li>o Normal feed breakers to all 480 volt busses - CLOSED</li> <li>o 480 volt bus voltage - GREATER THAN 420 VOLTS</li> <li>o Emergency D/G output breakers - OPEN</li> </ul>	<p>Perform the following:</p> <ul style="list-style-type: none"> <li>a. <u>IF</u> any AC emergency bus normal feed breaker open, <u>THEN</u> ensure associated D/G breaker closed.</li> <li>b. Perform the following as necessary: <ul style="list-style-type: none"> <li>1) Close non-safeguards bus tie breakers: <ul style="list-style-type: none"> <li>• Bus 13 to Bus 14 tie</li> <li>• Bus 15 to Bus 16 tie</li> </ul> </li> <li>2) Place the following pumps in PULL STOP: <ul style="list-style-type: none"> <li>• EH pumps</li> <li>• Turning gear oil pump</li> <li>• HP seal oil backup pump</li> </ul> </li> <li>3) Restore power to MCCs. <ul style="list-style-type: none"> <li>• A from Bus 13</li> <li>• B from Bus 15</li> <li>• E from Bus 15</li> <li>• F from Bus 15</li> </ul> </li> <li>4) Start HP seal oil backup pump.</li> <li>5) Start CNMT RECIRC fans as necessary.</li> <li>6) Ensure D/G load within limits.</li> <li>7) <u>WHEN</u> bus 15 restored, <u>THEN</u> reset control room lighting.</li> </ul> </li> <li>c. Try to restore offsite power to all AC busses (Refer to ER-ELEC.1, RESTORATION OF OFFSITE POWER).</li> </ul>

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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).  <u>IF</u> less than two SW pumps running, <u>THEN</u> :  1) Ensure SW isolation.  2) Dispatch AO to establish normal shutdown alignment (Refer to Attachment SD-1)  3) 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	a. Perform the following:
o	Bus 13 normal feed - CLOSED	1) Close non-safeguards bus tie breakers:
	-OR-	• Bus 13 to Bus 14 tie
o	Bus 15 normal feed - CLOSED	• 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).
b.	Verify turbine building SW isolation valves - OPEN	b. Manually align valves.
	• MOV-4613 and MOV-4670	
	• MOV-4614 and MOV-4664	
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:	d. Perform the following:
o	Pressure - GREATER THAN 60 PSIG	1) Continue attempts to restore IA (Refer to AP-IA.1, LOSS OF INSTRUMENT AIR).
o	Pressure - STABLE OR INCREASING	2) 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:	
a.	Charging pumps - ANY RUNNING	<p>a. Perform the following:</p> <ol style="list-style-type: none"> <li>1) <u>IF</u> CCW flow is lost to any RCP thermal barrier <u>OR</u> any RCP #1 seal outlet temperature offscale high, <u>THEN</u> dispatch AO with key to RWST gate to locally close seal injection needle valves to affected RCP. <ul style="list-style-type: none"> <li>• V-300A for RCP A</li> <li>• V-300B for RCP B</li> </ul> </li> <li>2) Ensure HCV-142 demand at 0%.</li> </ol>
b.	Align charging pump suction to RWST: <ul style="list-style-type: none"> <li>o LCV-112B - OPEN</li> <li>o LCV-112C - CLOSED</li> </ul>	<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"> <li>1) Verify charging pump A <u>NOT</u> running and place in PULL STOP.</li> <li>2) Direct AO to close V-268 to isolate charging pumps B and C from VCT (V-268 located in charging pump room).</li> </ol>
c.	Start charging pumps as necessary and establish 75 gpm total charging flow <ul style="list-style-type: none"> <li>• Charging line flow</li> <li>• Seal injection</li> </ul>	

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STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
18	Check If RCS Cooldown Should Be Stopped:	
	a. Core exit T/Cs - LESS THAN REQUIRED TEMPERATURE	a. Do <u>NOT</u> proceed until core exit T/Cs less than required temperature.
	b. Stop RCS cooldown	
	c. Stabilize core exit T/Cs - LESS THAN REQUIRED TEMPERATURE	
19	Check Ruptured S/G Pressure - STABLE OR INCREASING	<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.
20	Check RCS Subcooling Based On Core Exit T/Cs - GREATER THAN 20°F USING FIGURE MIN SUBCOOLING	Go to ECA-3.1, SGTR WITH LOSS OF REACTOR COOLANT - SUBCOOLED RECOVERY DESIRED, Step 1 .

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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:

- |   |  |
|---|--|
| <p>a. Check the following:</p> <ul style="list-style-type: none"> <li>o Ruptured S/G level - LESS THAN 90% [80% adverse CNMT]</li> <li>o Any RCP - RUNNING</li> <li>o IA to CNMT - AVAILABLE</li> </ul> <p>b. Spray PRZR with maximum available spray until ANY of the following conditions satisfied:</p> <ul style="list-style-type: none"> <li>o PRZR level - GREATER THAN 75% [65% adverse CNMT]</li> </ul> <p style="text-align: center;">-OR-</p> <ul style="list-style-type: none"> <li>o RCS pressure - LESS THAN SATURATION USING FIGURE MIN SUBCOOLING</li> </ul> <p style="text-align: center;">-OR-</p> <ul style="list-style-type: none"> <li>o <u>BOTH</u> of the following: <ul style="list-style-type: none"> <li>1) RCS pressure - LESS THAN RUPTURED S/G PRESSURE</li> <li>2) PRZR level - GREATER THAN 5% [30% adverse CNMT]</li> </ul> </li> </ul> <p>c. Close normal PRZR spray valves:</p> <ul style="list-style-type: none"> <li>1) Adjust normal spray valve controller to 0% DEMAND</li> <li>2) Verify PRZR spray valves - CLOSED <ul style="list-style-type: none"> <li>• PCV-431A</li> <li>• PCV-431B</li> </ul> </li> </ul> <p>d. Verify auxiliary spray valve (AOV-296) - CLOSED</p> <p>e. Go to Step 24</p> | <p>a. Go to Step 22.</p> <p>c. Stop associated RCP(s).</p> <p>d. Decrease charging speed to minimum and ensure charging valve to loop B cold leg open (AOV-294).</p> |
|---|--|



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STEP

ACTION/EXPECTED RESPONSE

RESPONSE NOT OBTAINED

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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.

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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:

- |   |   |
|---|---|
| <p>a. Verify IA to CNMT - AVAILABLE</p> <p>b. PRZR PORVs - AT LEAST ONE AVAILABLE</p> | <p>a. Refer to Attachment N2 PORVS to operate PORVs.</p> <p>b. <u>IF</u> auxiliary spray available, <u>THEN</u> return to Step 21b.</p> <p><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.</p> |
|---|---|

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: <ul style="list-style-type: none"> <li>o PRZR level - GREATER THAN 75% [65% adverse CNMT]</li> <li>-OR-</li> <li>o RCS pressure - LESS THAN SATURATION USING FIGURE MIN SUBCOOLING</li> <li>-OR-</li> <li>o BOTH of the following: <ul style="list-style-type: none"> <li>1) RCS pressure - LESS THAN RUPTURED S/G PRESSURE</li> <li>2) PRZR level - GREATER THAN 5% [30% adverse CNMT]</li> </ul> </li> </ul>	c. <u>IF</u> auxiliary spray available, <u>THEN</u> return to step 21b. <ul style="list-style-type: none"> <li>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.</li> </ul>
	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> <ul style="list-style-type: none"> <li>a. Monitor the following conditions for indication of leakage from PRZR PORV: <ul style="list-style-type: none"> <li>o PORV outlet temp (TI-438) <u>NOT</u> decreasing.</li> <li>o PRT pressure, level or temperature continue to increase.</li> </ul> </li> <li>b. Go to ECA-3.1, SGTR WITH LOSS OF REACTOR COOLANT - SUBCOOLED RECOVERY DESIRED, Step 1.</li> </ul>

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
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CAUTION

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

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24 Check If SI Flow Should Be Terminated:

- |  |   |
|--|---|
| <p>a. RCS subcooling based on core exit T/Cs - GREATER THAN 0°F USING FIGURE MIN SUBCOOLING</p> <p>b. Secondary heat sink:</p> <p>o Total feed flow to S/G(s) - GREATER THAN 200 GPM AVAILABLE</p> <p style="text-align: center;">-OR-</p> <p>o Narrow range level in at least one intact S/G - GREATER THAN 5% [25% adverse CNMT]</p> <p>c. RCS pressure - STABLE OR INCREASING</p> <p>d. PRZR level - GREATER THAN 5% [30% adverse CNMT]</p> | <p>a. Do <u>NOT</u> stop SI pumps. Go to ECA-3.1, SGTR WITH LOSS OF REACTOR COOLANT - SUBCOOLED RECOVERY DESIRED, Step 1.</p> <p>b. <u>IF</u> neither condition satisfied, <u>THEN</u> do <u>NOT</u> stop SI pumps. Go to ECA-3.1, SGTR WITH LOSS OF REACTOR COOLANT - SUBCOOLED RECOVERY DESIRED, Step 1.</p> <p>c. Do <u>NOT</u> stop SI pumps. Go to ECA-3.1, SGTR WITH LOSS OF REACTOR COOLANT - SUBCOOLED RECOVERY DESIRED, Step 1.</p> <p>d. Do <u>NOT</u> stop SI pumps. Return to Step 6.</p> |
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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:
		<ul style="list-style-type: none"> <li>• RCP A, V-300A</li> <li>• RCP B, V-300B</li> </ul>
		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><b>*27 Monitor SI Reinitiation Criteria:</b></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><u>IF</u> 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> <p>a. Check the following:</p> <ul style="list-style-type: none"> <li>o RCS subcooling based on core exit T/Cs - GREATER THAN 0°F USING FIGURE MIN SUBCOOLING</li> <li>o PRZR level - GREATER THAN 5% [30% adverse CNMT]</li> </ul> <p>b. Dispatch AO with locked valve key to locally close breakers for SI ACCUM discharge valves</p> <ul style="list-style-type: none"> <li>• MOV-841, MCC C position 12F</li> <li>• MOV-865, MCC D position 12C</li> </ul> <p>c. Close SI ACCUM discharge valves</p> <ul style="list-style-type: none"> <li>• MOV-841</li> <li>• MOV-865</li> </ul> <p>d. Locally reopen breakers for MOV-841 and MOV-865</p>	<p>a. Manually operate SI pumps as necessary and go to ECA-3.1, SGTR WITH LOSS OF REACTOR COOLANT - SUBCOOLED RECOVERY DESIRED, Step 1.</p> <p>c. Vent any unisolated ACCUMs:</p> <p>1) Open vent valves for unisolated SI ACCUMs.</p> <ul style="list-style-type: none"> <li>• ACCUM A, AOV-834A</li> <li>• ACCUM B, AOV-834B</li> </ul> <p>2) Open HCV-945.</p>

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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). <u>IF</u> less than two SW pumps can be operated, <u>THEN</u> go to Step 36.
b.	Verify AUX BLDG SW isolation valves - AT LEAST ONE SET 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. Dispatch A0 to locally throttle flow to CCW Hx to between 5000 gpm and 6000 gpm total flow.



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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"> <li>o IA to CNMT (AOV-5392) - OPEN</li> <li>o IA pressure - GREATER THAN 60 PSIG</li> </ul> <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"> <li>1) Verify MCC A energized.</li> <li>2) Place instrument bus D on maintenance supply.</li> </ul> <p>c. Perform the following:</p> <ul style="list-style-type: none"> <li>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"> <li>• RCP A, MOV-749A and MOV-759A</li> <li>• RCP B, MOV-749B and MOV-759B</li> </ul> </li> <li>2) Manually start one CCW pump.</li> </ul> <p>d. Continue with Step 36. <u>WHEN</u> any charging pump running, <u>THEN</u> do Steps 31 through 35.</p>

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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  • 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:  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:  1) Trip the affected RCP  2) Allow 4 minutes for pump coast down, <u>THEN</u> close the affected RCP seal discharge valve  • RCP A, AOV-270A • RCP B, AOV-270B  <u>IF</u> both RCP seal discharge valves are shut, <u>THEN</u> go to Step 32.
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
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:  a. Establish charging line flow to REGEN Hx - GREATER THAN 20 GPM  b. Place the following switches to CLOSE:  • 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  • 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	<u>IF</u> RCP seal return has been established, <u>THEN</u> establish excess letdown as follows:  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.  <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.

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STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
34	Check VCT Makeup System:	
	<ul style="list-style-type: none"> <li>a. Adjust boric acid flow control valve in AUTO to 9.5 gpm</li> <li>b. Adjust RMW flow control valve in AUTO to 40 gpm</li> <li>c. Verify the following: <ul style="list-style-type: none"> <li>1) RMW mode selector switch in AUTO</li> <li>2) RMW control armed - RED LIGHT LIT</li> </ul> </li> <li>d. Check VCT level: <ul style="list-style-type: none"> <li>o Level - GREATER THAN 20% -OR-</li> <li>o Level - STABLE OR INCREASING</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>c. Adjust controls as necessary.</li> <li>d. Manually increase VCT makeup flow as follows: <ul style="list-style-type: none"> <li>1) Ensure BA transfer pumps and RMW pumps running. <u>IF NOT</u>, <u>THEN</u> reset MCC C and MCC D UV lockouts as necessary.</li> <li>2) Place RMW flow control valve HCV-111 in MANUAL and increase RMW flow.</li> <li>3) Increase boric acid flow as necessary.</li> </ul> </li> </ul>

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STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
35	<p>Check Charging Pump Suction Aligned To VCT:</p> <p>a. VCT level - GREATER THAN 20%</p> <p>b. Verify charging pumps aligned to VCT</p> <ul style="list-style-type: none"> <li>o LCV-112C - OPEN</li> <li>o LCV-112B - CLOSED</li> </ul>	<p>a. <u>IF</u> VCT level can <u>NOT</u> be maintained greater than 5%, <u>THEN</u> perform the following:</p> <p>1) Ensure charging pump suction aligned to RWST</p> <ul style="list-style-type: none"> <li>o LCV-112B open</li> <li>o LCV-112C closed</li> </ul> <p>2) Continue with Step 36. <u>WHEN</u> VCT level greater than 40%, <u>THEN</u> do Step 35b.</p> <p>b. Manually align valves as necessary.</p>

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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"> <li>o Increase charging flow</li> <li>o Depressurize RCS using Step 36b</li> </ul>	Increase charging flow	<ul style="list-style-type: none"> <li>o Increase charging flow</li> <li>o Maintain RCS and ruptured S/G pressure equal</li> </ul>
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"> <li>o Depressurize RCS using Step 36b</li> <li>o Decrease charging flow</li> </ul>	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
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 tank outlet valves - CLOSED	d. Place NaOH tank outlet valve controllers to MANUAL and close valves.
	<ul style="list-style-type: none"> <li>• AOV-836A</li> <li>• AOV-836B</li> </ul>	
e.	Stop CNMT spray pumps and place in AUTO	
f.	Close CNMT spray pump discharge valves	
	<ul style="list-style-type: none"> <li>• MOV-860A</li> <li>• MOV-860B</li> <li>• MOV-860C</li> <li>• MOV-860D</li> </ul>	

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STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
38	<p>Check If Emergency D/Gs Should Be Stopped:</p> <ul style="list-style-type: none"> <li>a. Verify AC emergency busses energized by offsite power: <ul style="list-style-type: none"> <li>o Emergency D/G output breakers - OPEN</li> <li>o AC emergency bus voltage - GREATER THAN 420 VOLTS</li> <li>o AC emergency bus normal feed breakers - CLOSED</li> </ul> </li> <li>b. Stop any unloaded emergency D/G and place in standby (Refer to Attachment D/G STOP)</li> </ul>	<ul style="list-style-type: none"> <li>a. Try to restore offsite power (Refer to ER-ELEC.1, RESTORATION OF OFFSITE POWER).</li> </ul>
39	<p>Minimize Secondary System Contamination:</p> <ul style="list-style-type: none"> <li>a. Isolate reject from hotwell to CST: <ul style="list-style-type: none"> <li>o Place hotwell level controller (LC-107) in MANUAL at 50%</li> <li>o Verify hotwell level - STABLE</li> </ul> </li> <li>b. Check status of local actions to complete ruptured S/G isolation (Refer to Attachment RUPTURED S/G)</li> </ul>	<ul style="list-style-type: none"> <li>a. <u>IF</u> hotwell level increasing, <u>THEN</u> direct RP to sample hotwells for activity.</li> </ul>



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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
<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>		
42	Check RCP Status:	
	a. RCPs - AT LEAST ONE RUNNING	<p>a. Perform the following:</p> <p>1) Try to start one RCP:</p> <ul style="list-style-type: none"> <li>a) Ensure conditions for starting an RCP. <ul style="list-style-type: none"> <li>o Bus 11A or 11B energized.</li> <li>o Refer to Attachment RCP START.</li> </ul> </li> <li>b) <u>IF</u> RVLIS level (no RCPs) less than 95%, <u>THEN</u> perform the following: <ul style="list-style-type: none"> <li>o Increase PRZR level to greater than 65% [82% adverse CNMT].</li> <li>o Dump steam to establish RCS subcooling based on core exit T/Cs to greater than 20°F using Figure MIN SUBCOOLING.</li> <li>o Energize PRZR heaters as necessary to saturate PRZR water</li> </ul> </li> <li>c) Start one RCP.</li> </ul> <p>2) <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 can <u>NOT</u> be verified, <u>THEN</u> increase dumping steam.</p>
	b. Stop all but one RCP	

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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	Check If Source Range Detectors Should Be Energized:	
	a. Source range channels - DEENERGIZED	a. Go to Step 43e.
	b. Check intermediate range flux - EITHER CHANNEL LESS THAN 10 <sup>-10</sup> AMPS	b. Perform the following: <ol style="list-style-type: none"> <li>1) <u>IF</u> neither intermediate range channel is decreasing, <u>THEN</u> initiate boration.</li> <li>2) Continue with Step 44. <u>WHEN</u> flux is LESS THAN 10<sup>-10</sup> amps on any operable channel, <u>THEN</u> do Steps 43c through e.</li> </ol>
	c. Check the following: <ul style="list-style-type: none"> <li>o Both intermediate range channels - LESS THAN 10<sup>-10</sup> AMPS</li> </ul> <p style="text-align: center;">-OR-</p> <ul style="list-style-type: none"> <li>o Greater than 20 minutes since reactor trip</li> </ul>	c. Continue with Step 44. <u>WHEN</u> either condition met, <u>THEN</u> do Steps 43d 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 44.</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
44	<p>Establish Normal Shutdown Alignment:</p> <p>a. Check condenser - AVAILABLE</p> <p>b. Perform the following:</p> <ul style="list-style-type: none"> <li>o Open generator disconnects <ul style="list-style-type: none"> <li>• 1G13A71</li> <li>• 9X13A73</li> </ul> </li> <li>o Place voltage regulator to OFF</li> <li>o Open turbine drain valves</li> <li>o Rotate reheater steam supply controller cam to close valves</li> <li>o Place reheater dump valve switches to HAND</li> <li>o Stop all but one condensate pump</li> </ul> <p>c. Verify adequate Rx head cooling:</p> <ol style="list-style-type: none"> <li>1) Verify at least one control rod shroud fan - RUNNING</li> <li>2) Verify one Rx compartment cooling fan - RUNNING</li> </ol> <p>d. Verify Attachment SD-1 - COMPLETE</p>	<p>a. Dispatch A0 to perform Attachment SD-2.</p> <p>1) Manually start one fan as power supply permits (45 kw)</p> <p>2) Perform the following:</p> <ul style="list-style-type: none"> <li>o Dispatch A0 to reset UV relays at MCC C and MCC D.</li> <li>o Manually start one fan as power supply permits (23 kw)</li> </ul>

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STEP

ACTION/EXPECTED RESPONSE

RESPONSE NOT OBTAINED

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-

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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) FOLDOUT



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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.

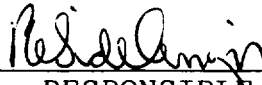


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ROCHESTER GAS AND ELECTRIC CORPORATION

GINNA STATION

CONTROLLED COPY NUMBER 23

  
RESPONSIBLE MANAGER

2-28-2001  
EFFECTIVE DATE

CATEGORY 1.0

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

EOP: ECA-3.3	TITLE: SGTR WITHOUT PRESSURIZER PRESSURE CONTROL	REV: 24 PAGE 2 of 27
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- A. PURPOSE - This procedure provides actions for a SGTR with coincident loss of normal and auxiliary PRZR sprays and PORVs.
- B. ENTRY CONDITIONS/SYMPTOMS
  - 1. ENTRY CONDITIONS - This procedure is entered from:
    - a. E-3, STEAM GENERATOR TUBE RUPTURE, when PRZR pressure control is not available.

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STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
<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 <math>10^{+05}</math> R/hr.</p>		
1	Check Ruptured S/G Narrow Range Level - LESS THAN 80% [60% adverse CNMT]	Go to Step 8.
2	Check RCP Status - AT LEAST ONE RUNNING	<p>Try to start one RCP:</p> <p>a. Establish conditions for starting RCP.</p> <p>      o   Bus 11A and Bus 11B energized</p> <p>      o   Refer to Attachment RCP START</p> <p>b. Start one RCP. <u>IF</u> no RCP can be started, <u>THEN</u> go to Step 4.</p>
3	Check IF Normal PRZR Spray Available:	
	<p>a. Verify the following:</p> <p>      1) Verify IA to CNMT - AVAILABLE</p> <p>      2) Verify spray valve associated with running RCP - OPERABLE</p> <p>b. Go to E-3, STEAM GENERATOR TUBE RUPTURE, Step 21</p>	<p>a. Perform the following:</p> <p>      1) Place PRZR heater control group to PULL STOP.</p> <p>      2) Place PRZR heater backup group to OFF.</p> <p>      3) Place normal spray valve controllers to MANUAL at 0%.</p> <p>      4) Go to Step 4.</p>

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STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
4	Try To Restore PRZR PORV:	
a.	Block valves - AT LEAST ONE OPEN <ul style="list-style-type: none"> <li>• MOV-516 for PCV-430</li> <li>• MOV-515 for PCV-431C</li> </ul>	a. Open one block valve unless it was closed to isolate an open PORV.  If block valves can <u>NOT</u> be opened, <u>THEN</u> dispatch A0 to locally ensure breakers to block valves closed.  <ul style="list-style-type: none"> <li>• MOV-515, MCC D position 6C</li> <li>• MOV-516, MCC C position 6C</li> </ul>
b.	Check IA to CNMT - AVAILABLE	b. Refer to Attachment N2 PORVS to operate PORVs.
c.	Verify at least one PRZR PORV flow path - AVAILABLE	c. Go to Step 5.
d.	Go to E-3, STEAM GENERATOR TUBE RUPTURE, Step 22	

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STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
	<p><u>NOTE:</u> If auxiliary spray is the only means of RCS pressure control, THEN the 320°F ΔT limit between the spray line and PRZR does not apply.</p>	
5	Try To Establish Auxiliary Spray:	
	<p>a. Charging pumps - AT LEAST ONE RUNNING</p>	<p>a. Perform the following:</p> <ol style="list-style-type: none"> <li>1) <u>IF</u> CCW flow is lost to any RCP thermal barrier <u>OR</u> any RCP #1 seal outlet temperature offscale high, <u>THEN</u> locally isolate seal injection to affected RCP. <ul style="list-style-type: none"> <li>• RCP A, V-300A</li> <li>• RCP B, V-300B</li> </ul> </li> <li>2) Ensure HCV-142 demand at 0%.</li> <li>3) Start charging pumps as necessary. <p><u>IF</u> charging not available, <u>THEN</u> go to Step 6.</p> </li> </ol>
	<p>b. Establish auxiliary spray flow:</p> <ol style="list-style-type: none"> <li>1) Open auxiliary spray valve (AOV-296)</li> <li>2) Close charging valve to loop B cold leg (AOV-294)</li> </ol>	<p>b. <u>IF</u> auxiliary spray can <u>NOT</u> be established, <u>THEN</u> go to Step 6.</p>
	<p>c. Go to E-3, STEAM GENERATOR TUBE RUPTURE, Step 21b</p>	

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STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
	<p><u>NOTE:</u> TDAFW pump flow control valves fail open on loss of IA.</p>	
* 6	Monitor Intact S/G Level:	
	<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>	<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. <u>IF</u> narrow range level in 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>
7	Check PRZR Level - GREATER THAN 5% [30% adverse CNMT]	Return to Step 1.

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STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
	8 Check If SI Can Be Terminated:	
	a. RCS subcooling based on core exit T/Cs - GREATER THAN 0°F USING FIGURE MIN SUBCOOLING	a. Do <u>NOT</u> stop SI pumps. Go to ECA-3.1, SGTR WITH LOSS OF REACTOR COOLANT - SUBCOOLED RECOVERY DESIRED, Step 1.
	b. Secondary heat sink:	b. <u>IF</u> neither condition satisfied, <u>THEN</u> do <u>NOT</u> stop SI pumps. Go to ECA-3.1, SGTR WITH LOSS OF REACTOR COOLANT - SUBCOOLED RECOVERY DESIRED, Step 1.
	o Total feed flow to intact S/Gs - GREATER THAN 200 GPM AVAILABLE	
	-OR-	
	o Narrow range level in intact S/G - GREATER THAN 5% [25% adverse CNMT]	
	c. RVLIS indication	c. Do <u>NOT</u> stop SI pumps. Go to ECA-3.1, SGTR WITH LOSS OF REACTOR COOLANT - SUBCOOLED RECOVERY DESIRED, Step 1.
	o Level (no RCPs) - GREATER THAN 77% [82% adverse CNMT]	
	-OR-	
	o Fluid fraction (any RCP running) - GREATER THAN 84%	
	d. Any ruptured S/G narrow range level - INCREASING IN AN UNCONTROLLED MANNER OR OFFSCALE HIGH	d. Do <u>NOT</u> stop SI pumps. Return to Step 2.

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STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
9	Stop SI Pumps and Place In AUTO	



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STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
10	<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"> <li>o LCV-112B - OPEN</li> <li>o LCV-112C - CLOSED</li> </ul> <p>c. Start charging pumps as necessary and adjust charging flow to perform the following:</p> <ul style="list-style-type: none"> <li>o Restore PRZR level</li> <li>o Maintain RCS subcooling based on core exit T/Cs - GREATER THAN 0°F USING FIGURE MIN SUBCOOLING</li> </ul>	<p>a. Perform the following:</p> <ol style="list-style-type: none"> <li>1) <u>IF</u> CCW flow is lost to any RCP thermal barrier <u>OR</u> any RCP #1 seal outlet temperature offscale high, <u>THEN</u> dispatch AO with key to RWST gate to close seal injection needle valve(s) to affected RCP: <ul style="list-style-type: none"> <li>• RCP A, V-300A</li> <li>• RCP B, V-300B</li> </ul> </li> <li>2) Ensure HCV-142 open, demand at 0%.</li> </ol> <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"> <li>1) Verify charging pump A <u>NOT</u> running and place in PULL STOP.</li> <li>2) Direct AO to close V-268 to isolate charging pumps B and C from VCT (V-268 located in charging pump room).</li> </ol>

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STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
<b>*11</b>	<p>Monitor RCS Inventory:</p> <ul style="list-style-type: none"> <li>o RCS subcooling based on core exit T/Cs - GREATER THAN 0°F USING FIGURE MIN SUBCOOLING</li> <li>o RVLIS indication <ul style="list-style-type: none"> <li>o Level (no RCPs) - GREATER THAN 77% [82% adverse CNMT]</li> </ul> </li> </ul> <p style="text-align: center;">-OR-</p> <ul style="list-style-type: none"> <li>o Fluid fraction (any RCP running) - GREATER THAN 84%</li> </ul>	<p>Perform the following:</p> <ul style="list-style-type: none"> <li>a. Manually start SI pumps as necessary.</li> <li>b. Go to ECA-3.1, SGTR WITH LOSS OF REACTOR COOLANT - SUBCOOLED RECOVERY DESIRED, Step 1.</li> </ul>
<b>12</b>	<p>Verify Adequate SW Flow To CCW Hx:</p> <ul style="list-style-type: none"> <li>a. Verify at least two SW pumps - RUNNING</li> <li>b. Verify AUX BLDG SW isolation valves - OPEN <ul style="list-style-type: none"> <li>• MOV-4615 and MOV-4734</li> <li>• MOV-4616 and MOV-4735</li> </ul> </li> <li>c. Verify CNMT RECIRC fan annunciator C-2, HIGH TEMPERATURE ALARM - EXTINGUISHED</li> </ul>	<ul style="list-style-type: none"> <li>a. Manually start pumps as power supply permits (257 kw per pump). <u>IF</u> less than two SW pumps can be operated, <u>THEN</u> go to Step 20.</li> <li>b. Manually align valves.</li> <li>c. Dispatch AO to locally throttle flow to CCW Hx to between 5000 gpm and 6000 gpm total flow.</li> </ul>

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STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
13	Check If Normal CVCS Operation Can Be Established	
a.	Verify IA restored: <ul style="list-style-type: none"> <li>o IA to CNMT (AOV-5392) - OPEN</li> <li>o IA pressure - GREATER THAN 60 PSIG</li> </ul>	a. Continue with Step 17. <u>WHEN</u> IA restored, <u>THEN</u> do Steps 13 through 16.
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: <ol style="list-style-type: none"> <li>1) Verify MCC A energized.</li> <li>2) Place instrument bus D on maintenance supply.</li> </ol>
c.	CCW pumps - ANY RUNNING	c. Perform the following: <ol style="list-style-type: none"> <li>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"> <li>• RCP A, MOV-749A and MOV-759A</li> <li>• RCP B, MOV-749B and MOV-759B</li> </ul> </li> <li>2) Manually start one CCW pump.</li> </ol>
d.	Charging pump - ANY RUNNING	d. Continue with Step 20. <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
	<p><u>NOTE:</u> If PRZR level is less than 13%, letdown may be established by placing AOV-427 to OPEN.</p>	
14	Establish Normal Letdown:	<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"> <li>o Place excess letdown divert valve, AOV-312, to NORMAL.</li> <li>o Ensure CCW from excess letdown open. (AOV-745).</li> <li>o Open excess letdown isolation valve AOV-310.</li> <li>o Slowly open HCV-123 to maintain excess letdown temperature less than 195°F and pressure less than 100 psig.</li> <li>o Adjust charging pump speed as necessary.</li> </ul> <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>
	<p>a. Establish charging line flow to REGEN Hx - GREATER THAN 20 GPM</p> <p>b. Place the following switches to CLOSE:</p> <ul style="list-style-type: none"> <li>• Letdown orifice valves (AOV-200A, AOV-200B, and AOV-202)</li> <li>• AOV-371, letdown isolation valve</li> <li>• AOV-427, loop B cold leg to REGEN Hx</li> </ul> <p>c. Place letdown controllers in MANUAL at 40% open</p> <ul style="list-style-type: none"> <li>• TCV-130</li> <li>• PCV-135</li> </ul> <p>d. Reset both trains of XY relays for AOV-371 and AOV-427</p> <p>e. Open AOV-371 and AOV-427</p> <p>f. Open letdown orifice valves as necessary</p> <p>g. Place TCV-130 in AUTO at 105°F</p> <p>h. Place PCV-135 in AUTO at 250 psig</p> <p>i. Adjust charging pump speed and HCV-142 as necessary</p>	

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STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
15	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-	1) Ensure BA transfer pumps and RMW pumps running. <u>IF NOT</u> , <u>THEN</u> reset MCC C and MCC D UV lockouts as necessary.
	o Level - STABLE OR INCREASING	2) Place RMW flow control valve HCV-111 in MANUAL.
		3) Increase RMW flow.

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STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
16	<p>Check Charging Pump Suction Aligned To VCT:</p> <p>a. VCT level - GREATER THAN 20%</p> <p>b. Verify charging pumps aligned to VCT</p> <ul style="list-style-type: none"> <li>o LCV-112C - OPEN</li> <li>o LCV-112B - CLOSED</li> </ul>	<p>a. <u>IF</u> VCT level can <u>NOT</u> be maintained greater than 5%, <u>THEN</u> perform the following:</p> <p>1) Ensure charging pump suction aligned to RWST</p> <ul style="list-style-type: none"> <li>o LCV-112B open</li> <li>o LCV-112C closed</li> </ul> <p>2) Continue with Step 17. <u>WHEN</u> VCT level greater than 40%, <u>THEN</u> do Step 16b.</p> <p>b. Manually align valves as necessary.</p>

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STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
17	<p>Check RCP Cooling:</p> <p>a. Check CCW to RCPs:</p> <ul style="list-style-type: none"> <li>o Annunciator A-7, RCP 1A CCW RETURN HIGH TEMP OR LOW FLOW - EXTINGUISHED</li> <li>o Annunciator A-15, RCP 1B CCW RETURN HIGH TEMP OR LOW FLOW - EXTINGUISHED</li> </ul> <p>b. Check RCP seal injection:</p> <ul style="list-style-type: none"> <li>o Labyrinth seal D/Ps - GREATER THAN 15 INCHES OF WATER</li> <li>-OR-</li> <li>o RCP seal injection flow to each RCP - GREATER THAN 6 GPM</li> </ul>	<p>Establish normal cooling to RCPs (Refer to Attachment SEAL COOLING).</p>

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STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
18	Check If Seal Return Flow Should Be Established:	
a.	Verify RCP #1 seal outlet temperature - LESS THAN 235°F	a. Go to Step 19.
b.	Verify RCP seal outlet valves - OPEN <ul style="list-style-type: none"> <li>• AOV-270A</li> <li>• AOV-270B</li> </ul>	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"> <li>1) Place MOV-313 switch to OPEN.</li> <li>2) Dispatch AO with key to RWST gate to locally open MOV-313.</li> </ol>
e.	Verify RCP #1 seal leakoff flow - LESS THAN 6.0 GPM	e. Perform the following: <ol style="list-style-type: none"> <li>1) Trip the affected RCP</li> <li>2) Allow 4 minutes for pump coast down, <u>THEN</u> close the affected RCP seal discharge valve <ul style="list-style-type: none"> <li>• RCP A, AOV-270A</li> <li>• RCP B, AOV-270B</li> </ul> </li> </ol> <p><u>IF</u> both RCP seal discharge valves are shut, <u>THEN</u> go to Step 19.</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
19	Equalize Charging And Letdown Flows:	
	<ul style="list-style-type: none"> <li>a. Verify charging pump controllers in manual</li> <li>b. Control charging and seal injection flows to equal letdown and seal leakoff flows</li> </ul>	
20	Check If Emergency D/Gs Should Be Stopped:	
	<ul style="list-style-type: none"> <li>a. Verify AC emergency busses energized by offsite power: <ul style="list-style-type: none"> <li>o Emergency D/G output breakers - OPEN</li> <li>o AC emergency bus voltage - GREATER THAN 420 VOLTS</li> <li>o AC emergency bus normal feed breakers - CLOSED</li> </ul> </li> <li>b. Stop any unloaded emergency D/G and place in standby (Refer to Attachment D/G STOP)</li> </ul>	<ul style="list-style-type: none"> <li>a. Try to restore offsite power (Refer to ER-ELEC.1, RESTORATION OF OFFSITE POWER).</li> </ul>
21	Minimize Secondary System Contamination:	
	<ul style="list-style-type: none"> <li>a. Isolate reject from hotwell to CST: <ul style="list-style-type: none"> <li>o Place hotwell level controller (HC-107) in MANUAL at 50%</li> <li>o Verify hotwell level - STABLE</li> </ul> </li> <li>b. Verify local actions to complete isolation of ruptured S/G (Refer to Attachment RUPTURED S/G)</li> </ul>	<ul style="list-style-type: none"> <li>a. <u>IF</u> hotwell level increasing, <u>THEN</u> direct RP to sample hotwells for activity.</li> </ul>

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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>		
<p>22 Check If Source Range Detectors Should Be Energized:</p>		
a.	Source range channels - DEENERGIZED	a. Go to Step 22e.
b.	Check intermediate range flux - EITHER CHANNEL LESS THAN 10 <sup>-10</sup> AMPS	b. Perform the following: <ul style="list-style-type: none"> <li>1) <u>IF</u> neither intermediate range channel is decreasing, <u>THEN</u> initiate boration.</li> <li>2) Continue with Step 23. <u>WHEN</u> flux is LESS THAN 10<sup>-10</sup> amps on any operable channel, <u>THEN</u> do Steps 22c through e.</li> </ul>
c.	Check the following: <ul style="list-style-type: none"> <li>o Both intermediate range channels - LESS THAN 10<sup>-10</sup> AMPS</li> </ul> <p>-OR-</p> <ul style="list-style-type: none"> <li>o Greater than 20 minutes since reactor trip</li> </ul>	c. Continue with Step 23. <u>WHEN</u> either condition met, <u>THEN</u> do Steps 22d 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 22.</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
23	<p>Establish Normal Shutdown Alignment:</p> <p>a. Check condenser - AVAILABLE</p> <p>b. Perform the following:</p> <ul style="list-style-type: none"> <li>o Open generator disconnects <ul style="list-style-type: none"> <li>• 1G13A71</li> <li>• 9X13A73</li> </ul> </li> <li>o Place voltage regulator to OFF</li> <li>o Open turbine drain valves</li> <li>o Rotate reheater steam supply controller cam to close valves</li> <li>o Place reheater dump valve switches to HAND</li> <li>o Stop all but one condensate pump</li> </ul> <p>c. Verify adequate Rx head cooling:</p> <ul style="list-style-type: none"> <li>1) Verify at least one control rod shroud fan - RUNNING</li> <li>2) Verify one Rx compartment cooling fan - RUNNING</li> </ul> <p>d. Verify Attachment SD-1 - COMPLETE</p>	<p>a. Dispatch AO to perform Attachment SD-2.</p> <p>1) Manually start one fan as power supply permits (45 kw)</p> <p>2) Perform the following:</p> <ul style="list-style-type: none"> <li>o Dispatch AO to reset UV relays at MCC C and MCC D.</li> <li>o Manually start one fan as power supply permits (23 kw)</li> </ul>

## STEP

## ACTION/EXPECTED RESPONSE

## RESPONSE NOT OBTAINED

NOTE: Plant staff should decide whether to repair PRZR pressure control systems or continue with this procedure. If PRZR pressure control is established, PRZR level should be restored to greater than 5% [30% adverse CNMT] and then further recovery should continue with E-3, STEAM GENERATOR TUBE RUPTURE, Step 32.

## 24 Check If SI ACCUMs Should Be Isolated:

### a. Check the following:

- o RCS subcooling based on core exit T/Cs - GREATER THAN 0°F USING FIGURE MIN SUBCOOLING
- o RVLIS indication
  - o Level (no RCPs - GREATER THAN 77% [82% adverse CNMT])

-OR-

### b. Dispatch AO with locked valve key to locally close breakers for SI ACCUM discharge valves

- MOV-841, MCC C position 12F
- MOV-865, MCC D position 12C

### c. Close SI ACCUM discharge valves

- MOV-841
- MOV-865

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

### a. Return to Step 11.

### c. Vent any unisolated ACCUMs:

#### 1) Open vent valves for unisolated SI ACCUMs.

- ACCUM A, AOV-834A
- ACCUM B, AOV-834B

#### 2) Open HCV-945.

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STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
	<p><u>NOTE:</u> Leakage from ruptured S/G into RCS will dilute RCS boron concentration.</p>	
25	Verify Adequate Shutdown Margin	
	<ul style="list-style-type: none"> <li>a. Direct RP to sample RCS and ruptured S/G for boron concentration</li> <li>b. Verify boron concentration - GREATER THAN REQUIREMENTS OF FIGURE SDM</li> </ul>	<ul style="list-style-type: none"> <li>b. Borate as necessary.</li> </ul>
26	Maintain Required RCP Seal Injection Flow And Labyrinth Seal D/P:	Perform the following:
	<ul style="list-style-type: none"> <li>o Labyrinth seal D/P to each RCP - GREATER THAN 15 INCHES OF WATER</li> <li>o RCP seal injection flow - GREATER THAN 6 GPM</li> </ul>	<ul style="list-style-type: none"> <li>o Adjust charging flow to REGEN Hx, HCV-142 as necessary.</li> </ul> <p style="text-align: center;">-OR-</p> <ul style="list-style-type: none"> <li>o Dispatch AO to adjust seal injection needle valves V-300A and V-300B if necessary.</li> </ul>
27	Initiate RCS Cooldown to 350°F In RCS Cold Legs:	
	<ul style="list-style-type: none"> <li>a. Establish and maintain cooldown rate in RCS cold legs - LESS THAN 100°F/HR</li> <li>b. Dump steam to condenser from intact S/G</li> </ul>	<ul style="list-style-type: none"> <li>b. Manually or locally dump steam using intact S/G ARV.</li> </ul> <p><u>IF</u> no intact S/G available, <u>THEN</u> use faulted S/G.</p>

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STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
<p>*****</p> <p style="text-align: center;"><u>CAUTION</u></p> <p>RCS AND RUPTURED S/G PRESSURES MUST BE MAINTAINED LESS THAN THE RUPTURED S/G ARV SETPOINT.</p> <p>*****</p>		
28	Control Charging Flow To Maintain RCS Subcooling:	
	<p>a. RCS subcooling based on core exit T/Cs - GREATER THAN 20°F USING FIGURE MIN SUBCOOLING</p> <p>b. Ruptured S/G narrow range level - LESS THAN 90% [80% adverse CNMT]</p> <p>c. Ruptured S/G narrow range level - STABLE OR DECREASING</p>	<p>a. Increase charging flow to maintain subcooling greater than 20°F using Figure MIN SUBCOOLING and go to Step 29.</p> <p>b. Control charging flow to maintain RCS pressure at ruptured S/G pressure and go to Step 29.</p> <p>c. <u>IF</u> ruptured S/G level increasing, <u>THEN</u> decrease charging flow to stabilize level. Maintain RCS subcooling greater than 20°F using Figure MIN SUBCOOLING.</p>
29	Check If RCS Cooldown Should Be Stopped:	
	<p>a. RCS cold leg temperatures - LESS THAN 350°F</p> <p>b. Stop RCS cooldown</p>	<p>a. Return to Step 25.</p>

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STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
30	Check RCS Pressure - GREATER THAN 400 PSIG [300 PSIG adverse CNMT]	Go to Step 33.
*31	Monitor Ruptured S/G Narrow Range Level - GREATER THAN 17% [25% adverse CNMT]	<p>Refill ruptured S/G to 80% [60% adverse CNMT] using feed flow.</p> <p><u>IF</u> any of the following conditions occurs, <u>THEN</u> stop feed flow to ruptured S/G:</p> <ul style="list-style-type: none"> <li>o Ruptured S/G pressure decreases in an uncontrolled manner.</li> </ul> <p style="text-align: center;">-OR-</p> <ul style="list-style-type: none"> <li>o Ruptured S/G pressure increases to 1020 psig.</li> </ul> <p style="text-align: center;">-OR-</p> <ul style="list-style-type: none"> <li>o Ruptured S/G pressure decreases to 350 psig <u>AND</u> ruptured S/G level greater than 5% [25% adverse CNMT]</li> </ul>

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT.OBTAINED
<p>*****</p> <p style="text-align: center;"><u>CAUTION</u></p> <p>o STEAM SHOULD NOT BE RELEASED FROM A RUPTURED S/G IF WATER MAY EXIST IN ITS STEAMLINE.</p> <p>o RUPTURED S/G PRESSURE MAY DECREASE RAPIDLY WHEN STEAM IS RELEASED.</p> <p>*****</p>		
32	Depressurize RCS And Ruptured S/G To 400 PSIG [300 PSIG adverse CNMT]	
	a. Perform the following:	
	o Decrease charging and increase letdown to initiate backfill	
	-OR-	
	o Initiate blowdown from ruptured S/G	
	-OR-	
	o Dump steam from ruptured S/G	
	b. Check RCS pressure - LESS THAN 400 psig [300 psig adverse CNMT]	b. Return to Step 31.
	c. Stop RCS depressurization	



## STEP

## ACTION/EXPECTED RESPONSE

## RESPONSE NOT OBTAINED

### 33 Check If RHR Normal Cooling Can Be Established:

- |   |  |
|---|--|
| a. RCS cold leg temperature - LESS THAN 350°F   | a. Return to Step 27.  |
| b. RCS pressure - LESS THAN 400 psig [300 psig adverse CNMT]  | b. Return to Step 31.  |
| c. Place RCS overpressure protection system in service (Refer to O-7, ALIGNMENT AND OPERATION OF THE REACTOR VESSEL OVERPRESSURE PROTECTION SYSTEM) | c. <u>IF</u> RCS overpressure protection system can <u>NOT</u> be placed in service, <u>THEN</u> notify TSC of potential Tech Spec violation if RHR system is placed in service. |
| d. Establish RHR normal cooling (Refer to Attachment RHR COOL)  |  |

NOTE: Leakage from ruptured S/G into RCS will dilute RCS boron concentration.

### 34 Verify Adequate Shutdown Margin

- |   |                         |
|---|-------------------------|
| a. Direct RP to sample RCS and ruptured S/G for boron concentration     |                         |
| b. Verify boron concentration - GREATER THAN REQUIREMENTS OF FIGURE SDM | b. Borate as necessary. |

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STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
35	Initiate RCS Cooldown To Cold Shutdown:	
	<ul style="list-style-type: none"> <li>a. Establish and maintain cooldown rate in RCS cold legs - LESS THAN 100°F/HR</li> <li>b. Use RHR system if in service</li> <li>c. Dump steam to condenser from intact S/G</li> </ul>	<ul style="list-style-type: none"> <li>c. Manually or locally dump steam from intact S/G using ARVs.</li> </ul> <p><u>IF</u> no intact S/G available and RHR system <u>NOT</u> in service, <u>THEN</u> use faulted S/G.</p>
36	Control Charging Flow To Maintain RCS Subcooling:	
	<ul style="list-style-type: none"> <li>a. RCS subcooling based on core exit T/Cs - GREATER THAN 20°F USING FIGURE MIN SUBCOOLING</li> <li>b. Ruptured S/G narrow range level - LESS THAN 90% [80% adverse CNMT]</li> <li>c. Ruptured S/G narrow range level - STABLE OR DECREASING</li> </ul>	<ul style="list-style-type: none"> <li>a. Increase charging flow to maintain subcooling greater than 20°F using Figure MIN SUBCOOLING and go to Step 37.</li> <li>b. Control charging flow to maintain RCS pressure at ruptured S/G pressure and go to Step 37.</li> <li>c. <u>IF</u> ruptured S/G level increasing, <u>THEN</u> decrease charging flow to stabilize level. Maintain RCS subcooling greater than 20°F using Figure MIN SUBCOOLING.</li> </ul>

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STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
<p><b>*37 Monitor RCP Operation:</b></p> <p>a. RCPs - ANY RUNNING</p> <p>b. Check the following:</p> <ul style="list-style-type: none"> <li>o RCP #1 seal D/P - GREATER THAN 220 PSID</li> <li>o Check RCP seal leakage - WITHIN THE NORMAL OPERATING RANGE OF FIGURE RCP SEAL LEAKOFF</li> </ul> <p>38 Check Core Exit T/Cs - LESS THAN 200° F</p> <p>39 Evaluate Long Term Plant Status:</p> <ul style="list-style-type: none"> <li>a. Maintain cold shutdown conditions</li> <li>b. Consult TSC</li> </ul> <p style="text-align: center;">-END-</p>		
		<p>a. Go to Step 39.</p> <p>b. Stop the affected RCP(s).</p> <p>Return to Step 34.</p>

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### ECA-3.3 APPENDIX LIST

#### TITLE

- 1) RED PATH SUMMARY
- 2) FIGURE MIN SUBCOOLING (FIG-1.0)
- 3) FIGURE SDM (FIG-2.0)
- 4) FIGURE RCP SEAL LEAKOFF (FIG-4.0)
- 5) ATTACHMENT RCP START (ATT-15.0)
- 6) ATTACHMENT N2 PORVS (ATT-12.0)
- 7) ATTACHMENT RUPTURED S/G (ATT-16.0)
- 8) ATTACHMENT D/G STOP (ATT-8.1)
- 9) ATTACHMENT SD-1 (ATT-17.0)
- 10) ATTACHMENT SEAL COOLING (ATT-15.2)
- 11) ATTACHMENT SD-2 (ATT-17.1)
- 12) ATTACHMENT RHR COOL (ATT-14.1)
- 13) FOLDOUT



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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 ECA-3.1, SGTR WITH LOSS OF REACTOR COOLANT - SUBCOOLED RECOVERY DESIRED, Step 1:

- o RCS subcooling based on core exit TCs - LESS THAN 0°F USING REQUIREMENTS OF FIGURE MIN SUBCOOLING

- OR -

- o Check RVLIS indication:

Level (no RCPs) - LESS THAN 77% [82% adverse CNMT]  
Fluid Fraction (any RCP running) - LESS THAN 84%

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).

EOP: FIG-4.0	TITLE: FIGURE RCP SEAL LEAKOFF	REV: 2 PAGE 1 of 1
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Responsible Manager                     *Bel...*                    

Date 2-28-2001

FIGURE RCP SEAL LEAKOFF

#1 SEAL LEAK RATE (GPM)

