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ROCHESTER GAS AND ELECTRIC CORPORATION

GINNA STATION

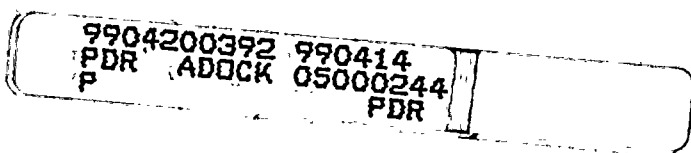
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RESPONSIBLE MANAGER

4-14-99
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CATEGORY 1.0

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A. PURPOSE - This procedure provides the instructions necessary to mitigate the consequences of a reactor coolant leak.

B. ENTRY CONDITIONS/SYMPTOMS

1. ENTRY CONDITIONS - This procedure is entered from:

- a. S-12.2, OPERATOR ACTION IN THE EVENT OF INDICATION OF SIGNIFICANT INCREASE IN LEAKAGE, when a significant increase in RCS leakage is indicated.
- b. AP-CVCS.1, CVCS LEAK, when leak cannot be isolated.

2. SYMPTOMS - The symptoms of REACTOR COOLANT LEAK are;

- a. Annunciator F-14, CHARGING PUMP SPEED, lit, or
- b. Annunciator A-2, VCT LEVEL 14% 86, lit, or
- c. Annunciator E-16, RMS PROCESS MONITOR HIGH ACTIVITY, lit, or
- d. Annunciator E-24, RMS AREA MONITOR HIGH ACTIVITY, lit, or
- e. Annunciator F-4, PRESSURIZER LEVEL DEVIATION -5 NORMAL +5, lit, or
- f. Annunciator F-10, PRESSURIZER LO PRESS 2205 PSI, lit, or
- g. Annunciator F-11, PRESSURIZER LO LEVEL 13%, lit.

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STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
<p>*****</p> <p style="text-align: center;"><u>CAUTION</u></p> <p>IF, AT ANY TIME DURING THIS PROCEDURE, A REACTOR TRIP OR SI OCCURS, E-0, REACTOR TRIP OR SAFETY INJECTION, SHALL BE PERFORMED.</p> <p>*****</p> <p><u>NOTE:</u> Conditions should be evaluated for site contingency reporting (Refer to EPIP-1.0, GINNA STATION EVENT EVALUATION AND CLASSIFICATION.</p>		
1 Check PRZR Level - STABLE AT PROGRAM LEVEL		<p><u>IF</u> PRZR level decreasing, <u>THEN</u> start additional charging pumps and increase speed as necessary to stabilize PRZR level.</p> <p><u>IF</u> PRZR level continues to decrease, <u>THEN</u> close loop B cold leg to REGEN Hx isolation valve, AOV-427.</p> <p><u>IF</u> available charging pumps are running at maximum speed with letdown isolated, <u>AND</u> PRZR level is decreasing, <u>THEN</u> trip the reactor and go to E-0, REACTOR TRIP or SAFETY INJECTION.</p>

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STEP

ACTION/EXPECTED RESPONSE

RESPONSE NOT OBTAINED

NOTE: IF VCT level decreases to 5%, charging pump suction will swap to the RWST. This may require a load reduction.

2 Check VCT Makeup System:

a. Verify VCT level - GREATER THAN 5%

a. Ensure charging pump suction aligned to RWST.

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

b. Verify the following:

b. Adjust controls as necessary.

- 1) RMW mode selector switch in AUTO
- 2) RMW control armed - RED LIGHT LIT

c. Check VCT level:

c. Check letdown divert valve, LCV-112A, closed.

- o Level GREATER THAN 20%

-OR-

- o Level - STABLE OR INCREASING

IF VCT makeup flow NOT adequate, THEN perform the following:

- 1) Ensure BA transfer pumps and RMW pumps running.
- 2) Adjust RMW flow control valve, HCV-111, to increase RMW flow.
- 3) Increase boric acid flow as necessary to maintain required concentration.

IF VCT level can NOT be maintained, THEN refer to ER-CVCS.1, REACTOR-MAKEUP CONTROL MALFUNCTION, if necessary.

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STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
3	<p>Check If RCS Leakage In CNMT:</p> <ul style="list-style-type: none"> o Check CNMT radiation monitors - NORMAL <ul style="list-style-type: none"> • R-2 • R-7 • R-10A • R-11 • R-12 o CNMT sump A pump run frequency - NORMAL (Refer to RCS Daily Leakage Log) 	<p><u>IF</u> leakage is indicated in CNMT, <u>THEN</u> perform the following:</p> <ul style="list-style-type: none"> a. Direct RP to sample CNMT for entry. b. Continue with Step 4. <u>WHEN</u> CNMT cleared for entry, <u>THEN</u> dispatch personnel to investigate CNMT for RCS leakage.
<p style="text-align: center;">***** <u>CAUTION</u> *****</p> <p>RADIATION PROTECTION TECHNICIAN SHOULD BE CONSULTED PRIOR TO ENTERING A HIGH AIRBORNE AREA.</p> <p style="text-align: center;">*****</p>		
4	Dispatch AO To AUX BLDG To Investigate For CVCS Leak (locked area keys required)	
5	<p>Check For Leak To CCW System:</p> <ul style="list-style-type: none"> o CCW surge tank level - APPROXIMATELY 50% AND STABLE o CCW radiation monitor, R-17 - NORMAL 	Go to AP-CCW.1, LEAKAGE INTO THE COMPONENT COOLING LOOP.

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STEP

ACTION/EXPECTED RESPONSE

RESPONSE NOT OBTAINED

6 Check CVCS Conditions:

a. Letdown indication:

- o Letdown flow - APPROXIMATELY 40 GPM
- o Low pressure LTDN pressure - APPROXIMATELY 250 PSIG
- o Letdown pressure control valve, PCV-135, demand - APPROXIMATELY 35% OPEN

b. Charging indication:

- o Seal injection flows - GREATER THAN 6 GPM AND STABLE
- o RCP Labyrinth seal D/Ps - GREATER THAN 15 INCHES AND APPROXIMATELY EQUAL
- o Charging pump discharge pressure - GREATER THAN RCS PRESSURE

c. AUX BLDG radiation levels - NORMAL

- R-4
- R-9
- R-10B
- R-13
- R-14

a. IF letdown isolated, THEN continue with Step 6b. IF NOT isolated, THEN go to AP-CVCS.1, CVCS LEAK, Step 6.

b. Go to AP-CVCS.1, CVCS LEAK, Step 6.

c. Go to AP-CVCS.1, CVCS LEAK, Step 6 and refer to CVCS piping diagrams for further guidance.

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STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
7	<p>Check PRT Indications:</p> <ul style="list-style-type: none"> a. Level - BETWEEN 61% AND 84% b. Pressure - APPROXIMATELY 1.5 PSIG AND STABLE c. Temperature - AT CNMT AMBIENT TEMPERATURE AND STABLE 	<p>Check tailpipe and valve leakoff temperatures for the PRZR safety valves and PORVs for indication of leakage.</p> <p><u>IF</u> no PORV or safety valve leakage is indicated, <u>THEN</u> check other leak paths from the RCS to the PRT.</p> <ul style="list-style-type: none"> • Letdown relief valve, RV-203 • Seal return relief valve, RV-314
<p style="text-align: center;">*****</p> <p style="text-align: center;"><u>CAUTION</u></p> <p>STEAM GENERATOR TUBE LEAKAGE IN ONE S/G SHALL NOT EXCEED 0.1 GPM WHEN AVERAGED OVER 24 HOURS.</p> <p style="text-align: center;">*****</p>		
8	<p>Check S/Gs For Leakage:</p> <ul style="list-style-type: none"> o Air ejector radiation monitors - NORMAL <ul style="list-style-type: none"> • R-15 • R-15A o S/G blowdown radiation monitor (R-19) - NORMAL o Steamline radiation monitors - NORMAL <ul style="list-style-type: none"> • R-31 • R-32 o S/G sample activity - NORMAL (Check with RP Department for normal) 	<p><u>IF</u> S/G tube leak indicated, <u>THEN</u> refer to 0-6.10, PLANT OPERATION WITH A S/G TUBE LEAK INDICATION.</p>

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STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
9	Check SI Accumulator Levels - STABLE	Calculate inleakage to SI accumulators (Refer to S-16.11. MONITORING INLEAKAGE TO SI ACCUMULATORS).
10	Check RCP Seal Leakoff Flows: <ul style="list-style-type: none"> o Leakoff flows - WITHIN THE NORMAL OPERATING RANGE OF FIGURE RCP SEAL LEAKOFF o Leakoff flows - STABLE 	Go to AP-RCP.1, RCP SEAL MALFUNCTION.
11	Check RCDT Leak Rate - NORMAL (Refer to RCS Daily Leakage Log and PPCS point ID L1003)	Check other sources of in leakage to RCDT: <ul style="list-style-type: none"> a. <u>IF</u> Rx vessel flange leakoff temperature has increased, <u>THEN</u> close Rx VESS FLANGE SEAL LEAKOFF VLV, AOV-521. b. Verify excess letdown isolated. <u>IF NOT</u>, <u>THEN</u> ensure RCDT divert valve, AOV-312, in the VCT position. c. <u>IF</u> source of leakage <u>NOT</u> determined, <u>THEN</u> suspect loop drains.

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STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
12	Check Valve Leakoff Temperatures - NORMAL (Refer to Pressurizer Valve Leak-Off Temperature Record Log)	<u>IF</u> any valve leakoff temperature is abnormally high, <u>THEN</u> initiate investigation of that leakage path.
13	Establish Stable Plant Conditions:	
	a. PRZR level - TRENDING TO PROGRAM	a. Control charging and letdown flows to restore PRZR level to program.
	b. Check PRZR pressure control:	b. Verify proper operation of PRZR heaters and spray or take manual control of PRZR pressure controller 431K. <u>IF</u> pressure can <u>NOT</u> be controlled, <u>THEN</u> refer to AP-PRZR.1, ABNORMAL PRESSURIZER PRESSURE.
	o Pressure - TRENDING TO 2235 PSIG	
	o PRZR backup heaters - OFF	
14	Evaluate RCS Leakage:	
	a. Leakage within limits (Refer to leakage surveillance sheet and ITS section 3.4.13)	a. <u>IF</u> leak <u>NOT</u> isolable, but PRZR level and seal injection can be maintained, <u>THEN</u> shut the plant down (Refer to O-2.1, NORMAL SHUTDOWN TO HOT SHUTDOWN or AP-TURB.5, RAPID LOAD REDUCTION).
	b. Leak location identified	b. Return to Step 1.

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STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
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NOTE: Refer to 0-9.3, NRC IMMEDIATE NOTIFICATION, for reporting requirements.

15 Notify Higher Supervision

-END-

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AP-RCS.1 APPENDIX LIST

TITLE

- 1) FIGURE RCP SEAL LEAKOFF (FIG-4.0)

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ROCHESTER GAS AND ELECTRIC CORPORATION

GINNA STATION

CONTROLLED COPY NUMBER 23

Reside
RESPONSIBLE MANAGER

3-31-2000
EFFECTIVE DATE

CATEGORY 1.0

REVIEWED BY: _____

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

B. ENTRY CONDITIONS/SYMPTOMS

1. ENTRY CONDITIONS - This procedure is entered from:

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

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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>		
<p><u>NOTE:</u></p> <ul style="list-style-type: none"> o FOLDOUT page should be open AND monitored periodically. o Critical Safety Function Status Trees should be monitored (Refer to Appendix I for Red Path Summary). o Adverse CNMT values should be used whenever CNMT pressure is greater than 4 psig or CNMT radiation is greater than 10^{+05} R/hr. 		
1	Reset SI	
2	Reset CI:	
	<ul style="list-style-type: none"> a. Depress CI reset pushbutton b. Verify annunciator A-26, CNMT ISOLATION - EXTINGUISHED 	<ul style="list-style-type: none"> b. Perform the following: <ul style="list-style-type: none"> 1) Reset SI. 2) Depress CI reset pushbutton.
3	Maintain PRZR Pressure Between 1800 PSIG And 2235 PSIG	
	<ul style="list-style-type: none"> o Reset PRZR heaters o Use normal PRZR spray 	

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STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
4	Verify Adequate SW Flow:	
a.	Check at least two SW pumps - RUNNING	<p>a. Manually start SW pumps as power supply permits (257 kw each).</p> <p><u>IF</u> less than two SW pumps running, <u>THEN</u> perform the following:</p> <ol style="list-style-type: none"> 1) Ensure SW isolation. 2) Dispatch AO to establish normal shutdown alignment (Refer to Attachment SD-1). 3) Go to Step 7.
b.	Dispatch AO to establish normal shutdown alignment (Refer to Attachment SD-1)	

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STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
5	Establish IA to CNMT:	
a.	Verify non-safeguards busses energized from offsite power <ul style="list-style-type: none"> o Bus 13 normal feed - CLOSED -OR- o Bus 15 normal feed - CLOSED 	a. Perform the following: <ol style="list-style-type: none"> 1) Close non-safeguards bus tie breakers: <ul style="list-style-type: none"> • Bus 13 to Bus 14 tie • Bus 15 to Bus 16 tie 2) Verify adequate emergency D/G capacity to run air compressors (75 kw each). <u>IF NOT</u>, <u>THEN</u> evaluate if CNMT RECIRC fans should be stopped (Refer to Attachment CNMT RECIRC FANS). 3) <u>WHEN</u> bus 15 restored, <u>THEN</u> reset control room lighting.
b.	Verify SW isolation valves to turbine building - OPEN <ul style="list-style-type: none"> • MOV-4613 and MOV-4670 • MOV-4614 and MOV-4664 	b. Manually align valves.
c.	Verify adequate air compressor(s) - RUNNING	c. Manually start air compressors as power supply permits (75 kw each). <u>IF</u> air compressors can <u>NOT</u> be started, <u>THEN</u> dispatch AO to locally reset compressors as necessary.
d.	Check IA supply: <ul style="list-style-type: none"> o Pressure - GREATER THAN 60 PSIG o Pressure - STABLE OR INCREASING 	d. Perform the following: <ol style="list-style-type: none"> 1) Continue attempts to restore IA (Refer to AP-IA.1, LOSS OF INSTRUMENT AIR). 2) Continue with Step 6. <u>WHEN</u> IA restored, <u>THEN</u> do Steps 5e and f.
e.	Reset both trains of XY relays for IA to CNMT AOV-5392	
f.	Verify IA to CNMT AOV-5392 - OPEN	

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STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
6	Check If Charging Flow Has Been Established:	
a.	Charging pumps - ANY RUNNING	<p>a. Perform the following:</p> <ol style="list-style-type: none"> 1) <u>IF</u> CCW flow is lost to any RCP thermal barrier <u>OR</u> any RCP #1 seal outlet temperature offscale high. <u>THEN</u> dispatch AO with key to RWST gate to close seal injection needle valve(s) to affected RCP: <ul style="list-style-type: none"> • RCP A, V-300A • RCP B, V-300B 2) Ensure HCV-142 open, demand at 0%.
b.	Charging pump suction aligned to RWST: <ul style="list-style-type: none"> o LCV-112B - OPEN o LCV-112C - CLOSED 	<p>b. Manually align valves as necessary.</p> <p><u>IF</u> LCV-112B can <u>NOT</u> be opened, <u>THEN</u> dispatch AO to locally open manual charging pump suction from RWST (V-358 located in charging pump room).</p> <p><u>IF</u> LCV-112C can <u>NOT</u> be closed, <u>THEN</u> perform the following:</p> <ol style="list-style-type: none"> 1) Verify charging pump A <u>NOT</u> running and place in PULL STOP. 2) Direct AO to close V-268 to isolate charging pumps B and C from VCT (V-268 located in charging pump room).
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
	7 Stop SI And RHR Pumps And Place In AUTO	
	* 8 Monitor SI Reinitiation Criteria:	
	a. RCS subcooling based on core exit T/Cs - GREATER THAN 0°F USING FIGURE MIN SUBCOOLING	a. Manually start SI pumps as necessary and go to E-1. LOSS OF REACTOR OR SECONDARY COOLANT. Step 1.
	b. PRZR level - GREATER THAN 5% [30% adverse CNMT]	b. Control charging flow to maintain PRZR level. IF PRZR level can NOT be maintained, THEN manually start SI pumps as necessary and go to E-1. LOSS OF REACTOR OR SECONDARY COOLANT. Step 1.

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STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
* 9	Monitor If CNMT Spray Should Be Stopped:	
a.	CNMT spray pumps - RUNNING	a. Go to Step 10.
b.	Check CNMT pressure - LESS THAN 4 PSIG	b. Continue with Step 10: <u>WHEN</u> CNMT pressure less than 4 psig. <u>THEN</u> do Steps 9c through f.
c.	Reset CNMT spray	
d.	Check NaOH tank outlet valves - CLOSED <ul style="list-style-type: none"> • AOV-836A • AOV-836B 	d. Place NaOH tank outlet valve controllers to MANUAL and close valves.
e.	Stop CNMT spray pumps and place in AUTO	
f.	Close CNMT spray pump discharge valves <ul style="list-style-type: none"> • MOV-860A • MOV-860B • MOV-860C • MOV-860D 	

EOP:

ES-1.1

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STEP

ACTION/EXPECTED RESPONSE

RESPONSE NOT OBTAINED

10 Verify MRPI Indicates - ALL
CONTROL AND SHUTDOWN RODS ON
BOTTOM

IF one or more control rods NOT
fully inserted, THEN perform the
following:

- a. Place RMW mode selector switch
to BORATE.
- b. Adjust boric acid flow control
valve, FCV-110A, for desired
flowrate.
- c. Set boric acid integrator to
desired amount (650 gallons for
each control rod not fully
inserted).
- d. Place RMW control to start and
verify flow. IF flow can NOT be
established, THEN refer to
ER-CVCS.1, REACTOR MAKEUP
CONTROL MALFUNCTION.

11 Establish Condenser Steam
Dump Pressure Control:

- a. Verify condenser available:
 - o Any MSIV - OPEN
 - o Annunciator G-15, STEAM DUMP
ARMED - LIT
- b. Adjust condenser steam dump
controller HC-484 to desired
pressure and verify in AUTO.
- c. Place steam dump mode selector
switch to MANUAL.

- a. Place S/G ARV controllers in
AUTO at desired pressure and go
to Step 12.

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STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
12	Verify Adequate SW Flow To CCW Hx:	
a.	Verify at least two SW pumps - RUNNING	a. Manually start pumps as power supply permits (257 kw each). <u>IF</u> less than two SW pumps can be operated, <u>THEN</u> go to Step 18.
b.	Verify AUX BLDG SW isolation valves - OPEN	b. Manually align valves.
	<ul style="list-style-type: none"> • MOV-4615 and MOV-4734 • MOV-4616 and MOV-4735 	
c.	Verify CNMT RECIRC fan annunciator C-2, HIGH TEMPERATURE ALARM - EXTINGUISHED	c. Manually start an additional SW pump as power supply permits (257 kw each).

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

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

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

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STEP

ACTION/EXPECTED RESPONSE

RESPONSE NOT OBTAINED

17 Check Charging Pump Suction
Aligned To VCT:

a. VCT level - GREATER THAN 20%

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

1) Ensure charging pump suction
aligned to RWST

o LCV-112B open

o LCV-112C closed

2) Continue with Step 18. WHEN
VCT level greater than 40%,
THEN do Step 17b.

b. Verify charging pumps aligned to
VCT

b. Manually align valves as
necessary.

o LCV-112C - OPEN

o LCV-112B - CLOSED

18 Check RCS Hot Leg
Temperatures - STABLE

Control steam dump and total feed
flow as necessary to stabilize RCS
temperature.

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STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
	<p><u>NOTE:</u> o WHEN using a PRZR PORV, THEN select one with an operable block valve.</p> <p>o If auxiliary spray is in use, spray flow may be increased by closing normal charging valve AOV-294 and normal PRZR spray valves.</p>	
19	Control PRZR Heaters And Operate Normal Spray To Stabilize RCS Pressure	<p><u>IF</u> normal spray <u>NOT</u> available and letdown is in service, <u>THEN</u> perform the following:</p> <p>a. Verify Regen Hx Chg outlet temp to PRZR Vapor temp ΔT less than 320°F. <u>IF NOT</u>, <u>THEN</u> control pressure using one PRZR PORV and go to Step 20.</p> <p>b. Control pressure using auxiliary spray.</p> <p><u>IF</u> auxiliary spray <u>NOT</u> available, <u>THEN</u> use one PRZR PORV.</p>
	<p><u>NOTE:</u> TDAFW pump flow control valves fail open on loss of IA.</p>	
*20	Monitor Intact S/G Levels:	
	<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 any S/G continues to increase, <u>THEN</u> stop feed flow to that S/G.</p>

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STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
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NOTE: SW should be aligned to CCW Hxs before restoring RCP seal cooling.

21 Check RCP Cooling:

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

a. Check CCW to RCPs:

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

b. Check RCP seal injection:

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

-OR-

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

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

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STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
23	<p>Verify All AC Busses - ENERGIZED BY OFFSITE POWER</p> <ul style="list-style-type: none"> o Normal feed breakers to all 480 volt busses - CLOSED o 480 volt bus voltage - GREATER THAN 420 VOLTS o Emergency D/G output breakers - OPEN 	<p>Perform the following:</p> <ul style="list-style-type: none"> a. <u>IF</u> any AC emergency bus normal feed breaker open, <u>THEN</u> ensure associated D/G breaker closed. b. Perform the following as necessary: <ul style="list-style-type: none"> 1) Close non-safeguards bus tie breakers: <ul style="list-style-type: none"> • Bus 13 to Bus 14 tie • Bus 15 to Bus 16 tie 2) Reset Bus 13 and Bus 15 lighting breakers. 3) Dispatch AO to locally reset and start two IA compressors. 4) Place the following pumps in PULL STOP: <ul style="list-style-type: none"> • EH pumps • Turning gear oil pump • HP seal oil backup pump 5) Restore power to MCCs. <ul style="list-style-type: none"> • A from Bus 13 • B from Bus 15 • E from Bus 15 • F from Bus 15 6) Start HP seal oil backup pump. 7) Start CNMT RECIRC fans as necessary. 8) Ensure D/G load within limits. 9) Refer to Attachment SI/UV for other equipment lost with loss of offsite power. c. Try to restore offsite power to all AC busses (Refer to ER-ELEC.1, RESTORATION OF OFFSITE POWER).

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

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

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STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED

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

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

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

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

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STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
30	Go To Procedure O-2.1, NORMAL SHUTDOWN TO HOT SHUTDOWN	
	-END-	

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ES-1.1 APPENDIX LIST

TITLE

- 1) RED PATH SUMMARY
- 2) FIGURE MIN SUBCOOLING (FIG-1.0)
- 3) ATTACHMENT CNMT RECIRC FANS (ATT-4.0)
- 4) ATTACHMENT D/G STOP (ATT-8.1)
- 5) ATTACHMENT NC (ATT-13.0)
- 6) ATTACHMENT SEAL COOLING (ATT-15.2)
- 7) ATTACHMENT RCP START (ATT-15.0)
- 8) ATTACHMENT SD-1 (ATT-17.0)
- 9) ATTACHMENT SD-2 (ATT-17.1)
- 10) ATTACHMENT SI/UV (ATT-8.4)
- 11) 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 E-1, LOSS OF REACTOR OR SECONDARY COOLANT, Step 1:

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

2. SECONDARY INTEGRITY CRITERIA

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

3. AFW SUPPLY SWITCHOVER CRITERION

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

4. E-3 TRANSITION CRITERIA

IF any S/G level increases 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.

1000

1000

1000

1000