EOP:	TITLE:	REV: 14
AP-SW.1	SERVICE WATER LEAK	PAGE 1 of 10

ROCHESTER GAS AND ELECTRIC CORPORATION

GINNA STATION

CONTROLLED COPY NUMBER 23

RESPONSIBLE MANAGER

1-14-99

EFFECTIVE DATE

CATEGORY 1.0

REVIEWED BY: _____

A. PURPOSE - This procedure provides the necessary instructions to respond to a service water system leak.

B. ENTRY CONDITIONS/SYMPTOMS

1. SYMPTOMS - The symptoms of SERVICE WATER LEAK are:

a. Service water header pressure low alarms on computer, or

b. Sump pump activity increases in containment, the AUX BLDG, or INT BLDG, OR

c. Unexplained increase in the waste hold-up tank, or

d. Visual observation of a SW leak, or

e. Annunciator C-2, CONTAINMENT RECIRC CLRS WATER OUTLET HI TEMP 217°F, lit, or

f. Annunciator C-10, CONTAINMENT RECIRC CLRS WATER OUTLET LO FLOW 1050 GPM, lit, or

g. Annunciator E-31, CONTAINMENT RECIRC FAN CONDENSATE HI-HI LEVEL alarm, exhibits an unexplained increase in frequency, or

h. Annunciator H-6, CCW SERVICE WATER LO FLOW 1000 GPM, lit.

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED

* *

CAUTION

o IF, AT ANY TIME DURING THIS PROCEDURE, A REACTOR TRIP OR SI OCCURS, E-0, REACTOR TRIP OR SAFETY INJECTION, SHALL BE PERFORMED.

o IF EITHER D/G RUNNING WITHOUT SW COOLING AVAILABLE, THEN STOP THE AFFECTED D/G TO PREVENT OVERHEATING.

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STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
1	Verify 480V AC Emergency Busses 17 and 18 - ENERGIZED	Ensure associated D/G(s) running and attempt to manually load busses 17 and/or 18 onto the D/G(s) if necessary.
2	Verify At Least One SW Pump Running In Each Loop: • A or B pump in loop A • C or D pump in loop B	IF a SW pump has tripped, THEN ensure other pump in the affected loop is running.

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED

NOTE: Abnormally low pressure in either SW loop may indicate that the idle pump check valve is open. This may be corrected by restarting or isolating the idle pump.

3 Check SW System Status:

a. Check SW loop header pressures:

- o Pressure in both loops - APPROXIMATELY EQUAL
- o PPCS SW low pressure alarm status - NOT LOW
- o Pressure in both loops - STABLE OR INCREASING

a. IF three SW pumps operating and either loop pressure less than 40 psig, THEN trip the reactor and go to E-0, REACTOR TRIP OR SAFETY INJECTION.

IF only two SW pumps operating and either loop pressure less than 45 psig, THEN start one additional SW pump (243 kw each pump).

b. Check SW loop header pressures - GREATER THAN 55 PSIG

b. IF either SW loop pressure is less than 55 PSIG with three SW pumps running AND cause can NOT be corrected, THEN initiate a controlled shutdown while continuing with this procedure (Refer to O-2.1, NORMAL SHUTDOWN TO HOT SHUTDOWN).

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED

NOTE: o If SW is lost to any safeguards equipment, the affected component should be declared inoperable and appropriate actions taken as required by ITS, Section 3.

o CNMT sump A level of 10 feet is approximately 6 feet 6 inches below the bottom of the reactor vessel.

4 Check For SW Leakage In CNMT:

a. Check Sump A indication

o Sump A level - INCREASING

-OR-

o Sump A pump start frequency - INCREASING (Refer to RCS Daily Leakage Log)

a. IF the SW leak is NOT in the CNMT, THEN go to Step 6.

b. Evaluate Sump A conditions:

1) Verify Leakage within capacity of one Sump A pump (50 gpm)

2) Check Sump A level - LESS THAN 10 FEET

b. Plant shutdown should be considered, consult plant staff.

c. Direct RP to establish conditions for CNMT entry

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED

* *

CAUTION

BEFORE ISOLATING SW TO CNMT RECIRC FANS, REFER TO ITS SECTION 3.6.6 FOR OPERABILITY REQUIREMENTS.

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NOTE: o One Reactor Compartment cooling fan should be running whenever RCS temperature is greater than 135°F.

o CNMT recirc fan condensate collector level indicators may be helpful in identifying a leaking fan cooler.

5 Check CNMT fan indications:

- o CNMT recirc fan collector dump frequency - NORMAL (Refer to RCS Daily Leakage Log)
- o CNMT recirc fan SW flows - APPROXIMATELY EQUAL (INTER BLDG basement by IBELIP)
- o Reactor compartment cooler SW outlet pressures - APPROXIMATELY EQUAL (INTER BLDG SAMPLE HOOD AREA)
  - • Cooler A - PI 2232
  - • Cooler B - PI 2141

Dispatch AO to perform Attachment SW LOADS IN CNMT as necessary. WHEN CNMT SW leak location identified, THEN go to Step 9.

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
6	Dispatch AO To Screenhouse To Perform The Following:	
	a. Verify idle SW pump check valve closed o Idle pump shaft stopped o Idle pump discharge pressure - ZERO (unisolate and check local pressure indicator)	a. Notify Control Room of any indication of check valve failure.
	b. Investigate for SW leak in Screenhouse - NO EXCESSIVE LEAKAGE INDICATED	b. Perform the following: 1) Identify leak location. IF increase in leakage from underground header indicated, THEN isolation of header should be considered (Refer to Attachment SW ISOLATION) 2) Notify Control Room of leak location.
	NOTE: Refer to Attachment SW ISOLATION for a list of the major non-safeguards loads supplied by each service water header.	
7	Check Indications For Leak Location: o AUX BLDG sump pump start frequency - NORMAL (Refer to RCS Daily Leakage Log) o Annunciator L-9, AUX BLDG SUMP HI LEVEL - EXTINGUISHED o Annunciator L-17, INTER BLDG SUMP HI LEVEL - EXTINGUISHED	Dispatch AO to the specific area to investigate for leakage.

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED

8 Dispatch AO To Locally Investigate For SW Leakage And To Monitor Operating Equipment

- Turbine BLDG
- SAFW pump room

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED

NOTE: If SW is lost to either D/G, refer to ER-D/G.2, ALTERNATE COOLING FOR EMERGENCY D/Gs, if cooling is required.

9 Evaluate SW Leak Concerns

a. Check SW pump status - AT LEAST THREE PUMPS RUNNING

a. IF either SW header pressure less than 45 psig, THEN start third SW pump.

b. Intact SW loop header pressure - GREATER THAN 45 PSIG

b. Dispatch AO to perform the following:

1) Split A and B SW headers:

- Close V-4669 OR V-4760 in B D/G room.
- Close V-4611 OR V-4612 in Screenhouse.
- Close V-4625 OR V-4626 in INT BLDG clean side.
- Close V-4639 OR V-4756 in INT BLDG clean side.

2) IF plant at power, THEN initiate a controlled shutdown (Refer to O-2.1, NORMAL SHUTDOWN TO HOT SHUTDOWN).

3) Go to Step 10.

c. Verify leak location - IDENTIFIED

c. Return to Step 3.

d. Verify plant operating at power

d. Verify SW system conditions appropriate for plant mode (Refer to ITS Section 3.7.8) and go to Step 10.

e. Leak isolation at power - ACCEPTABLE

e. IF plant shutdown required, THEN refer to O-2.1, NORMAL SHUTDOWN TO HOT SHUTDOWN.

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED

10 Dispatch AO(s) To Locally Isolate SW Leak As Necessary

11 Verify SW Leak Isolated

a. Monitor SW System Operation

- o SW loop header pressure - RESTORED TO PRE-EVENT VALUE Archive PPCS point ID loop A P2160 OR loop B P2161)
- o Both SW loop header pressures - STABLE

a. IF SW leak can NOT be isolated within the affected header, THEN stop SW pumps in the affected loop and go to Step 12.

b. Verify at least one SW pump available from each screenhouse AC Emergency bus

- Bus 17 SW pumps B or D
- Bus 18 SW pumps A or C

b. Refer to ITS Section 3.7.8 for limiting conditions for operation.

NOTE:
- o Refer to O-9.3, NRC IMMEDIATE NOTIFICATION, for reporting requirements.
- o An Action Report, per IP-CAP.1, should be submitted for a SW leak in CNMT.

12 Notify Higher Supervision

-END-

AP-SW.1 APPENDIX LIST

TITLE

1) ATTACHMENT SW ISOLATION (ATT-2.2)

2) ATTACHMENT SW LOADS IN CNMT (ATT-2.3)

ROCHESTER GAS AND ELECTRIC CORPORATION

GINNA STATION

CONTROLLED COPY NUMBER 23

RESPONSIBLE MANAGER

5-18-2000

EFFECTIVE DATE

CATEGORY 1.0

REVIEWED BY:_____

A. PURPOSE - This procedure provides actions to verify proper response of the automatic protection systems following manual or automatic actuation of a reactor trip or safety injection and to assess plant conditions, and identify the appropriate recovery procedure.

B. ENTRY CONDITIONS/SYMPTOMS

1. The following are symptoms that require a reactor trip, if one has not occurred:

   - o Any plant parameter reaches a reactor trip setpoint and logic as listed in procedure P-1, REACTOR CONTROL AND PROTECTION SYSTEM.
   - o Operator discretion.

2. The following are symptoms of a reactor trip:

   - o Any First Out reactor trip annunciator lit.
   - o A rapid decrease in core neutron level as indicated by nuclear instrumentation.
   - o MRPI Indicates all control and shutdown rods on bottom.
   - o Reactor trip breakers indicate open.

3. The following are symptoms that require a reactor trip and safety injection, if one has not occurred:

   - o Any plant parameter reaches the Safety Injection setpoint and logic as listed in procedure P-1, REACTOR CONTROL AND PROTECTION SYSTEM.
   - o Operator discretion.

4. The following are symptoms of a reactor trip and safety injection:

   - o Any SI annunciator lit.
   - o Safeguards sequencing started.

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
1	Verify Reactor Trip: o At least one train of reactor trip breakers - OPEN o Neutron flux - DECREASING o MRPI indicates - ALL CONTROL AND SHUTDOWN RODS ON BOTTOM	Manually trip reactor. IF reactor trip breakers NOT open, THEN perform the following: a. Open Bus 13 and Bus 15 normal feed breakers. b. Verify rod drive MG sets tripped. c. Close Bus 13 and Bus 15 normal feed breakers. d. Reset lighting breakers. IF the reactor will NOT trip OR IF power range NIS indicates greater than 5%, THEN go to FR-S.1, RESPONSE TO REACTOR RESTART/ATWS, Step 1
2	Verify Turbine Stop Valves - CLOSED	Manually trip turbine. IF turbine trip can NOT be verified, THEN close both MSIVs.
3	Verify Both Trains Of AC Emergency Busses Energized To At Least 420 VOLTS: • Bus 14 and Bus 18 • Bus 16 and Bus 17	Attempt to start any failed emergency D/G to restore power to all AC emergency busses. IF power can NOT be restored to at least one train, THEN go to ECA-0.0, LOSS OF ALL AC POWER, Step 1.

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
4	Check if SI is Actuated:	
	a. Any SI Annunciator - LIT	a. IF any of the following conditions are met, THEN manually actuate SI and CI: o PRZR pressure less than 1750 psig -OR- o Steamline pressure less than 514 psig -OR- o CNMT pressure greater than 4 psig -OR- o SI sequencing started -OR- o Operator determines SI required IF SI is NOT required, THEN go to ES-0.1, REACTOR TRIP RESPONSE, Step 1.
	b. SI sequencing - BOTH TRAINS STARTED.	b. Manually actuate SI and CI.

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED

NOTE: o FOLDOUT page should be open and monitored periodically.

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.

5 Verify SI and RHR Pumps Running:

a. All SI pumps - RUNNING

a. Perform the following:

1) Ensure SI pump suction supply open from RWST.

2) Manually start pumps.

b. Both RHR pumps - RUNNING

b. Manually start pumps.

6 Verify CNMT RECIRC Fans Running:

a. All fans - RUNNING

a. Manually start fans.

b. Charcoal filter dampers green status lights - EXTINGUISHED

b. Dispatch personnel to relay room with relay rack key to locally open dampers by pushing in trip relay plungers.

- AUX RELAY RACK RA-2 for fan A
- AUX RELAY RACK RA-3 for fan C

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
* 7	Verify CNMT Spray Not Required: o Annunciator A-27, CNMT SPRAY - EXTINGUISHED o CNMT pressure - LESS THAN 28 PSIG	Verify CNMT spray initiated. IF CNMT spray NOT initiated, THEN perform the following: a. Depress manual CNMT spray pushbuttons (2 of 2). b. Ensure CNMT spray pumps running. IF no CNMT spray pump available, THEN go to Step 8. c. Ensure CNMT spray pump discharge valves open for operating pump(s). o CNMT spray pump A: • MOV-860A • MOV-860B o CNMT spray pump B: • MOV-860C • MOV-860D d. Ensure NaOH tank outlet valves open. • AOV-836A • AOV-836B

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
8	Check If Main Steamlines Should Be Isolated:	
	a. Any MSIV - OPEN	a. Go to Step 9.
	b. Check CNMT pressure - LESS THAN 18 PSIG	b. Ensure BOTH MSIVs closed and go to Step 9.
	c. Check if ANY main steamlines should be isolated: o Low Tavg (545°F) AND high steam flow (0.4×10^6 lb/hr) from either S/G -OR- o High-High steam flow (3.6×10^6 lb/hr) from either S/G	c. Go to Step 9.
	d. Verify MSIV closed on the affected S/G(s)	d. Manually close valves.
9	Verify MFW Isolation:	
	a. MFW pumps - TRIPPED	a. Manually close MFW pump discharge valves and trip MFW pumps.
	b. MFW flow control valves - CLOSED • MFW regulating valves • MFW bypass valves	b. Place A and B S/G MFW regulating valve and bypass valve controllers in MANUAL at 0% demand.
	c. S/G blowdown and sample valves - CLOSED	c. Place S/G blowdown and sample valve isolation switch to CLOSE.

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
10	Verify AFW Pumps Running: a. MDAFW pumps - RUNNING b. TDAFW pump - RUNNING IF NECESSARY	a. Manually start MDAFW pumps. b. Manually open steam supply valves. • MOV-3505A • MOV-3504A
11	Verify At Least Two SW Pumps - RUNNING	Perform the following: a. Ensure one SW pump running on each energized screenhouse AC emergency bus: • Bus 17 • Bus 18 b. IF offsite power NOT available, THEN ensure SW isolation.

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
12	Verify CI And CVI:	
	a. CI and CVI annunciators - LIT • Annunciator A-26, CNMT ISOLATION - • Annunciator A-25, CNMT VENTILATION ISOLATION	a. Depress manual CI pushbutton.
	b. Verify CI and CVI valve status lights - BRIGHT	b. Manually close CI and CVI valves as required. IF valves can NOT be verified closed by MCB indication, THEN dispatch AO to locally close valves (Refer to Attachment CI/CVI for alternate isolation valves).
	c. CNMT RECIRC fan coolers SW outlet valve status lights - BRIGHT • FCV-4561 • FCV-4562	c. Dispatch AO to locally fail open valves.

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CAUTION

RCP TRIP CRITERIA LISTED ON FOLDOUT PAGE SHOULD BE MONITORED PERIODICALLY.

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13	Check CCW System Status:	
	a. Verify CCW pump - AT LEAST ONE RUNNING	a. IF offsite power available, THEN manually start one CCW pump.
	b. Place switch for excess letdown AOV-310 to CLOSE	
	c. Verify CCW from excess letdown AOV-745 - CLOSED	c. Manually close valve.

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
14	Verify SI And RHR Pump Flow:	
	a. SI flow indicators - CHECK FOR FLOW	a. IF RCS pressure less than 1400 psig, THEN manually start pumps and align valves. IF NOT, THEN go to Step 15.
	b. RHR flow indicator - CHECK FOR FLOW	b. IF RCS pressure less than 140 psig, THEN manually start pumps and align valves. IF NOT, THEN go to Step 15.
15	Verify Total AFW Flow - GREATER THAN 200 GPM	IF S/G narrow range level greater than 5% [25% adverse CNMT] in any S/G, THEN control AFW flow to maintain narrow range level. IF narrow range level less than 5% [25% adverse CNMT] in all S/Gs, THEN manually start pumps and align valves as necessary. IF AFW flow greater than 200 gpm can NOT be established, THEN go to FR-H.1, RESPONSE TO LOSS OF SECONDARY HEAT SINK, Step 1.
16	Verify AFW Valve Alignment:	Manually align valves as necessary.
	a. AFW flow - INDICATED TO BOTH S/G(s)	
	b. AFW flow from each MDAFW pump - LESS THAN 230 GPM	

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
17	Verify SI Pump And RHR Pump Emergency Alignment:	
	a. RHR pump discharge to Rx vessel deluge - OPEN • MOV-852A • MOV-852B	a. Ensure at least one valve open.
	b. Verify SI pump C - RUNNING	b. Manually start pump on available bus.
	c. Verify SI pump A - RUNNING	c. Perform the following: 1) Ensure SI pumps B and C running. IF either pump NOT, running, THEN go to Step 17e. 2) Ensure SI pump C aligned to discharge line A: o MOV-871A open o MOV-871B closed 3) Go to Step 18.
	d. Verify SI pump B - RUNNING	d. Perform the following: 1) Ensure SI pumps A and C running. IF either pump NOT, running, THEN go to Step 17e. 2) Ensure SI pump C aligned to discharge line B: o MOV-871B open o MOV-871A closed 3) Go to Step 18.
	e. Verify SI pump C discharge valves - OPEN • MOV-871A • MOV-871B	e. Manually open valves as necessary.

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED

CAUTION

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.

18 Check CCW Flow to RCP Thermal Barriers:

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

IF CCW to a RCP is lost, THEN perform the following:

a. Stop affected RCPs.

b. Reset SI.

c. Verify adequate power available to run one charging pump (75 kw).

d. Start one charging pump at minimum speed for seal injection.

e. Adjust HCV-142 to establish either of the following:

- o Labyrinth seal D/P to each RCP greater than 15 inches of water.

-OR-

- o RCP seal injection flow to each RCP greater than 6 gpm.

f. IF large imbalance in seal injection flow exists, THEN consider local adjustment of V-300A and V-300B.

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
19	Check If TDAFW Pump Can Be Stopped: a. Both MDAFW pumps - RUNNING b. PULL STOP TDAFW-pump steam supply valves • MOV-3504A • MOV-3505A	a. Go to Step 20.
*20	Monitor RCS Tavg - STABLE AT OR TRENDING TO 547°F	IF temperature less than 547°F and decreasing, THEN perform the following: a. Stop dumping steam. b. Ensure reheater steam supply valves are closed. c. IF cooldown continues, THEN control total feed flow greater than 200 gpm until narrow range level greater than 5% [25% adverse CNMT] in at least one S/G. d. WHEN S/G level greater than 5% [25% adverse CNMT] in one S/G, THEN limit feed flow to that required to maintain level in at least one S/G. e. IF cooldown continues, THEN close both MSIVs. IF temperature greater than 547°F and increasing, THEN dump steam to stabilize and slowly decrease temperature to 547°F.

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
21	Check PRZR PORVs And Spray Valves:	
	a. PORVs - CLOSED	a. IF PRZR pressure less than 2335 psig, THEN manually close PORVs. IF any valve can NOT be closed, THEN manually close its block valve. • MOV-516 for PCV-430 • MOV-515 for PCV-431C IF block valve can NOT be closed, THEN go to E-1, LOSS OF REACTOR OR SECONDARY COOLANT, Step 1.
	b. Auxiliary spray valve (AOV-296) - CLOSED	b. Manually close auxiliary spray valve. IF valve can NOT be closed, THEN perform the following: 1) Decrease charging pump flow to minimum. 2) Ensure charging valve to loop B cold leg open (AOV-294).
	c. Check PRZR pressure - LESS THAN 2260 PSIG	c. Continue with Step 22. WHEN pressure less than 2260 psig, THEN do Steps 21d.
	d. Normal PRZR spray valves - CLOSED • PCV-431A • PCV-431B	d. Place controllers in MANUAL at 0% demand. IF valves can NOT be closed, THEN stop associated RCP(s).

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
*22	Monitor RCP Trip Criteria:	
	a. RCP status - ANY RCP RUNNING	a. Go to Step 23.
	b. SI pumps - AT LEAST TWO RUNNING	b. Go to Step 23.
	c. RCS pressure minus maximum S/G pressure - LESS THAN 175 psig [400 psig adverse CNMT]	c. Go to Step 23.
	d. Stop both RCPs	
23	Check If S/G Secondary Side Is Intact: o Pressure in both S/Gs - STABLE OR INCREASING o Pressure in both S/Gs - GREATER THAN 110 PSIG	IF any S/G pressure decreasing in an uncontrolled manner OR completely depressurized, THEN go to E-2, FAULTED STEAM GENERATOR ISOLATION, Step 1.
24	Check If S/G Tubes Are Intact: o Air ejector radiation monitors (R-15 or R-15A) - NORMAL o S/G blowdown radiation monitor (R-19) - NORMAL o Steamline radiation monitors (R-31 and R-32) - NORMAL	Go to E-3, STEAM GENERATOR TUBE RUPTURE, Step 1.

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
25	Check If RCS Is Intact: a. CNMT area radiation monitors - NORMAL • R-2 • R-7 • R-29 • R-30 b. CNMT pressure - LESS THAN 0.5 PSIG c. CNMT sump B level - LESS THAN 8 INCHES d. CNMT sump A level o Level - STABLE o Annunciator C-19, CONTAINMENT SUMP A HI LEVEL - EXTINGUISHED	Go to E-1, LOSS OF REACTOR OR SECONDARY COOLANT, Step 1.

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
26	Check If SI Should Be Terminated:	
	a. RCS pressure: o Pressure - GREATER THAN 1625 PSIG o Pressure - STABLE OR INCREASING	a. Do NOT stop SI pumps. Go to Step 27.
	b. RCS subcooling based on core exit T/Cs - GREATER THAN 0°F USING FIGURE MIN SUBCOOLING	b. Do NOT stop SI pumps. Go to Step 27.
	c. Secondary heat sink: o Total feed flow to S/Gs - GREATER THAN 200 GPM -OR- o Narrow range level in at least one S/G - GREATER THAN 5%	c. IF neither condition met, THEN do NOT stop SI pumps. Go to Step 27.
	d. PRZR level - GREATER THAN 5%	d. Do NOT stop SI pumps. Perform the following: 1) IF normal PRZR spray available, THEN try to stabilize RCS pressure with PRZR spray. 2) Go to Step 27.
	e. Go to ES-1.1, SI TERMINATION, Step 1.	

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED

NOTE: o Conditions should be evaluated for Site Contingency Reporting (Refer to EPIP-1.0, GINNA STATION EVENT EVALUATION AND CLASSIFICATION).

o The Critical Safety Function Red Path Summary is available in APPENDIX 1.

27 Initiate Monitoring of Critical Safety Function Status Trees

*28 Monitor S/G Levels:

a. Narrow range level - GREATER THAN 5%

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

b. Control feed flow to maintain narrow range level between 17% and 50%

b. IF narrow range level in any S/G continues to increase in an uncontrolled manner, THEN go to E-3, STEAM GENERATOR TUBE RUPTURE, Step 1.

29 Check Secondary Radiation Levels - NORMAL

o Steamline radiation monitor (R-31 and R-32)

o Dispatch AO to locally check steamline radiation

o Request RP sample S/Gs for activity

Go to E-3, STEAM GENERATOR TUBE RUPTURE, Step 1.

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED

* *

CAUTION

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.

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30 Reset SI

31 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.

32 Verify Adequate SW Flow:

a. At least three SW pumps - RUNNING

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

IF less than three pumps running, THEN ensure SW isolation.

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

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
33	Establish IA to CNMT:	
	a. Verify non-safeguards busses energized from offsite power o Bus 13 normal feed - CLOSED -OR- o Bus 15 normal feed - CLOSED	a. 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. Verify SW isolation valves to turbine building - OPEN • 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). IF air compressors can NOT be started, THEN dispatch AO to locally reset compressors as necessary.
	d. Check IA supply: o Pressure - GREATER THAN 60 PSIG o Pressure - STABLE OR INCREASING	d. Perform the following: 1) Continue attempts to restore IA (Refer to AP-IA.1, LOSS OF INSTRUMENT AIR). 2) Continue with Step 34. WHEN IA restored, THEN do Steps 33e and f.
	e. Reset both trains of XY relays for IA to CNMT AOV-5392	
	f. Verify IA to CNMT AOV-5392 - OPEN	

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
34	Check Auxiliary Building Radiation - NORMAL • Plant vent iodine (R-10B) • Plant vent particulate (R-13) • Plant vent gas (R-14) • CCW liquid monitor (R-17) • LTD line monitor (R-9) • CHG pump room (R-4)	Evaluate cause of abnormal conditions. IF the cause is a loss of RCS inventory outside CNMT, THEN go to ECA-1.2, LOCA OUTSIDE CONTAINMENT, Step 1.
35	Check PRT Conditions o PRT level (LI-442) - LESS THAN 84% o PRT temperature (TI-439) - LESS THAN 120°F o PRT pressure (PI-440A) - LESS THAN 3 PSIG	Evaluate the following flowpaths for cause of abnormal conditions: • RCP seal return relief • PRZR PORVs • PRZR safeties • Letdown line relief IF excess letdown previously in service, THEN close AOV-310, excess letdown isolation valve from loop A cold.

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED

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CAUTION

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

* *

36 Check If RHR Pumps Should Be Stopped:

a. Check RCS pressure:

1) Pressure - GREATER THAN 250 PSIG — 1) Go to E-1, LOSS OF REACTOR OR SECONDARY COOLANT, Step 1.

2) Pressure - STABLE OR INCREASING — 2) Go to Step 37.

b. Stop both RHR pumps and place in AUTO

37 Check Normal Power Available To Charging Pumps:

- Bus 14 normal feed breaker - CLOSED
- Bus 16 normal feed breaker - CLOSED

Verify adequate emergency D/G capacity to run charging pumps (75 kw each).

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

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
38	Check If Charging Flow Has Been Established:	
	a. Charging pumps - ANY RUNNING	a. Perform the following: 1) IF CCW flow is lost to any RCP thermal barrier OR any RCP #1 seal outlet temperature offscale high, THEN dispatch AO with key to RWST gate to close seal injection needle valve(s) to affected RCP: • V-300A for RCP A • V-300B for RCP B 2) Ensure HCV-142 open, demand at 0%.
	b. Charging pump suction aligned to RWST: o LCV-112B - OPEN o LCV-112C - CLOSED	b. Manually align valves as necessary. IF LCV-112B can NOT be opened, THEN dispatch AO to locally open manual charging pump suction from RWST (V-358 located in charging pump room). IF LCV-112C can NOT be closed, THEN perform the following: 1) Verify charging pump A NOT 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	

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED

39 Maintain PRZR Pressure Between 1800 PSIG And 2235 PSIG

- o Reset PRZR heaters
- o Use normal PRZR spray

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
40	Check If Emergency D/Gs Should Be Stopped:	
	a. Verify AC emergency busses energized by offsite power: o Emergency D/G output breakers - OPEN o AC emergency bus voltage - GREATER THAN 420 VOLTS o AC emergency bus normal feed breakers - CLOSED	a. Perform the following: 1) Verify non-safeguards bus tie breakers closed: • Bus 13 to Bus 14 tie • Bus 15 to Bus 16 tie 2) Place the following pumps in PULL STOP: • EH pumps • Turning gear oil pump • HP seal oil backup pump 3) Ensure condenser steam dump mode control in MANUAL. 4) Restore power to MCCs: • A from Bus 13 • B from Bus 15 • E from Bus 15 • F from Bus 15 5) Start HP seal oil backup pump. 6) Ensure D/G load within limits. 7) Refer to Attachment SI/UV for other equipment lost with loss of offsite power. 8) Try to restore offsite power (Refer to ER-ELEC.1, RESTORATION OF OFFSITE POWER).
	b. Stop any unloaded emergency D/G and place in standby (Refer to Attachment D/G STOP)	

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED

41 Return to Step 20

-END-

E-0 APPENDIX LIST

TITLE

1) RED PATH SUMMARY
2) FIGURE MIN SUBCOOLING (FIG-1.0)
3) ATTACHMENT CI/CVI (ATT-3.0)
4) ATTACHMENT SD-1 (ATT-17.0)
5) ATTACHMENT CNMT RECIRC FANS (ATT-4.0)
6) ATTACHMENT D/G STOP (ATT-8.1)
7) ATTACHMENT SI/UV (ATT-8.4)
8) FOLDOUT

RED PATH SUMMARY

a. SUBCRITICALITY - Nuclear power greater than 5%

b. CORE COOLING - Core exit T/Cs greater than 1200°F
-OR-
Core exit T/Cs greater than 700°F AND RVLIS level (no RCPs) less than 52% [55% adverse CNMT]

c. HEAT SINK - Narrow range level in all S/Gs less than 5% [25% adverse CNMT] AND total feedwater flow less than 200 gpm

d. INTEGRITY - Cold leg temperatures decrease greater than 100°F in last 60 minutes AND RCS cold leg temperature less than 285°F

e. CONTAINMENT - CNMT pressure greater than 60 psig

FOLDOUT PAGE

1. RCP TRIP CRITERIA

   IF BOTH conditions listed below occur, THEN trip both RCPs:

   a. SI pumps - AT LEAST TWO RUNNING

   b. RCS pressure minus maximum S/G pressure - LESS THAN 175 PSIG [400 psig adverse CNMT]

2. AFW SUPPLY SWITCHOVER CRITERION

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

ROCHESTER GAS AND ELECTRIC CORPORATION

GINNA STATION

CONTROLLED COPY NUMBER 23

RESPONSIBLE MANAGER

2-28-2001
EFFECTIVE DATE

CATEGORY 1.0

REVIEWED BY:_____

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.

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED

* *

CAUTION

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.

* *

NOTE:
- o FOLDOUT page should be open AND monitored periodically.
- o Critical Safety Function Status Trees should be monitored. (Refer to Appendix 1 for Red Path Summary.)
- o Conditions should be evaluated for Site Contingency Reporting (Refer to EPIP-1.0, GINNA STATION EVENT EVALUATION AND CLASSIFICATION).
- o Adverse CNMT values should be used whenever CNMT pressure is greater than 4 psig or CNMT radiation is greater than 10^{+05} R/hr.

1 Monitor RCP Trip Criteria:

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

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
2	Check If S/G Secondary Side Is Intact: o Pressure in both S/Gs - STABLE OR INCREASING o Pressure in both S/Gs - GREATER THAN 110 PSIG	IF any S/G pressure decreasing in an uncontrolled manner OR completely depressurized, THEN verify faulted S/G isolated unless needed for RCS cooldown: • Steamlines • Feedlines IF NOT, THEN go to E-2, FAULTED STEAM GENERATOR ISOLATION, Step 1.

NOTE: TDAFW pump flow control valves fail open on loss of IA.

* 3	Monitor Intact S/G Levels:	
	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. IF narrow range level in any S/G continues to increase in an uncontrolled manner, THEN go to E-3, STEAM GENERATOR TUBE RUPTURE, Step 1.
* 4	Monitor If Secondary Radiation Levels Are Normal o Steamline radiation monitor (R-31 and R-32) o Request RP sample S/Gs for activity	IF steamline radiation monitors NOT available, THEN dispatch AO to locally check steamline radiation. IF abnormal radiation levels detected in any S/G, THEN go to E-3, STEAM GENERATOR TUBE RUPTURE, Step 1.

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED

* *

CAUTION

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).

* *

* 5	Monitor PRZR PORV Status:	
	a. Power to PORV block valves - AVAILABLE	a. Restore power to block valves unless block valve was closed to isolate an open PORV: • MOV-515, MCC D position 6C • MOV-516, MCC C position 6C
	b. PORVs - CLOSED	b. IF PRZR pressure less than 2335 psig, THEN manually close PORVs. IF any PORV can NOT be closed, THEN manually close its block valve. IF block valve can NOT be closed, THEN dispatch AO to locally check breaker. • MOV-515, MCC D position 6C • MOV-516, MCC C position 6C
	c. Block valves - AT LEAST ONE OPEN	c. Open one block valve unless it was closed to isolate an open PORV.

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED

* *

CAUTION

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.

* *

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

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

IF less than two SW pumps running, THEN perform the following:

1) Ensure SW isolation.

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

3) Go to Step 10.

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

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	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. Verify turbine building SW isolation valves - OPEN • MOV-4613 and MOV-4670 • MOV-4614 and MOV-4664	b. Manually align valves.
	c. Verify adequate air compressors - RUNNING	c. Manually start air compressors as power supply permits (75 kw each). IF air compressors can NOT be started, THEN dispatch AO to locally reset compressors as necessary.
	d. Check IA supply: o Pressure - GREATER THAN 60 PSIG o Pressure - STABLE OR INCREASING	d. Perform the following: 1) Continue attempts to restore IA (Refer to AP-IA.1, LOSS OF INSTRUMENT AIR). 2) Continue with Step 10. WHEN IA restored, THEN do Steps 9e and f.
	e. Reset both trains of XY relays for IA to CNMT AOV-5392	
	f. Verify IA to CNMT AOV-5392 - OPEN	

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
10	Check Normal Power Available To Charging Pumps: o Bus 14 normal feed breaker - CLOSED o Bus 16 normal feed breaker - CLOSED	Verify adequate emergency D/G capacity to run charging pumps (75 kw each). IF NOT, THEN evaluate if CNMT RECIRC fans can be stopped (Refer to Attachment CNMT RECIRC FANS).

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
11	Check If Charging Flow Has Been Established:	
	a. Charging pumps - ANY RUNNING	a. Perform the following: 1) IF CCW flow is lost to any RCP thermal barrier OR any RCP #1 seal outlet temperature offscale high, THEN dispatch AO with key to RWST gate to close seal injection needle valve(s) to affected RCP: • V-300A for RCP A • V-300B for RCP B 2) Ensure HCV-142 open, demand at 0%.
	b. Charging pump suction aligned to RWST: o LCV-112B - OPEN o LCV-112C - CLOSED	b. Manually align valves as necessary. IF LCV-112B can NOT be opened, THEN dispatch AO to locally open manual charging pump suction from RWST (V-358 located in charging pump room). IF LCV-112C can NOT be closed, THEN perform the following: 1) Verify charging pump A NOT 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	

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
12	Check If SI Should Be Terminated:	
	a. RCS pressure: o Pressure - GREATER THAN 1625 psig [1825 psig adverse CNMT] o Pressure - STABLE OR INCREASING	a. Do NOT stop SI pumps. Go to Step 13.
	b. RCS subcooling based on core exit T/Cs - GREATER THAN 0°F USING FIGURE MIN SUBCOOLING	b. Do NOT stop SI pumps. Go to Step 13.
	c. Secondary heat sink: 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]	c. IF neither condition satisfied, THEN do NOT stop SI pumps. Go to Step 13.
	d. PRZR level - GREATER THAN 5% [30% adverse CNMT]	d. Do NOT stop SI pumps. Perform the following: 1) IF normal PRZR spray available, THEN try to stabilize RCS pressure with PRZR spray. 2) Go to Step 13.
	e. Go to ES-1.1, SI TERMINATION, Step 1.	

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
*13	Monitor If CNMT Spray Should Be Stopped:	
	a. CNMT spray pumps - RUNNING	a. Go to Step 14.
	b. Check the following: o CNMT pressure - LESS THAN 4 PSIG o Sodium hydroxide tank level - LESS THAN 55%	b. Continue with Step 14. WHEN BOTH conditions satisfied, THEN do Steps 13c through f.
	c. Reset CNMT spray	
	d. Check NaOH tank outlet valves - CLOSED • 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 • MOV-860A • MOV-860B • MOV-860C • MOV-860D	

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED

* *

CAUTION

- 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.
- 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.

* *

***14** 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

15 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 NOT increase after faulted S/G dryout, THEN go to Step 16.

c. Check RCS pressure - STABLE OR DECREASING — c. Return to Step 1.

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
16	Check If Emergency D/Gs Should Be Stopped:	
	a. Verify AC emergency busses energized by offsite power: o Emergency D/G output breakers - OPEN o AC emergency bus voltage - GREATER THAN 420 VOLTS o AC emergency bus normal feed breakers - CLOSED	a. Perform the following: 1) Close non-safeguards bus tie breakers as necessary: • Bus 13 to Bus 14 tie • Bus 15 to Bus 16 tie 2) Place the following pumps in PULL STOP: • EH pumps • Turning gear oil pump • HP seal oil backup pump 3) Ensure condenser steam dump mode control in MANUAL. 4) Restore power to MCCs: • A from Bus 13 • B from Bus 15 • E from Bus 15 • F from Bus 15 5) Start HP seal oil backup pump. 6) Ensure D/G load within limits. 7) WHEN bus 15 restored, THEN reset control room lighting breaker. 8) Refer to Attachment SI/UV for other equipment lost with loss of offsite power. 9) Try to restore offsite power (Refer to ER-ELEC.1, RESTORATION OF OFFSITE POWER).
	b. Stop any unloaded emergency D/G and place in standby (Refer to Attachment D/G STOP)	

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 • RHR Hx A, HCV-625 • RHR Hx B, HCV-624 <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. • RHR Hx A, HCV-625 handwheel • RHR Hx B, HCV-624 handwheel

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
18	Verify CNMT Sump Recirculation Capability:	
	a. Check RHR and CCW systems: 1) Power available to emergency AC busses and MCCs required for CNMT sump recirculation o Bus 14 and bus 18 - ENERGIZED o MCC C - ENERGIZED o Bus 16 and bus 17 - ENERGIZED o MCC D - ENERGIZED 2) RHR pumps and valves - OPERABLE 3) CCW pumps and Hx - OPERABLE	a. Restore power to at least one train of emergency AC busses. IF at least one train of cold leg recirculation capability can NOT be verified, THEN go to ECA-1.1, LOSS OF EMERGENCY COOLANT RECIRCULATION, Step 1.
	b. Check SW pumps - AT LEAST 2 PUMPS AVAILABLE	b. Attempt to restore at least 2 SW pumps to operable. IF only 1 SW pump available, THEN refer to Attachment MIN SW for additional guidance.
	c. Dispatch AO to check AUX BLDG sub-basement for RHR system leakage (AUX BLDG sub-basement key may be required)	c. IF any RHR pump seal leakage indicated, THEN leakage should be evaluated and isolated if necessary.

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
19	Evaluate Plant Status:	
	a. Check auxiliary building radiation - NORMAL • Plant vent iodine (R-10B) • Plant vent particulate (R-13) • Plant vent gas (R-14) • CCW liquid monitor (R-17) • LTDN line monitor (R-9) • CHG pump room (R-4)	a. Notify RP and refer to appropriate AR-RMS procedure. IF the cause is a loss of RCS inventory outside CNMT, THEN go to ECA-1.2, LOCA OUTSIDE CONTAINMENT, Step 1.
	b. Direct RP to obtain following samples: • RCS boron • RCS activity • CNMT hydrogen • CNMT sump boron	
	c. Verify adequate Rx head cooling: 1) Verify at least one control rod shroud fan - RUNNING 2) Verify one Rx compartment cooling fan - RUNNING	1) Manually start one fan as power supply permits (45 kw) 2) Perform the following: o Dispatch AO to reset UV relays at MCC C and MCC D. o Manually start one fan as power supply permits (23 kw)

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

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED

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

21 Establish Adequate SW Flow:

a. Verify at least two SW pumps - RUNNING

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

1) Ensure Attachment MIN SW is in progress.

2) Go to Step 22.

b. Verify AUX BLDG SW isolation valves - OPEN

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

b. Manually align valves.

This Step continued on the next page.

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED

(Step 21 continued from previous page)

c. Dispatch AO to perform the following:

1) Check BOTH CCW Hx - INSERVICE

1) Perform the following:

a) Locally place BOTH CCW Hxs in service

b) Locally adjust total SW flow equally to available CCW Hxs to between 5000 gpm and 6000 gpm

- V-4619
- V-4620

2) Verify total SW flow to CCW Hxs - GREATER THAN 5000 GPM

2) Perform the following:

a) Isolate SW to screenhouse and air conditioning headers.

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

b) Direct AO to locally adjust total SW flow equally to available CCW Hxs to between 5000 gpm and 6000 gpm (V-4619 and V-4620).

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

- SFP Hx A (V-4622)
- SFP Hx B (V-8689)

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

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
22	Establish CCW flow to RHR Hxs:	
	a. Check both CCW pumps - RUNNING	a. Perform the following: 1) Start CCW pumps as power supply permits (124 kw each) 2) IF both CCW pumps are running, THEN go to step 22b. 3) IF only one CCW pump is running, THEN perform the following: a) Direct AO to isolate CCW to boric acid evaporator o Close V-760A b) Manually open CCW MOV to only one operable RHR Loop o Open MOV-738A -OR- o Open MOV-738B c) Go to step 23.
	b. Manually open CCW valves to RHR Hxs • MOV-738A • MOV-738B	b. Dispatch AO to locally open valves.

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

-END-

E-1 APPENDIX LIST

	TITLE
1)	RED PATH SUMMARY
2)	FIGURE MIN SUBCOOLING (FIG-1.0)
3)	ATTACHMENT CNMT RECIRC FANS (ATT-4.0)
4)	ATTACHMENT D/G STOP (ATT-8.1)
5)	ATTACHMENT SD-1 (ATT-17.0)
6)	ATTACHMENT SI/UV (ATT-8.4)
7)	ATTACHMENT MIN SW (ATT-2.1)
8)	FOLDOUT

RED PATH SUMMARY

a. SUBCRITICALITY - Nuclear power greater than 5%

b. CORE COOLING - Core exit T/Cs greater than 1200°F
-OR-
Core exit T/Cs greater than 700°F AND RVLIS level (no RCPs) less than 52% [55% adverse CNMT]

c. HEAT SINK - Narrow range level in all S/Gs less than 5% [25% adverse CNMT] AND total feedwater flow less than 200 gpm

d. INTEGRITY - Cold leg temperatures decrease greater than 100°F in last 60 minutes AND RCS cold leg temperature less than 285°F

e. CONTAINMENT - CNMT pressure greater than 60 psig

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).

ROCHESTER GAS AND ELECTRIC CORPORATION

GINNA STATION

CONTROLLED COPY NUMBER 23

RESPONSIBLE MANAGER

2-28-2001

EFFECTIVE DATE

CATEGORY 1.0

REVIEWED BY:_____

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.

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED

NOTE: o FOLDOUT page should be open AND monitored periodically.

o Critical Safety Function Status Trees should be monitored (Refer to Appendix 1 for Red Path Summary).

o Personnel should be available for sampling during this procedure.

o Conditions should be evaluated for Site Contingency Reporting (EPIP-1.0, GINNA STATION EVENT EVALUATION AND CLASSIFICATION).

o Adverse CNMT values should be used whenever CNMT pressure is greater than 4 psig or CNMT radiation is greater than 10^{+05} R/hr.

* 1 Monitor RCP Trip Criteria:

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

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED

CAUTION

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.

2 Identify Ruptured S/G(s):

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

  -OR-

- o High radiation indication on main steamline radiation monitor
  - R-31 for S/G A
  - R-32 for S/G B

  -OR-

- o AO reports local indication of high steamline radiation

  -OR-

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

Perform the following:

a. Reset SI

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

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED

CAUTION

- 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.
- AT LEAST ONE S/G SHALL BE MAINTAINED AVAILABLE FOR RCS COOLDOWN.

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

a. Adjust ruptured S/G ARV controller to 1050 psig in AUTO

b. Check ruptured S/G ARV - CLOSED

b. WHEN ruptured S/G pressure less than 1050 psig, THEN verify S/G ARV closed. IF NOT closed, THEN place controller in MANUAL and close S/G ARV.

IF S/G ARV can NOT be closed, THEN dispatch AO to locally isolate.

c. Close ruptured S/G TDAFW pump steam supply valve and place in PULL STOP

- S/G A, MOV-3505A
- S/G B, MOV-3504A

c. Dispatch AO with locked valve key to locally isolate steam from ruptured S/G to TDAFW pump.

- S/G A, V-3505
- S/G B, V-3504

d. Verify ruptured S/G blowdown valve - CLOSED

- S/G A, AOV-5738
- S/G B, AOV-5737

d. Place S/G blowdown and sample valve isolation switch to CLOSE.

IF blowdown can NOT be isolated manually, THEN dispatch AO to locally isolate blowdown.

- S/G A, V-5701
- S/G B, V-5702

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
4	Complete Ruptured S/G Isolation:	
	a. Close ruptured S/G MSIV - RUPTURED S/G MSIV CLOSED	a. Perform the following: 1) Close intact S/G MSIV. 2) Place intact S/G ARV controller at 1005 psig in AUTO. 3) Adjust condenser steam dump controller to 1050 psig in AUTO. 4) Place condenser steam dump mode selector switch to MANUAL. 5) Adjust reheat steam supply controller cam to close reheat steam supply valves. 6) Ensure turbine stop valves - CLOSED. 7) Dispatch AO to complete ruptured S/G isolation (Refer to Attachment RUPTURED S/G, parts A and B).
	b. Dispatch AO to complete ruptured S/G isolation (Refer to Attachment RUPTURED S/G part A)	

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED

* *

CAUTION

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.

* *

5 Check Ruptured S/G Level:

a. Narrow range level - GREATER THAN 5% [25% adverse CNMT]

a. IF ruptured S/G NOT faulted, THEN perform the following:

1) Maintain feed flow to ruptured S/G until level greater than 5% [25% adverse CNMT].

2) Continue with Step 6. WHEN ruptured S/G level greater than 5% [25% adverse CNMT], THEN do Steps 5b through e.

b. Close MDAFW pump discharge valve to ruptured S/G

- S/G A, MOV-4007
- S/G B, MOV-4008

b. Dispatch AO to locally close valve.

c. Pull stop MDAFW pump for ruptured S/G

d. Close TDAFW pump flow control valve to ruptured S/G

- S/G A, AOV-4297
- S/G B, AOV-4298

d. Dispatch AO with locked valve key to locally close TDAFW pump manual feedwater isolation valve to ruptured S/G.

- S/G A, V-4005
- S/G B, V-4006

e. Verify MDAFW pump crosstie valves - CLOSED

- MOV-4000A
- MOV-4000B

e. Manually close valves.

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 OR V-3505 • S/G B, MOV-3504A OR 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	

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED

* *

CAUTION

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.

* *

8 Reset SI

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED

* *

CAUTION

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

* *

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

9 Initiate RCS Cooldown:

a. Determine required core exit temperature from below table

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

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

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

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

- o Use faulted S/G.

-OR-

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

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

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

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

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
	NOTE: TDAFW pump flow control valves fail open on loss of IA.	
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. IF narrow range level in the intact S/G continues to increase in an uncontrolled manner, THEN go to ECA-3.1, SGTR WITH LOSS OF REACTOR COOLANT - SUBCOOLED RECOVERY DESIRED, Step 1.

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED

* *

CAUTION

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).

* *

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: • MOV-515, MCC D position 6C • MOV-516, MCC C position 6C
b. PORVs - CLOSED		b. IF PRZR pressure less than 2335 psig, THEN manually close PORVs. IF any PORV can NOT be closed, THEN manually close its block valve. IF block valve can NOT be closed, THEN go to ECA-3.1, SGTR WITH LOSS OF REACTOR COOLANT - SUBCOOLED RECOVERY DESIRED, Step 1.
c. Block valves - AT LEAST ONE OPEN		c. Open one block valve unless it was closed to isolate an open PORV.

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.

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
13	Monitor All AC Busses - BUSSES ENERGIZED BY OFFSITE POWER 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	Perform the following: a. IF any AC emergency bus normal feed breaker open, THEN ensure associated D/G breaker closed. b. Perform the following as necessary: 1) Close non-safeguards bus tie breakers: • Bus 13 to Bus 14 tie • Bus 15 to Bus 16 tie 2) Place the following pumps in PULL STOP: • EH pumps • Turning gear oil pump • HP seal oil backup pump 3) Restore power to MCCs. • A from Bus 13 • B from Bus 15 • E from Bus 15 • F from Bus 15 4) Start HP seal oil backup pump. 5) Start CNMT RECIRC fans as necessary. 6) Ensure D/G load within limits. 7) WHEN bus 15 restored, THEN reset control room lighting. c. Try to restore offsite power to all AC busses (Refer to ER-ELEC.1, RESTORATION OF OFFSITE POWER).

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
14	Verify Adequate SW Flow:	
	a. Check at least two SW pumps - RUNNING	a. Manually start SW pumps as power supply permits (257 kw each). IF less than two SW pumps running, THEN: 1) Ensure SW isolation. 2) Dispatch AO to establish normal shutdown alignment (Refer to Attachment SD-1) 3) Go to Step 16.
	b. Dispatch AO to establish normal shutdown alignment (Refer to Attachment SD-1)	

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
15	Establish IA to CNMT:	
	a. Verify non-safeguards busses energized o Bus 13 normal feed - CLOSED -OR- o Bus 15 normal feed - CLOSED	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).
	b. Verify turbine building SW isolation valves - OPEN • MOV-4613 and MOV-4670 • MOV-4614 and MOV-4664	b. Manually align valves.
	c. Verify adequate air compressors - RUNNING	c. Manually start air compressors as power supply permits (75 kw each). IF air compressors can NOT be started, THEN dispatch AO to locally reset compressors as necessary.
	d. Check IA supply: o Pressure - GREATER THAN 60 PSIG o Pressure - STABLE OR INCREASING	d. Perform the following: 1) Continue attempts to restore IA (Refer to AP-IA.1, LOSS OF INSTRUMENT AIR). 2) Continue with Step 16. WHEN IA restored, THEN 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	

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED

* *

CAUTION

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.

* *

16 Check If RHR Pumps Should Be Stopped:

a. Check RCS pressure - GREATER THAN 250 psig [465 psig adverse CNMT]

a. Go to Step 17.

b. Stop RHR pumps and place both in AUTO

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
17	Establish Charging Flow:	
	a. Charging pumps - ANY RUNNING	a. Perform the following: 1) IF CCW flow is lost to any RCP thermal barrier OR any RCP #1 seal outlet temperature offscale high, THEN dispatch AO with key to RWST gate to locally close seal injection needle valves to affected RCP. • V-300A for RCP A • V-300B for RCP B 2) Ensure HCV-142 demand at 0%.
	b. Align charging pump suction to RWST: o LCV-112B - OPEN o LCV-112C - CLOSED	b. IF LCV-112B can NOT be opened, THEN dispatch AO to locally open manual charging pump suction from RWST (V-358 located in charging pump room). IF LCV-112C can NOT be closed, THEN perform the following: 1) Verify charging pump A NOT 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 establish 75 gpm total charging flow • Charging line flow • Seal injection	

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 NOT 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	IF pressure continues to decrease to less than 250 psi above the pressure of the intact S/G, THEN 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 .

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED

NOTE: SI ACCUMs may inject during RCS depressurization.

21 Depressurize RCS To Minimize Break Flow And Refill PRZR:

a. Check the following:

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

a. Go to Step 22.

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

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

-OR-

- RCS pressure - LESS THAN SATURATION USING FIGURE MIN SUBCOOLING

-OR-

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

c. Close normal PRZR spray valves:

1) Adjust normal spray valve controller to 0% DEMAND

2) Verify PRZR spray valves - CLOSED

- PCV-431A
- PCV-431B

c. Stop associated RCP(s).

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

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

e. Go to Step 24

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED

* *

CAUTION

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

* *

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

22 Depressurize RCS Using PRZR PORV To Minimize Break Flow And Refill PRZR:		
	a. Verify IA to CNMT - AVAILABLE	a. Refer to Attachment N2 PORVS to operate PORVs.
	b. PRZR PORVs - AT LEAST ONE AVAILABLE	b. IF auxiliary spray available, THEN return to Step 21b. IF auxiliary spray can NOT be established, THEN go to ECA-3.3, SGTR WITHOUT PRESSURIZER PRESSURE CONTROL, Step 1.

This Step continued on the next page.

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:

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

-OR-

- RCS pressure - LESS THAN SATURATION USING FIGURE MIN SUBCOOLING

-OR-

- BOTH of the following:

  1) RCS pressure - LESS THAN RUPTURED S/G PRESSURE

  2) PRZR level - GREATER THAN 5% [30% adverse CNMT]

c. IF auxiliary spray available, THEN return to step 21b.

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

d. Close PRZR PORVs

d. IF either PRZR PORV can NOT be closed, THEN close associated block valve.

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
23	Check RCS Pressure - INCREASING	Close block valve for the PRZR PORV that was opened. IF pressure continues to decrease, THEN perform the following: a. Monitor the following conditions for indication of leakage from PRZR PORV: o PORV outlet temp (TI-438) NOT decreasing. o PRT pressure, level or temperature continue to increase. b. Go to ECA-3.1, SGTR WITH LOSS OF REACTOR COOLANT - SUBCOOLED RECOVERY DESIRED, Step 1.

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED

* *

CAUTION

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

* *

24 Check If SI Flow Should Be Terminated:

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

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

b. Secondary heat sink:

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

-OR-

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

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

c. RCS pressure - STABLE OR INCREASING

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

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

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

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) IF CCW flow is lost to any RCP thermal barrier OR any RCP #1 seal outlet temperature offscale high, THEN dispatch AO with key to RWST gate to locally isolate seal injection to affected RCP: • RCP A, V-300A • RCP B, V-300B 2) Ensure HCV-142 open. 3) Start one charging pump.
	b. Establish 20 gpm charging line flow	

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
*27	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 ECA-3.1, SGTR WITH LOSS OF REACTOR COOLANT - SUBCOOLED RECOVERY DESIRED, 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 ECA-3.1, SGTR WITH LOSS OF REACTOR COOLANT - SUBCOOLED RECOVERY DESIRED, Step 1.

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
28	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 PRZR level - GREATER THAN 5% [30% adverse CNMT]	a. Manually operate SI pumps as necessary and go to ECA-3.1, SGTR WITH LOSS OF REACTOR COOLANT - SUBCOOLED RECOVERY DESIRED, Step 1.
	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	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.
	d. Locally reopen breakers for MOV-841 and MOV-865	

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
29	Verify Adequate SW Flow To CCW Hx:	
	a. Verify at least three SW pumps - RUNNING	a. Manually start pumps as power supply permits (257 kw each). IF less than two SW pumps can be operated, THEN 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 AO to locally throttle flow to CCW Hx to between 5000 gpm and 6000 gpm total flow.

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
30	Check If Normal CVCS Operation Can Be Established	
	a. Verify IA restored: o IA to CNMT (AOV-5392) - OPEN o IA pressure - GREATER THAN 60 PSIG	a. Continue with Step 36. WHEN IA restored, THEN do Steps 30 through 35.
	b. Verify instrument bus D - ENERGIZED	b. Energize MCC B. IF MCC B NOT available, THEN 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) IF any RCP #1 seal outlet temperature offscale high, THEN isolate CCW to thermal barrier of affected RCP(s). • RCP A, MOV-749A and MOV-759A • RCP B, MOV-749B and MOV-759B 2) Manually start one CCW pump.
	d. Charging pump - ANY RUNNING	d. Continue with Step 36. WHEN any charging pump running, THEN do Steps 31 through 35.

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.

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
32	Verify PRZR Level - GREATER THAN 13% [40% adverse CNMT]	Continue with Step 34. WHEN PRZR level increases to greater than 13% [40% adverse CNMT], THEN 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	IF RCP seal return has been established, THEN 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. IF RCP seal return NOT established, THEN consult TSC to determine if excess letdown should be placed in service.

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

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
35	Check Charging Pump Suction Aligned To VCT:	
	a. VCT level - GREATER THAN 20%	a. IF VCT level can NOT be maintained greater than 5%, THEN perform the following: 1) Ensure charging pump suction aligned to RWST o LCV-112B open o LCV-112C closed 2) Continue with Step 36. WHEN VCT level greater than 40%, THEN do Step 35b.
	b. Verify charging pumps aligned to VCT o LCV-112C - OPEN o LCV-112B - CLOSED	b. Manually align valves as necessary.

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED

* *

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]	o Increase charging flow o Depressurize RCS using Step 36b	Increase charging flow	o Increase charging flow o Maintain RCS and ruptured S/G pressure equal
BETWEEN 13% [40% ADVERSE CNMT] AND 50%	Depressurize RCS using Step 36b	Energize PRZR heaters	Maintain RCS and ruptured S/G pressure equal
BETWEEN 50% AND 75% [65% ADVERSE CNMT]	o Depressurize RCS using Step 36b o Decrease charging flow	Energize PRZR heaters	Maintain RCS and ruptured S/G pressure equal
GREATER THAN 75% [65% ADVERSE CNMT]	o Decrease charging flow	Energize PRZR heaters	Maintain RCS and ruptured S/G pressure equal

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

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

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

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
38	Check If Emergency D/Gs Should Be Stopped:	
	a. Verify AC emergency busses energized by offsite power: o Emergency D/G output breakers - OPEN o AC emergency bus voltage - GREATER THAN 420 VOLTS o AC emergency bus normal feed breakers - CLOSED	a. Try to restore offsite power (Refer to ER-ELEC.1, RESTORATION OF OFFSITE POWER).
	b. Stop any unloaded emergency D/G and place in standby (Refer to Attachment D/G STOP)	
39	Minimize Secondary System Contamination:	
	a. Isolate reject from hotwell to CST: o Place hotwell level controller (LC-107) in MANUAL at 50% o Verify hotwell level - STABLE	a. IF hotwell level increasing, THEN direct RP to sample hotwells for activity.
	b. Check status of local actions to complete ruptured S/G isolation (Refer to Attachment RUPTURED S/G)	

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

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED

* *

CAUTION

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

* *

42 Check RCP Status:

a. RCPs - AT LEAST ONE RUNNING

a. Perform the following:

1) Try to start one RCP:

a) Ensure conditions for starting an RCP.

- o Bus 11A or 11B energized.
- o Refer to Attachment RCP START.

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

- o Increase PRZR level to greater than 65% [82% adverse CNMT].
- o Dump steam to establish RCS subcooling based on core exit T/Cs to greater than 20°F using Figure MIN SUBCOOLING.
- o Energize PRZR heaters as necessary to saturate PRZR water

c) Start one RCP.

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

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

b. Stop all but one RCP

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED

NOTE: Adverse CNMT conditions or loss of forced air cooling may result in failure of NIS detectors.

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^{-10} AMPS

b. Perform the following:

1) IF neither intermediate range channel is decreasing, THEN initiate boration.

2) Continue with Step 44. WHEN flux is LESS THAN 10^{-10} amps on any operable channel, THEN do Steps 43c through e.

c. Check the following:

- Both intermediate range channels - LESS THAN 10^{-10} AMPS

-OR-

- Greater than 20 minutes since reactor trip

c. Continue with Step 44. WHEN either condition met, THEN 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).

IF source ranges can NOT be restored, THEN refer to ER-NIS.1, SR MALFUNCTION and go to Step 44.

e. Transfer Rk-45 recorder to one source range and one intermediate range channel

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

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED

45 Consult TSC To Determine Appropriate Post-SGTR Cooldown Procedure:

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

-OR-

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

-OR-

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

-END-

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

RED PATH SUMMARY

a. SUBCRITICALITY - Nuclear power greater than 5%

b. CORE COOLING - Core exit T/Cs greater than 1200°F
-OR-
Core exit T/Cs greater than 700°F AND RVLIS level (no RCPs) less than 52% [55% adverse CNMT]

c. HEAT SINK - Narrow range level in all S/Gs less than 5% [25% adverse CNMT] AND total feedwater flow less than 200 gpm

d. INTEGRITY - Cold leg temperatures decrease greater than 100°F in last 60 minutes AND RCS cold leg temperature less than 285°F

e. CONTAINMENT - CNMT pressure greater than 60 psig

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:

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

   OR

   - 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.