ROCHESTER GAS AND ELECTRIC CORPORATION

GINNA STATION

CONTROLLED COPY NUMBER 23

TECHNICAL REVIEW

PORC REVIEW DATE 12/18/90

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PLANT SUPERINTENDENT

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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:

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

   - Operator discrection.

2. The following are symptoms of a reactor trip:

   - Any First Out reactor trip annunciator lit.

   - A rapid decrease in core neutron level as indicated by nuclear instrumentation.

   - MRPI Indicates all control and shutdown rods on bottom.

   - Reactor trip breakers indicate open.

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

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

   - Operator discretion.

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

   - Any SI annunciator lit.

   - Safeguards sequencing started.

| STEP | ACTION/EXPECTED RESPONSE | RESPONSE NOT OBTAINED |
|---|---|---|

NOTE: o Steps 1 through 12 are IMMEDIATE ACTION steps.

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.

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| 1 | Verify Reactor Trip:<br><br>o At least one train of reactor trip breakers - OPEN<br><br>o Neutron flux - DECREASING<br><br>o MRPI indicates - ALL CONTROL AND SHUTDOWN RODS ON BOTTOM | Manually trip reactor.<br><br>IF reactor trip breakers NOT open, THEN perform the following:<br><br>a. Open Bus 13 and Bus 15 normal feed breakers.<br><br>b. Verify rod drive MG sets tripped.<br><br>c. Close Bus 13 and Bus 15 normal feed breakers.<br><br>d. Reset lighting breakers.<br><br>IF any power range channel greater than 5% OR MRPI indicates more than one control rod not fully inserted, THEN go to FR-S.1, RESPONSE TO REACTOR RESTART/ATWS, Step 1 |
| 2 | Verify Turbine Stop Valves - CLOSED | Manually trip turbine.<br><br>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:<br><br>• Bus 14 and Bus 18<br>• Bus 16 and Bus 17 | Attempt to start any failed emergency D/G to restore power to all AC emergency busses.<br><br>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 Any SI Annuciator - LIT | IF any of the following conditions are met, THEN manually actuate SI and CI:<br>o PRZR pressure less than 1750 psig<br>-OR-<br>o Steamline pressure less than 514 psig<br>-OR-<br>o CNMT pressure greater than 4 psig<br>-OR-<br>o Safeguards sequencing started<br>-OR-<br>o Operator determines SI required<br>IF SI is NOT required, THEN go to ES-0.1, REACTOR TRIP RESPONSE, Step 1. |
| 5 | Verify SI and RHR Pumps Running: | |
| | a. All SI pumps - RUNNING | a. Perform the following:<br>1) Ensure SI pump suction supply open from BASTs or RWST.<br>2) Manually start pumps. |
| | b. Both RHR pumps - RUNNING | b. Manually start pumps. |

| STEP | ACTION/EXPECTED RESPONSE | RESPONSE NOT OBTAINED |
|---|---|---|
| 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.<br>• AUX RELAY RACK RA-2 for fan A<br>• AUX RELAY RACK RA-3 for fan C |
| 7 | Verify CNMT Spray Not Required: | Verify CNMT spray initiated. |
| | o Annunciator A-27, CNMT SPRAY - EXTINGUISHED | <u>IF</u> CNMT spray <u>NOT</u> initiated, <u>THEN</u> perform the following: |
| | o CNMT pressure - LESS THAN 28 PSIG | a. Depress manual CNMT spray pushbuttons (2 of 2). |
| | | b. Ensure CNMT spray pumps running. |
| | | c. Ensure CNMT spray pump discharge valves open.<br>• MOV-860A<br>• MOV-860B<br>• MOV-860C<br>• MOV-860D |
| | | d. Ensure NaOH tank outlet valves open.<br>• AOV-836A<br>• 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:<br>o Low Tavg (545°F) AND high steam flow ($0.4 \times 10^6$ lb/hr) from either S/G<br>-OR-<br>o High-High steam flow ($3.6 \times 10^6$ 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<br>• MFW regulating valves<br>• 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 | a. Manually start MDAFW pumps. |
| | b. TDAFW pump - RUNNING IF NECESSARY | b. Manually open steam supply valves.<br>• MOV-3505A<br>• MOV-3504A |
| 11 | Verify At Least Two SW Pumps - RUNNING | Perform the following:<br>a. Ensure one SW pump running on each energized screenhouse AC emergency bus:<br>• Bus 17<br>• Bus 18<br>b. <u>IF</u> offsite power <u>NOT</u> available, <u>THEN</u> ensure SW isolation. |
| 12 | Verify CI And CVI: | |
| | a. CI and CVI annunciators - LIT<br>• Annunciator A-26, CNMT ISOLATION<br>• 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. <u>IF</u> valves can <u>NOT</u> be closed, <u>THEN</u> dispatch AO to locally close valves (Refer to Attachment CI/CVI). |
| | c. CNMT RECIRC fan coolers SW outlet valve status lights - BRIGHT<br>• FCV-4561<br>• FCV-4562 | c. Dispatch AO to locally fail open valves. |

| STEP | ACTION/EXPECTED RESPONSE | RESPONSE NOT OBTAINED |
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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. Verify CCW from excess letdown (AOV-745) - CLOSED | b. Manually close valve. |
| 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.<br><br>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. |

| STEP | ACTION/EXPECTED RESPONSE | RESPONSE NOT OBTAINED |
|---|---|---|
| 16 | Verify AFW Valve Alignment:<br><br>a. AFW flow - INDICATED TO BOTH S/G(s)<br><br>b. AFW flow from each MDAFW pump - LESS THAN 230 GPM | Manually align valves as necessary. |
| 17 | Verify SI Pump Suction Alignment:<br><br>a. Check BAST level:<br><br>o Level - GREATER THAN 10%<br><br>o Annunciator B-23, BORIC ACID TANK LO LO LEVEL - EXTINGUISHED | a. Perform the following:<br><br>1) Ensure at least one SI pump suction valve from RWST open.<br><br>• MOV-825A<br>• MOV-825B<br><br>2) Ensure at least one valve in each SI pump suction line from BAST closed.<br><br>• MOV-826A or MOV-826B<br>• MOV-826C or MOV-826D<br><br>3) Go to Step 18. |
| | b. Verify SI pump suction valves from BAST - OPEN<br><br>• MOV-826A<br>• MOV-826B<br>• MOV-826C<br>• MOV-826D | b. Ensure both valves in either flow path open.<br><br>o MOV-826A and MOV-826B<br><br>-OR-<br><br>o MOV-826C and MOV-826D |
| | c. Verify SI pump suction from RWST - CLOSED<br><br>• MOV-825A<br>• MOV-825B | c. Manually align valves as necessary. |

| STEP | ACTION/EXPECTED RESPONSE | RESPONSE NOT OBTAINED |
|---|---|---|
| 18 | Verify SI Pump And RHR Pump Emergency Alignment: | |
| | a. RHR pump discharge to Rx vessel deluge - OPEN<br>• MOV-852A<br>• 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:<br>1) Ensure SI pumps B and C running.<br>2) Ensure SI pump C aligned to discharge line A:<br>o MOV-871A open<br>o MOV-871B closed<br>3) Go to Step 19. |
| | d. Verify SI pump B - RUNNING | d. Perform the following:<br>1) Ensure SI pumps A and C running.<br>2) Ensure SI pump C aligned to discharge line B:<br>o MOV-871B open<br>o MOV-871A closed<br>3) Go to Step 19. |
| | e. Verify SI pump C discharge valves - OPEN<br>• MOV-871A<br>• MOV-871B | e. Manually open valves as necessary. |

| STEP | ACTION/EXPECTED RESPONSE | RESPONSE NOT OBTAINED |
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CAUTION

IF OFFSITE POWER IS LOST AFTER SI RESET, 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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| 19 Check CCW Flow to RCP Thermal Barriers:<br><br>o Annunciator A-7, RCP 1A CCW RETURN HI TEMP OR LO FLOW - EXTINGUISHED<br><br>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:<br><br>a. Stop affected RCPs.<br><br>b. Reset SI.<br><br>c. Verify adequate power available to run one charging pump (75 kw).<br><br>d. Start one charging pump at minimum speed for seal injection.<br><br>e. Adjust HCV-142 to establish either of the following:<br><br>o Labyrinth seal D/P to each RCP greater than 15 inches of water.<br><br>-OR-<br><br>o RCP seal injection flow to each RCP greater than 6 gpm.<br><br>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 |
|---|---|---|
| 20 | Check If TDAFW Pump Can Be Stopped: | |
| | a. Both MDAFW pumps - RUNNING | a. Go to Step 21. |
| | b. PULL STOP TDAFW pump steam supply valves<br>• MOV-3504A<br>• MOV-3505A | |
| 21 | Check RCS Tavg - STABLE AT OR TRENDING TO 547°F | IF temperature less than 547°F and decreasing, THEN perform the following:<br>a. Stop dumping steam.<br>b. 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.<br>c. 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.<br>d. IF cooldown continues, THEN close both MSIVs.<br>IF temperature greater than 547°F and increasing, THEN perform the following:<br>o Dump steam to condenser.<br>-OR-<br>o Control RCS temperature manually using S/G ARVs. |

| STEP | ACTION/EXPECTED RESPONSE | RESPONSE NOT OBTAINED |
|---|---|---|
| 22 | Check PRZR PORVs And Spray Valves: | |
| | a. PORVs - CLOSED | a. IF PRZR pressure less than 2335 psig, THEN manually close PORVs.<br><br>IF any valve can NOT be closed, THEN manually close its block valve.<br><br>• MOV-516 for PCV-430<br>• MOV-515 for PCV-431C<br><br>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:<br><br>1) Decrease charging pump flow to minimum.<br><br>2) Ensure charging valve to loop B cold leg open (AOV-294). |
| | c. Check PRZR pressure - LESS THAN 2260 PSIG | c. Continue with Step 23. WHEN pressure less than 2260 psig, THEN do Steps 22d. |
| | d. Verify normal PRZR spray valve controllers - DEMAND AT 0% | 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 |
|---|---|---|
| 23 | Check If RCPs Should Be Stopped: | |
| | a. RCP status - ANY RCP RUNNING | a. Go to Step 24. |
| | b. SI pumps - AT LEAST TWO RUNNING | b. Go to Step 24. |
| | c. RCS pressure minus maximum S/G pressure - LESS THAN 175 psig [400 psig adverse CNMT] | c. Go to Step 24. |
| | d. Stop both RCPs | |
| 24 | Check If S/G Secondary Side Is Intact:<br>o Pressure in both S/Gs - STABLE OR INCREASING<br>o Pressure in both S/Gs - GREATER THAN 100 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. |
| 25 | Check If S/G Tubes Are Intact:<br>o Air ejector radiation monitors (R-15 or R-15A) - NORMAL<br>o S/G blowdown radiation monitor (R-19) - NORMAL<br>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 |
|---|---|---|
| 26 | Check If RCS Is Intact:<br><br>a. CNMT area radiation monitors - NORMAL<br><br>• R-2<br>• R-7<br>• R-29<br>• R-30<br><br>b. CNMT pressure - LESS THAN .5 PSIG<br><br>c. CNMT sump B level - LESS THAN 10 FEET<br><br>d. CNMT sump A level<br><br>o Level - STABLE<br><br>o Annunciator C-19, CONTAINMENT SUMP A HI LEVEL - EXTINGUISHED | Go to E-1, LOSS OF REACTOR OR SECONDARY COOLANT, Step 1. |

NOTE: The following is an attempt to determine whether a PRZR spray valve has failed.

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| 27 | Check RCS Pressure - STABLE OR INCREASING | IF RCS pressure decreasing with PRZR level stable or increasing, THEN stop both RCPs. |

| STEP | ACTION/EXPECTED RESPONSE | RESPONSE NOT OBTAINED |
|---|---|---|
| 28 | Check If SI Should Be Terminated: | |
| | a. RCS pressure:<br>o Pressure - GREATER THAN 1625 PSIG<br>o Pressure - STABLE OR INCREASING | a. Do NOT stop SI pumps. Go to Step 30. |
| | 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 30. |
| | c. Secondary heat sink:<br>o Total feed flow to S/Gs - GREATER THAN 200 GPM<br>-OR-<br>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 30. |
| | d. PRZR level - GREATER THAN 5% | d. Do NOT stop SI pumps. Perform the following:<br>1) IF normal PRZR spray available, THEN try to stabilize RCS pressure with PRZR spray.<br>2) Go to Step 30. |
| 29 | Go To ES-1.1, SI TERMINATION, Step 1 | |

| STEP | ACTION/EXPECTED RESPONSE | RESPONSE NOT OBTAINED |
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NOTE: o Conditions should be evaluated for Site Contingency Reporting (Refer to SC-100, GINNA STATION EVENT EVALUATION AND CLASSIFICATION).

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

30 Initiate Monitoring of Critical Safety Function Status Trees

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CAUTION

IF CST LEVEL DECREASES TO LESS THAN 5 FEET, THEN ALTERNATE WATER SOURCES FOR AFW PUMPS WILL BE NECESSARY (REFER TO ER-AFW.1, ALTERNATE WATER SUPPLY TO AFW PUMPS).

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31 Check S/G Levels:

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| 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. |

| STEP | ACTION/EXPECTED RESPONSE | RESPONSE NOT OBTAINED |
|---|---|---|
| 32 | Check Secondary Radiation Levels - NORMAL<br><br>o Steamline radiation monitor (R-31 and R-32)<br><br>o Dispatch AO to locally check steamline radiation<br><br>o Request HP sample S/Gs for activity | Go to E-3, STEAM GENERATOR TUBE RUPTURE, Step 1. |

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CAUTION

IF OFFSITE POWER IS LOST AFTER SI RESET, 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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| 33 | Reset SI | |
| 34 | Reset CI: | |
| | a. Operate CI reset key switch | |
| | b. Verify annunciator A-26, CNMT ISOLATION - EXTINGUISHED | b. Perform the following:<br><br>1) Reset SI.<br><br>2) Operate CI reset key switch. |

| STEP | ACTION/EXPECTED RESPONSE | RESPONSE NOT OBTAINED |
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| 35 | Verify Adequate SW Flow: | |
| | a. At least three SW pumps - RUNNING | a. Manually start SW pumps as power supply permits (258 kw each).<br><br><u>IF</u> less than three pumps running, <u>THEN</u> ensure SW isolation. |
| | b. Dispatch AO to establish normal shutdown alignment (Refer to Attachment SD-1) | |

| STEP | ACTION/EXPECTED RESPONSE | RESPONSE NOT OBTAINED |
|---|---|---|
| 36 | Establish IA to CNMT: | |
| | a. Verify non-safeguards busses energized from offsite power<br>o Bus 13 normal feed - CLOSED<br>-OR-<br>o Bus 15 normal feed - CLOSED | a. Perform the following:<br>1) Close non-safeguards bus tie breakers:<br>• Bus 13 to Bus 14 tie<br>• Bus 15 to Bus 16 tie<br>2) Verify adequate emergency D/G capacity to run air compressors (75 kw each).<br>IF NOT, THEN evaluate if CNMT RECIRC fans should be stopped (Refer to Attachment CNMT RECIRC FANS).<br>3) WHEN bus 15 restored, THEN reset control room lighting. |
| | b. Verify SW isolation valves to turbine building - OPEN<br>• MOV-4613 and MOV-4670<br>• MOV-4614 and MOV-4664 | b. Manually align valves. |
| | c. Verify at least two air compressors - RUNNING | c. Manually start air compressors as power supply permits (75 kw each). IF air compressors can NOT be started, THEN dispatch AO to locally reset compressors as necessary. |
| | d. Check IA supply:<br>o Pressure - GREATER THAN 395°F<br>o Pressure - STABLE OR INCREASING | d. Perform the following:<br>1) Continue attempts to restore IA (Refer to AP-IA.1, LOSS OF INSTRUMENT AIR).<br>2) Continue with Step 37. WHEN IA restored, THEN do Steps 36e 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 |
|---|---|---|
| 37 | Check Auxiliary Building Radiation - NORMAL<br><br>• Plant vent iodine (R-10B)<br>• Plant vent particulate (R-13)<br>• Plant vent gas (R-14)<br><br>• CCW liquid monitor (R-17)<br>• LTD line monitor (R-9)<br>• CHG pump room (R-4) | Evaluate cause of abnormal conditions.<br><br><u>IF</u> the cause is a loss of RCS inventory outside CNMT, <u>THEN</u> go to ECA-1.2, LOCA OUTSIDE CONTAINMENT, Step 1. |
| 38 | Check PRT Conditions<br><br>o PRT level (LI-442) - LESS THAN 84%<br><br>o PRT temperature (TI-439) - LESS THAN 120°F<br><br>o PRT pressure (PI-440A) - LESS THAN 3 PSIG | Evaluate the following flowpaths for cause of abnormal conditions:<br><br>• RCP seal return relief<br>• PRZR PORVs<br>• PRZR safeties<br>• Letdown line relief<br><br><u>IF</u> excess letdown previously in service, <u>THEN</u> 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 TO LESS THAN 250 PSIG, THE RHR PUMPS MUST BE MANUALLY RESTARTED TO SUPPLY WATER TO THE RCS.

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| 39 | 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 40. |
| | b. Stop both RHR pumps and place in AUTO | |
| 40 | Check Normal Power Available To Charging Pumps: | Verify adequate emergency D/G capacity to run charging pumps (75 kw each). |
| | o Bus 14 normal feed breaker - CLOSED | <u>IF NOT</u>, <u>THEN</u> evaluate if CNMT RECIRC fans can be stopped (Refer to Attachment CNMT RECIRC FANS). |
| | o Bus 16 normal feed breaker - CLOSED | |

| STEP | ACTION/EXPECTED RESPONSE | RESPONSE NOT OBTAINED |
|---|---|---|
| 41 | Check If Charging Flow Has Been Established: | |
| | a. Charging pumps - ANY RUNNING | a. Perform the following:<br>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:<br>• V-300A for RCP A<br>• V-300B for RCP B<br>2) Ensure HCV-142 open, demand at 0%. |
| | b. Charging pump suction aligned to RWST:<br>o LCV-112B - OPEN<br>o LCV-112C - CLOSED | b. Manually align valves as necessary.<br>IF LCV-112B can NOT be opened, THEN perform the following:<br>1) Verify charging pump A NOT running and place in PULL STOP.<br>2) Dispatch AO to locally open manual charging pump suction from RWST (V-358 located in charging pump room).<br>3) WHEN V-358 open, THEN 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 |
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| 42 | Maintain PRZR Pressure Between 1800 PSIG And 2235 PSIG<br><br>o Reset PRZR heaters<br><br>o Use normal PRZR spray | |

| STEP | ACTION/EXPECTED RESPONSE | RESPONSE NOT OBTAINED |
|---|---|---|
| 43 | Check If Emergency D/Gs Should Be Stopped: | |
| | a. Verify AC emergency busses energized by offsite power:<br>o Emergency D/G output breakers - OPEN<br>o AC emergency bus voltage - GREATER THAN 420 VOLTS<br>o AC emergency bus normal feed breakers - CLOSED | a. Perform the following:<br>1) Verify non-safeguards bus tie breakers closed:<br>• Bus 13 to Bus 14 tie<br>• Bus 15 to Bus 16 tie<br>2) Place the following pumps in PULL STOP:<br>• EH pumps<br>• Turning gear oil pump<br>• HP seal oil backup pump<br>3) Ensure condenser steam dump mode control in MANUAL.<br>4) Restore power to MCCs:<br>• A from Bus 13<br>• B from Bus 15<br>• E from Bus 15<br>• F from Bus 15<br>5) Refer to Attachment SI/UV for other equipment lost with loss of offsite power.<br>6) 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 |
| --- | --- | --- |

44 Return to Step 21

-END-

## E-0 APPENDIX LIST

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## RED PATH SUMMARY

a. SUBCRITICALITY - Nuclear power greater than 5%

b. CORE COOLING - Core exit T/Cs greater than 1200°F
-OR-
Core exit T/Cs greater than 700°F AND RVLIS level (no RCPs) less than 43% [46% adverse CNMT]

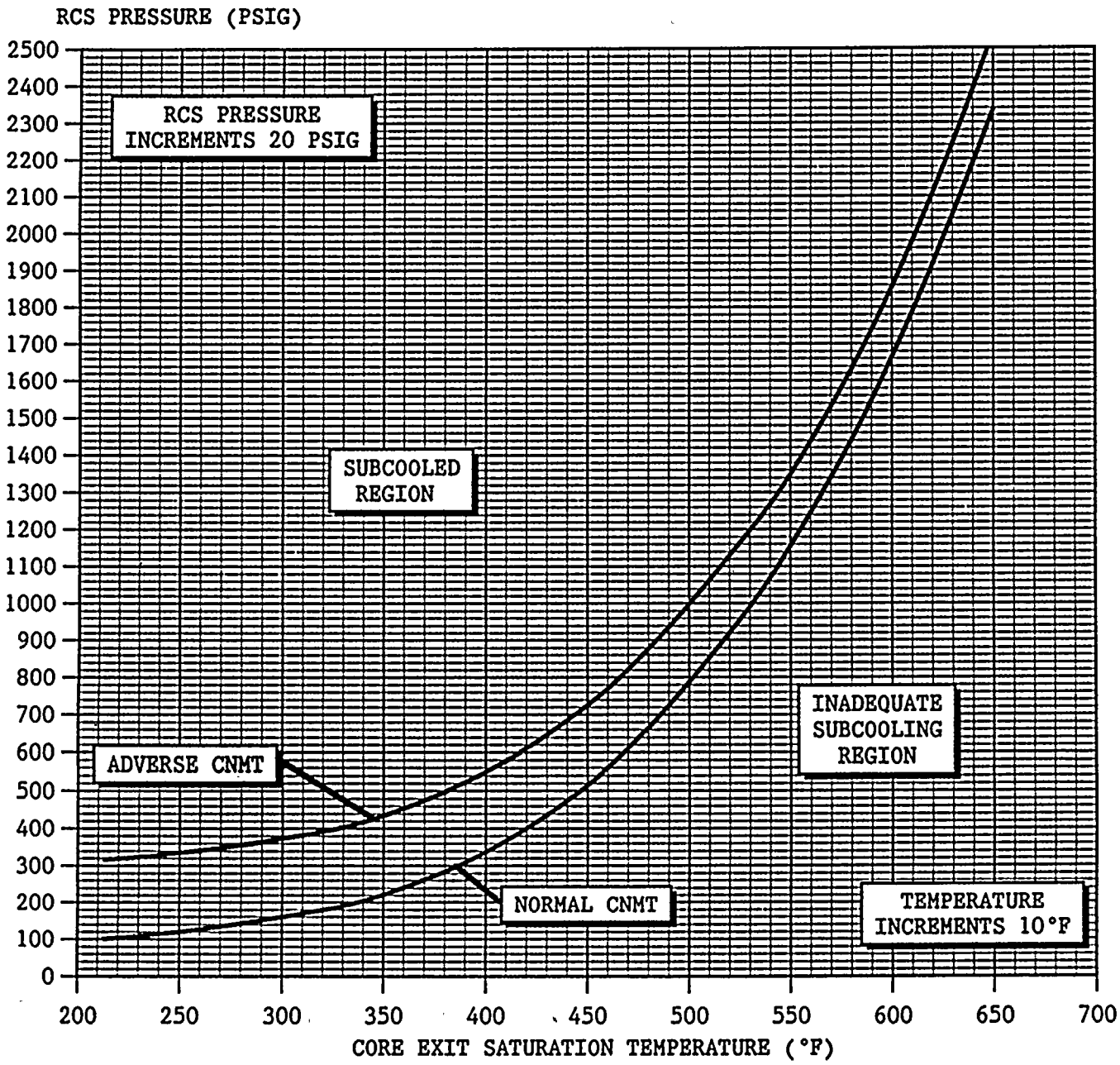
c. HEAT SINK - Narrow range level in all S/Gs less than 5% [25% adverse CNMT] AND total feedwater flow less than 200 gpm

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

## FIGURE MIN SUBCOOLING

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



FOLDOUT PAGE

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

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 ACTUATION CRITERIA

IF ANY condition listed below occurs, THEN actuate SI and go to E-0, REACTOR TRIP OR SAFETY INJECTION, Step 1:

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

-OR-

- PRZR level - LESS THAN 5% [30% adverse CNMT] AND RCS subcooling based on core exit T/Cs - LESS THAN 20°F USING FIGURE MIN SUBCOOLING

-OR-

- Any automatic SI setpoint reached

3. SI PUMP AUTO SWITCHOVER CRITERION

WHEN BAST level decreases to 10%, THEN ensure SI pump automatic switchover to RWST.

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).