



Joseph A. Widay
Vice President
and Plant Manager

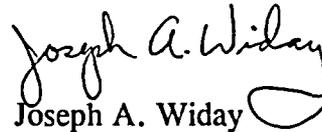
January 7, 2004

U.S. Nuclear Regulatory Commission
Document Control Desk
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Subject: Emergency Operating Procedures
R.E. Ginna Nuclear Power Plant
Docket No. 50-244

As requested, enclosed are Ginna Station Emergency Operating Procedures.

Very truly yours,


Joseph A. Widay

JAW/jdw

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

Ginna USNRC Senior Resident Inspector

Enclosure(s):

AP Index	ATT-9.0, Rev 9	ES-1.1, Rev 26
ATT Index	AP-CCW.1, Rev 16	FR-I.1, Rev 17
E Index	E-3, Rev 36	FR-I.3, Rev 19
ECA Index	ECA-0.1, Rev 23	FR-P.1, Rev 28
ES Index	ECA-2.1, Rev 27	
FR Index	ECA-3.3, Rev 30	

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INPUT PARAMETERS: TYPE: PRAP STATUS VALUE(S): EF, QU 5 YEARS ONLY:
PRAP ABNORMAL PROCEDURE

PROCEDURE NUMBER	PROCEDURE TITLE	REV	EFFECT DATE	LAST REVIEW	NEXT REVIEW	ST
AP-CCW.1	LEAKAGE INTO THE COMPONENT COOLING LOOP	016	01/07/2004	06/26/2002	06/26/2007	EF
AP-CCW.2	LOSS OF CCW DURING POWER OPERATION	018	05/08/2003	06/26/2002	06/26/2007	EF
AP-CCW.3	LOSS OF CCW - PLANT SHUTDOWN	015	11/19/2002	06/26/2002	06/26/2007	EF
AP-CR.1	CONTROL ROOM INACCESSIBILITY	019	02/25/2003	06/26/2002	06/26/2007	EF
AP-CVCS.1	CVCS LEAK	013	06/26/2002	06/03/2002	06/03/2007	EF
AP-CVCS.3	LOSS OF ALL CHARGING FLOW	004	08/26/2003	02/26/1999	02/26/2004	EF
AP-CW.1	LOSS OF A CIRC WATER PUMP	011	06/26/2002	04/16/2003	04/16/2008	EF
AP-ELEC.1	LOSS OF 12A AND/OR 12B BUSES	026	05/30/2003	06/26/2002	06/26/2007	EF
AP-ELEC.2	SAFEGUARD BUSES LOW VOLTAGE OR SYSTEM LOW FREQUENCY	010	06/26/2002	06/26/2002	06/26/2007	EF
AP-ELEC.3	LOSS OF 12A AND/OR 12B TRANSFORMER (BELOW 350 F)	012	05/30/2003	06/26/2002	06/26/2007	EF
AP-ELEC.13/15	LOSS OF BUS 13/15	000	09/24/2003	09/24/2003	09/24/2008	EF
AP-ELEC.14/16	LOSS OF SAFEGUARDS BUS 14/16	007	08/26/2003	06/26/2002	06/26/2007	EF
AP-ELEC.17/18	LOSS OF SAFEGUARDS BUS 17/18	006	05/30/2003	06/26/2002	06/26/2007	EF
AP-FW.1	ABNORMAL MAIN FEEDWATER FLOW	015	05/08/2003	06/26/2002	06/26/2007	EF
AP-IA.1	LOSS OF INSTRUMENT AIR	018	06/26/2002	04/16/2003	04/16/2008	EF
AP-PRZR.1	ABNORMAL PRESSURIZER PRESSURE	014	05/08/2003	06/26/2002	06/26/2007	EF
AP-RCC.1	CONTINUOUS CONTROL ROD WITHDRAWAL/INSERTION	008	06/26/2002	04/16/2003	04/16/2008	EF
AP-RCC.2	RCC/RPI MALFUNCTION	010	06/26/2002	01/22/2002	01/22/2007	EF
AP-RCC.3	DROPPED ROD RECOVERY	006	02/25/2003	02/25/2003	02/25/2008	EF
AP-RCP.1	RCP SEAL MALFUNCTION	015	05/08/2003	04/24/2003	04/24/2008	EF
AP-RCS.1	REACTOR COOLANT LEAK	016	06/26/2002	04/16/2003	04/16/2008	EF
AP-RCS.2	LOSS OF REACTOR COOLANT FLOW	011	06/26/2002	04/16/2003	04/16/2008	EF
AP-RCS.3	HIGH REACTOR COOLANT ACTIVITY	010	06/26/2002	04/01/2002	01/22/2007	EF
AP-RCS.4	SHUTDOWN LOCA	014	04/30/2003	04/30/2003	04/30/2008	EF
AP-RHR.1	LOSS OF RHR	019	04/30/2003	04/30/2003	04/30/2008	EF
AP-RHR.2	LOSS OF RHR WHILE OPERATING AT RCS REDUCED INVENTORY CONDITIONS	013	04/30/2003	04/30/2003	04/30/2008	EF
AP-SG.1	STEAM GENERATOR TUBE LEAK	003	11/21/2002	06/26/2002	06/26/2007	EF
AP-SW.1.	SERVICE WATER LEAK	019	05/30/2003	04/21/2003	04/21/2008	EF
AP-SW.2	LOSS OF SERVICE WATER	004	05/30/2003	10/31/2001	10/31/2006	EF
AP-TURB.1	TURBINE TRIP WITHOUT RX TRIP REQUIRED	012	05/08/2003	06/26/2002	06/26/2007	EF

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Ginna Nuclear Power Plant
PROCEDURE INDEX

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INPUT PARAMETERS: TYPE: PRAP STATUS VALUE(S): EF, QU 5 YEARS ONLY:

PRAP ABNORMAL PROCEDURE

PROCEDURE NUMBER	PROCEDURE TITLE	REV	EFFECT DATE	LAST REVIEW	NEXT REVIEW	ST
AP-TURB.2	TURBINE LOAD REJECTION	018	06/26/2002	06/26/2002	06/26/2007	EF
AP-TURB.3	TURBINE VIBRATION	011	06/26/2002	06/26/2002	06/26/2007	EF
AP-TURB.4	LOSS OF CONDENSER VACUUM	017	04/30/2003	04/30/2003	04/30/2008	EF
AP-TURB.5	RAPID LOAD REDUCTION	006	06/26/2002	06/26/2002	06/26/2007	EF

PRAP TOTAL: 34

GRAND TOTAL: 34

INPUT PARAMETERS: TYPE: PRATT
PRATT EOP ATTACHMENTS

STATUS VALUE(S): EF, QU

5 YEARS ONLY:

PROCEDURE NUMBER	PROCEDURE TITLE	REV	EFFECT DATE	LAST REVIEW	NEXT REVIEW	ST
ATT-1.0	ATTACHMENT AT POWER CCW ALIGNMENT	003	02/12/2003	02/12/2003	02/12/2008	EF
ATT-1.1	ATTACHMENT NORMAL CCW FLOW	000	05/18/2000	05/18/2000	05/18/2005	EF
ATT-2.1	ATTACHMENT MIN SW	005	02/01/2001	02/03/2003	02/03/2008	EF
ATT-2.2	ATTACHMENT SW ISOLATION	008	03/06/2002	03/27/2003	03/27/2008	EF
ATT-2.3	ATTACHMENT SW LOADS IN CNMT	004	03/06/2002	12/31/1999	12/31/2004	EF
ATT-2.4	ATTACHMENT NO SW PUMPS	002	05/30/2003	10/31/2001	10/31/2006	EF
ATT-2.5	ATTACHMENT SPLIT SW HEADERS	000	06/26/2002	06/26/2002	06/26/2007	EF
ATT-3.0	ATTACHMENT C/ CVI	006	03/06/2002	01/06/1999	01/06/2004	EF
ATT-3.1	ATTACHMENT CNMT CLOSURE	004	03/06/2002	01/25/1999	01/25/2004	EF
ATT-4.0	ATTACHMENT CNMT RECIRC FANS	003	07/26/1994	03/27/2003	03/27/2008	EF
ATT-5.0	ATTACHMENT COND TO S/G	006	10/10/2003	12/31/1999	12/31/2004	EF
ATT-5.1	ATTACHMENT SAFW	008	05/30/2002	12/31/1999	12/31/2004	EF
ATT-5.2	ATTACHMENT FIRE WATER COOLING TO TDAFW PUMP	003	01/14/1999	01/14/1999	01/14/2004	EF
ATT-6.0	ATTACHMENT COND VACUUM	003	12/18/1996	02/03/2003	02/03/2008	EF
ATT-7.0	ATTACHMENT CR EVAC	006	03/06/2002	02/03/2003	02/03/2008	EF
ATT-8.0	ATTACHMENT DC LOADS	006	03/22/1999	01/14/1999	01/14/2004	EF
ATT-8.1	ATTACHMENT D/G STOP	005	03/06/2002	02/03/2003	02/03/2008	EF
ATT-8.2	ATTACHMENT GEN DEGAS	008	06/20/2002	08/17/1999	08/17/2004	EF
ATT-8.3	ATTACHMENT NONVITAL	004	03/06/2002	02/03/2003	02/03/2008	EF
ATT-8.4	ATTACHMENT SI/UV	005	03/06/2002	02/03/2003	02/03/2008	EF
ATT-8.5	ATTACHMENT LOSS OF OFFSITE POWER	001	08/26/2003	05/02/2002	05/02/2007	EF
ATT-9.0	ATTACHMENT LETDOWN	009	01/07/2004	03/06/2002	03/06/2007	EF
ATT-9.1	ATTACHMENT EXCESS LD	005	03/06/2002	10/31/2001	10/31/2006	EF
ATT-10.0	ATTACHMENT FAULTED S/G	006	03/06/2002	03/27/2003	03/27/2008	EF
ATT-11.0	ATTACHMENT IA CONCERNS	003	06/26/2003	03/27/2003	03/27/2008	EF
ATT-11.1	ATTACHMENT IA SUPPLY	003	03/06/2002	03/27/2003	03/27/2008	EF
ATT-11.2	ATTACHMENT DIESEL AIR COMPRESSOR	004	11/18/2002	03/10/2003	03/10/2008	EF
ATT-12.0	ATTACHMENT N2 PORVS	005	02/12/2003	02/12/2003	02/12/2008	EF
ATT-13.0	ATTACHMENT NC	003	02/12/2003	02/12/2003	02/12/2008	EF
ATT-14.0	ATTACHMENT NORMAL RHR COOLING	003	03/06/2002	09/23/1999	09/23/2004	EF

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INPUT PARAMETERS: TYPE: PRATT
PRATT EOP ATTACHMENTS

STATUS VALUE(S): EF, QU

5 YEARS ONLY:

PROCEDURE NUMBER	PROCEDURE TITLE	REV	EFFECT DATE	LAST REVIEW	NEXT REVIEW	ST
ATT-14.1	ATTACHMENT RHR COOL	006	04/30/2003	01/08/2002	01/08/2007	EF
ATT-14.2	ATTACHMENT RHR ISOL	003	02/12/2003	02/12/2003	02/12/2008	EF
ATT-14.3	ATTACHMENT RHR NPSH	003	03/06/2002	01/06/1999	01/06/2004	EF
ATT-14.5	ATTACHMENT RHR SYSTEM	003	03/20/2003	02/03/2003	02/03/2008	EF
ATT-14.6	ATTACHMENT RHR PRESS REDUCTION	002	03/06/2002	01/14/1999	01/14/2004	EF
ATT-15.0	ATTACHMENT RCP START	009	03/06/2002	03/17/2000	03/17/2005	EF
ATT-15.1	ATTACHMENT RCP DIAGNOSTICS	003	04/24/1997	02/03/2003	02/03/2008	EF
ATT-15.2	ATTACHMENT SEAL COOLING	005	03/06/2002	02/03/2003	02/03/2008	EF
ATT-16.0	ATTACHMENT RUPTURED S/G	011	07/18/2001	01/11/2000	01/11/2005	EF
ATT-16.1	ATTACHMENT SGTL	002	03/06/2002	09/08/2000	09/08/2005	EF
ATT-16.2	ATTACHMENT RCS BORON FOR SGTL	003	11/26/2003	09/08/2000	09/08/2005	EF
ATT-17.0	ATTACHMENT SD-1	016	10/10/2003	02/29/2000	02/28/2005	EF
ATT-17.1	ATTACHMENT SD-2	006	03/06/2002	01/30/2001	01/30/2006	EF
ATT-18.0	ATTACHMENT SFP - RWST	005	03/06/2002	02/03/2003	02/03/2008	EF
ATT-20.0	ATTACHMENT VENT TIME	003	07/26/1994	02/03/2003	02/03/2008	EF
ATT-21.0	ATTACHMENT RCS ISOLATION	002	03/06/2002	02/03/2003	02/03/2008	EF
ATT-22.0	ATTACHMENT RESTORING FEED FLOW	003	05/02/2002	01/22/2002	01/22/2007	EF
ATT-23.0	ATTACHMENT TRANSFER 4160V LOADS	000	02/26/1999	02/26/1999	02/26/2004	EF
ATT-24.0	ATTACHMENT TRANSFER BATTERY TO TSC	000	09/08/2000	09/08/2000	09/08/2005	EF
ATT-26.0	ATTACHMENT RETURN TO NORMAL OPERATIONS	000	10/31/2001	10/31/2001	10/31/2006	EF

PRATT TOTAL: 50

GRAND TOTAL: 50

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INPUT PARAMETERS: TYPE: PRE STATUS VALUE(S): EF, QU 5 YEARS ONLY:

PRE EMERGENCY PROCEDURE

PROCEDURE NUMBER	PROCEDURE TITLE	REV	EFFECT DATE	LAST REVIEW	NEXT REVIEW	ST
E-0	REACTOR TRIP OR SAFETY INJECTION	035	10/10/2003	03/24/2003	03/24/2008	EF
E-1	LOSS OF REACTOR OR SECONDARY COOLANT	028	05/30/2003	03/24/2003	03/24/2008	EF
E-2	FAULTED STEAM GENERATOR ISOLATION	011	05/30/2003	03/24/2003	03/24/2008	EF
E-3	STEAM GENERATOR TUBE RUPTURE	036	01/07/2004	03/24/2003	03/24/2008	EF

PRE TOTAL: 4

GRAND TOTAL: 4

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INPUT PARAMETERS: TYPE: PRECA

STATUS VALUE(S): EF, QU

5 YEARS ONLY:

PRECA EMERGENCY CONTINGENCY ACTIONS PROC

PROCEDURE NUMBER	PROCEDURE TITLE	REV	EFFECT DATE	LAST REVIEW	NEXT REVIEW	ST
ECA-0.0	LOSS OF ALL AC POWER	027	10/10/2003	03/24/2003	03/24/2008	EF
ECA-0.1	LOSS OF ALL AC POWER RECOVERY WITHOUT SI REQUIRED	023	01/07/2004	03/24/2003	03/24/2008	EF
ECA-0.2	LOSS OF ALL AC POWER RECOVERY WITH SI REQUIRED	015	05/30/2003	03/24/2003	03/24/2008	EF
ECA-1.1	LOSS OF EMERGENCY COOLANT RECIRCULATION	022	05/30/2003	03/24/2003	03/24/2008	EF
ECA-1.2	LOCA OUTSIDE CONTAINMENT	006	05/30/2003	03/24/2003	03/24/2008	EF
ECA-2.1	UNCONTROLLED DEPRESSURIZATION OF BOTH STEAM GENERATORS	027	01/07/2004	03/24/2003	03/24/2008	EF
ECA-3.1	SGTR WITH LOSS OF REACTOR COOLANT SUBCOOLED RECOVERY DESIRED	026	05/30/2003	03/24/2003	03/24/2008	EF
ECA-3.2	SGTR WITH LOSS OF REACTOR COOLANT SATURATED RECOVERY DESIRED	027	05/30/2003	03/24/2003	03/24/2008	EF
ECA-3.3	SGTR WITHOUT PRESSURIZER PRESSURE CONTROL	030	01/07/2004	03/24/2003	03/24/2008	EF

PRECA TOTAL: 9

GRAND TOTAL: 9

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GINNA Nuclear Power Plant
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INPUT PARAMETERS: TYPE: PRES STATUS VALUE(S): EF, QU 5 YEARS ONLY:
PRES EQUIPMENT SUB-PROCEDURE

PROCEDURE NUMBER	PROCEDURE TITLE	REV	EFFECT DATE	LAST REVIEW	NEXT REVIEW	ST
ES-0.0	REDIAGNOSIS	010	05/01/1998	03/24/2003	03/24/2008	EF
ES-0.1	REACTOR TRIP RESPONSE	022	10/10/2003	03/24/2003	03/24/2008	EF
ES-0.2	NATURAL CIRCULATION COOLDOWN	013	05/30/2003	03/24/2003	03/24/2008	EF
ES-0.3	NATURAL CIRCULATION COOLDOWN WITH STEAM VOID IN VESSEL	009	05/30/2003	03/24/2003	03/24/2008	EF
ES-1.1	SI TERMINATION	026	01/07/2004	03/24/2003	03/24/2008	EF
ES-1.2	POST LOCA COOLDOWN AND DEPRESSURIZATION	026	05/30/2003	03/24/2003	03/24/2008	EF
ES-1.3	TRANSFER TO COLD LEG RECIRCULATION	036	05/30/2003	03/24/2003	03/24/2008	EF
ES-3.1	POST-SGTR COOLDOWN USING BACKFILL	015	05/30/2003	03/24/2003	03/24/2008	EF
ES-3.2	POST-SGTR COOLDOWN USING BLOWDOWN	016	05/30/2003	03/24/2003	03/24/2008	EF
ES-3.3	POST-SGTR COOLDOWN USING STEAM DUMP	016	05/30/2003	03/24/2003	03/24/2008	EF

PRES TOTAL: 10

GRAND TOTAL: 10

INPUT PARAMETERS: TYPE: PRFR STATUS VALUE(S): EF, QU 5 YEARS ONLY:

PRFR FUNCTIONAL RESTORATION GUIDELINE PROC

PROCEDURE NUMBER	PROCEDURE TITLE	REV	EFFECT DATE	LAST REVIEW	NEXT REVIEW	ST
FR-C.1	RESPONSE TO INADEQUATE CORE COOLING	020	05/30/2003	03/24/2003	03/24/2008	EF
FR-C.2	RESPONSE TO DEGRADED CORE COOLING	017	05/30/2003	03/24/2003	03/24/2008	EF
FR-C.3	RESPONSE TO SATURATED CORE COOLING	009	05/30/2003	03/24/2003	03/24/2008	EF
FR-H.1	RESPONSE TO LOSS OF SECONDARY HEAT SINK	030	10/10/2003	03/24/2003	03/24/2008	EF
FR-H.2	RESPONSE TO STEAM GENERATOR OVERPRESSURE	006	10/10/2003	03/24/2003	03/24/2008	EF
FR-H.3	RESPONSE TO STEAM GENERATOR HIGH LEVEL	007	10/10/2003	03/24/2003	03/24/2008	EF
FR-H.4	RESPONSE TO LOSS OF NORMAL STEAM RELEASE CAPABILITIES	005	05/30/2003	03/24/2003	03/24/2008	EF
FR-H.5	RESPONSE TO STEAM GENERATOR LOW LEVEL	009	05/30/2003	03/24/2003	03/24/2008	EF
FR-I.1	RESPONSE TO HIGH PRESSURIZER LEVEL	017	01/07/2004	03/24/2003	03/24/2008	EF
FR-I.2	RESPONSE TO LOW PRESSURIZER LEVEL	011	05/30/2003	03/24/2003	03/24/2008	EF
FR-I.3	RESPONSE TO VOIDS IN REACTOR VESSEL	019	01/07/2004	03/24/2003	03/24/2008	EF
FR-P.1	RESPONSE TO IMMINENT PRESSURIZED THERMAL SHOCK CONDITION	028	01/07/2004	03/24/2003	03/24/2008	EF
FR-P.2	RESPONSE TO ANTICIPATED PRESSURIZED THERMAL SHOCK CONDITION	008	05/30/2003	03/24/2003	03/24/2008	EF
FR-S.1	RESPONSE TO REACTOR RESTART/ATWS	016	10/10/2003	03/24/2003	03/24/2008	EF
FR-S.2	RESPONSE TO LOSS OF CORE SHUTDOWN	009	05/30/2003	03/24/2003	03/24/2008	EF
FR-Z.1	RESPONSE TO HIGH CONTAINMENT PRESSURE	008	10/10/2003	03/24/2003	03/24/2008	EF
FR-Z.2	RESPONSE TO CONTAINMENT FLOODING	005	05/30/2003	03/24/2003	03/24/2008	EF
FR-Z.3	RESPONSE TO HIGH CONTAINMENT RADIATION LEVEL	005	05/30/2003	03/24/2003	03/24/2008	EF

PRFR TOTAL: 18

GRAND TOTAL: 18

EOP: ATT-9.0	TITLE: . ATTACHMENT LETDOWN	REV: 9 PAGE 1 of 1
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Responsible Manager *R. Sidling* Date 1-7-2004

- A) The following conditions must be met to place normal letdown in service:
- o IA to CNMT - ESTABLISHED
 - o CCW - IN SERVICE
 - o PRZR level - GREATER THAN 13%
- B) Establish Normal Letdown:
1. Establish charging line flow to REGEN Hx - GREATER THAN 20 gpm.
 2. Place the following switches to CLOSE:
 - Letdown orifice valves (AOV-200A, AOV-200B, and AOV-202)
 - Letdown isolation, AOV-427
 3. Place letdown controllers in MANUAL at 40% open (60% open if 60 gpm orifice to be selected):
 - Temperature control valve, TCV-130
 - Pressure control valve, PCV-135
 4. Ensure AOV-371, letdown isolation valve - OPEN.
 5. Open letdown isolation, AOV-427.
 6. Open letdown orifice valve(s) to obtain desired flow
 - 40 gpm letdown orifice valve, AOV-200A or AOV-200B
 - 60 gpm letdown orifice valve, AOV-202
- *****
CAUTION
 MAINTAINING TCV-130 AT THE NORMAL SETPOINT HELPS PREVENT UNEXPECTED CHANGES IN REACTIVITY OR RCP SEAL PERFORMANCE.

7. Place PCV-135 in AUTO at 250 psig.
 8. Place TCV-130 in AUTO at the normal setpoint.
 9. Adjust charging pump speed and HCV-142 to control PRZR level and RCP labyrinth seal D/P.
- C) IF normal letdown can NOT be established, THEN refer to ATT-9.1, ATTACHMENT EXCESS L/D to establish excess letdown.

EOP: AP-CCW.1	TITLE: . LEAKAGE INTO THE COMPONENT COOLING LOOP	REV: 16 PAGE 1 of 15
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ROCHESTER GAS AND ELECTRIC CORPORATION

GINNA STATION

CONTROLLED COPY NUMBER 23

Residman
RESPONSIBLE MANAGER

1-7-2004
EFFECTIVE DATE

CATEGORY 1.0

REVIEWED BY: _____

EOP: AP-CCW.1	TITLE: . LEAKAGE INTO THE COMPONENT COOLING LOOP	REV: 16 PAGE 2 of 15
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- A. PURPOSE - This procedure provides the actions required to identify and isolate leakage into the CCW system and to control the plant during the course of the event.
- B. ENTRY CONDITIONS/SYMPTOMS
1. ENTRY CONDITIONS - This procedure is entered from;
 - a. AP-CVCS.1, CVCS LEAK, or,
 - b. AP-RCS.1, RCS LEAK, or,
 - c. AP-RCP.1 RCP SEAL MALFUNCTION, when CCW surge tank level increasing.
 2. SYMPTOMS - The symptoms of LEAKAGE INTO THE COMPONENT COOLING LOOP are;
 - a. Annunciator A-5, CCW SURGE TANK HI LEVEL 58.8%, lit or
 - b. CCW radiation monitor (R-17) alarm, or
 - c. Annunciator A-7 (15), RCP A (B) CCW RETURN HI TEMP OR LO FLOW 165 GPM 125°F, lit or
 - d. Erratic RCP labyrinth seal D/P.

STEP

ACTION/EXPECTED RESPONSE

RESPONSE NOT OBTAINED

.....

CAUTION

IF CCW SYSTEM RADIATION MONITOR ALARMS, THEN VERIFY CCW SURGE TANK VENT, RCV-017, CLOSES.

.....

1 Check CCW Indications

- | | |
|--|---|
| <p>a. Check CCW surge tank level - INCREASING</p> <p>b. Direct RP tech to perform CH-PRI-CCW-LEAK, DETERMINATION OF CCW SYSTEM LEAKAGE</p> <p>c. CCW radiation monitor, R-17. INCREASING</p> | <p>a. <u>IF</u> level decreasing, <u>THEN</u> go to AP-CCW.2, LOSS OF CCW DURING POWER OPERATION or AP-CCW.3, LOSS OF CCW - PLANT SHUTDOWN. <u>IF</u> level stable, <u>THEN</u> return to procedure or step in effect.</p> <p>c. Check RCS leakrate. <u>IF</u> RCS leakrate increasing, <u>THEN</u> go to Step 2 (Refer to RCS Leakage Surveillance Sheet).</p> <p><u>IF</u> RCS leakage and R-17 indication normal, <u>THEN</u> go to Step 13.</p> |
|--|---|

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
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CAUTION
 IF EITHER RCP #1 SEAL OUTLET TEMPERATURE EXCEEDS 215°F, THEN THE AFFECTED RCP(S) SHOULD BE STOPPED.

NOTE: RCPs may be safely operated without CCW to the thermal barrier if seal injection flow is maintained.

- 2 Check RCP Thermal Barrier Indications:
- o Labyrinth seal D/Ps - GREATER THAN 15 INCHES OF WATER AND APPROXIMATELY EQUAL
 - o RCP #1 seal leak off flows - WITHIN THE NORMAL OPERATING RANGE OF FIG-4.0, FIGURE RCP SEAL LEAKOFF
 - o Annunciator A-7 (15), RCP A (B) CCW RETURN HI TEMP OR LO FLOW 165 GPM 125°F - EXTINGUISHED

- IF either pump has indication of a thermal barrier leak, THEN perform the following:
- a. Verify seal injection flow to affected RCP.
 - b. Close CCW return from affected RCP thermal barrier (labyrinth seal D/P should increase).
 - RCP A. AOV-754A
 - RCP B. AOV-754B
 - c. Evaluate CCW surge tank level trend. IF leakage into the CCW system has stopped, THEN go to Step 17.

3 Check RCS temperature - GREATER THAN 350°F

Go to Step 7.

STEP

ACTION/EXPECTED RESPONSE

RESPONSE NOT OBTAINED

4 Check NRHX For Leakage:

a. Normal letdown - IN SERVICE

b. Check Letdown Indications:

- o Letdown line flow - APPROXIMATELY 40 GPM (60 GPM IF AOV-202 OPEN)
- o Low press LTDN pressure - APPROXIMATELY 250 PSIG
- o Letdown pressure control valve, PCV-135, demand - APPROXIMATELY 35% OPEN (40% OPEN IF AOV-202 OPEN)

c. Go to Step 6

a. Perform the following:

- 1) IF excess letdown in service, THEN perform the following:
 - a) Close excess letdown flow control valve, HCV-123.
 - b) Close excess letdown isolation valve, AOV-310.

2) Go to Step 5.

b. Isolate Normal Letdown:

- 1) Close letdown isolation, AOV-427.
- 2) Close letdown orifice valves (AOV-200A, AOV-200B, and AOV-202).
- 3) Close letdown isolation, AOV-371.
- 4) Close charging flow control valve, HCV-142 WHILE adjusting charging pump speed to maintain:
 - RCP labyrinth seal D/P between 15 inches and 80 inches.
 - PRZR level at program

5) Go to Step 5.

STEP

ACTION/EXPECTED RESPONSE

RESPONSE NOT OBTAINED

5 Check If CCW Inleakage Has Stopped:

a. CCW surge tank level - STABLE

a. IF CCW surge tank level still increasing, THEN perform the following:

1) Restore letdown flowpath previously isolated (Refer to ATT-9.0, ATTACHMENT LETDOWN OR ATT-9.1, ATTACHMENT EXCESS L/D).

2) Adjust charging flow to restore PRZR level.

3) Go to Step 13.

b. Restore an intact letdown flowpath if available (Refer to ATT-9.0, ATTACHMENT LETDOWN OR ATT-9.1, ATTACHMENT EXCESS L/D)

c. Check any letdown flowpath - RESTORED

c. IF no letdown flowpath available, THEN consult Plant Staff.

d. Adjust charging flow to restore PRZR level

STEP

ACTION/EXPECTED RESPONSE

RESPONSE NOT OBTAINED

NOTE: With PRZR pressure controller 431K in manual, PORV-431C will not operate in the automatic mode. (Refer to TR 3.4.3)

6 Establish Stable Plant Conditions:

a. Check Tav_g - TRENDING TO TREF

a. IF Tav_g greater than Tref, THEN restore Tav_g to Tref by one or more of the following:

- Insert control rods
- RCS boration

IF Tav_g less than Tref, THEN restore Tav_g to Tref by one or more of the following:

- Withdraw control rods
- Reduce turbine load
- Dilution of RCS

b. Check PRZR pressure - TRENDING TO 2235 PSIG IN AUTO

b. Control PRZR pressure by one of the following:

- 431K in MANUAL
- Manual control of PRZR heaters and sprays

IF PRZR pressure can NOT be controlled manually, THEN refer to AP-PRZR.1, ABNORMAL PRESSURIZER PRESSURE.

c. Check PRZR level - TRENDING TO PROGRAM IN AUTO CONTROL

c. Perform the following:

- 1) Place affected charging pumps in MANUAL
- 2) Adjust charging pump speed to restore PRZR level to program.

IF PRZR level can NOT be controlled manually, THEN refer to AP-RCS.1, REACTOR COOLANT LEAK.

d. Go to Step 17

STEP

ACTION/EXPECTED RESPONSE

RESPONSE NOT OBTAINED

.....
CAUTION
 UNFILTERED WATER MAY DAMAGE RCP SEAL SURFACES.

7 Check NRHX For Leakage:

a. Narrow range PRZR level - ON SCALE

a. IF the RCS is solid, THEN perform the following:

1) Stop any running RCP.

2) WHEN RCPs stopped, THEN stop any running charging pump.

b. Isolate letdown flow to NRHX:

o Ensure the following valves - 'CLOSED

- Letdown isolation, AOV-427
- Letdown orifice valves (AOV-200A, AOV-200B, and AOV-202)
- RHR letdown flow control valve, HCV-133

o Close letdown isolation valve, AOV-371

o Place letdown pressure controller, PCV-135, in MANUAL and close valve (demand at 100%).

STEP

ACTION/EXPECTED RESPONSE

RESPONSE NOT OBTAINED

CAUTION

IF THE RCS IS WATER SOLID, THEN ANY INCREASE IN RCS TEMPERATURE MAY RESULT IN A SIGNIFICANT RCS PRESSURE INCREASE. RCS HEATUP SHOULD BE PREVENTED.

8 Check If CCW Inleakage Has Stopped:

- | | |
|--|---|
| <p>a. CCW surge tank level - STABLE</p> | <p>a. <u>IF</u> CCW inleakage continues. <u>THEN</u> go to Step 9.</p> |
| <p>b. Narrow range PRZR level - ON SCALE</p> | <p>b. <u>IF</u> RCS is solid, <u>THEN</u> perform the following:</p> <ol style="list-style-type: none"> 1) Ensure both RCPs off. 2) Cycle charging pumps to control RCS pressure. |
| <p>c. Establish excess letdown (Refer to ATT-9.1, ATTACHMENT EXCESS L/D)</p> | |
| <p>d. Start one charging pump</p> | |
| <p>e. Adjust charging flow to restore PRZR level</p> | |
| <p>f. Check RCS temperature - STABLE</p> | <p>f. Adjust RHR cooling to stabilize RCS temperature.</p> |
| <p>g. Go to Step 17</p> | |

STEP

ACTION/EXPECTED RESPONSE

RESPONSE NOT OBTAINED

9 Restore Letdown:

a. Check RHR - IN SERVICE

a. Perform the following:

1) Establish normal letdown
(Refer to ATT-9.0, ATTACHMENT
LETDOWN).

2) Go to Step 10.

b. Open letdown isolation valve.
AOV-371c. Place letdown controllers in
MANUAL at 40% open

- TCV-130
- PCV-135

d. Manually open RHR LETDOWN TO
CVCS. HCV-133e. Place PCV-135 in AUTO at desired
pressuref. Place TCV-130 in AUTO at the
normal setpoint

g. Start one charging pump

h. Adjust charging flow to restore
PRZR pressure/level

STEP

ACTION/EXPECTED RESPONSE

RESPONSE NOT OBTAINED

.....
CAUTION
 o ONE TRAIN OF RHR SHALL BE OPERABLE AT ALL TIMES.
 o IF AN RHR PUMP OR HX IS REMOVED FROM SERVICE, THEN OPERABILITY REQUIREMENTS SHOULD BE EVALUATED (REFER TO ITS SECTIONS 3.4 AND 3.5).

10 Check RHR System For Leakage:

a. Both RHR loops - ALIGNED AND OPERABLE

a. IF any loop isolated for this leak investigation, THEN perform the following:

- 1) Restore isolated loop to service (Refer to ATT-14.2. ATTACHMENT RHR ISOL and S-13A, RHR LINEUP FOR SAFETY INJECTION).
- 2) WHEN loop restored, THEN isolate other RHR loop (Refer to ATT-14.2. ATTACHMENT RHR ISOL).
- 3) Go to Step 11.

b. Isolate selected RHR loop (Refer to ATT-14.2. ATTACHMENT RHR ISOL)

EOP:

AP-CCW.1

TITLE: .

LEAKAGE INTO THE COMPONENT COOLING LOOP

REV: 16

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STEP

ACTION/EXPECTED RESPONSE

RESPONSE NOT OBTAINED

11 Verify RCS temperature -
STABLE OR DECREASING

Increase cooling from available RHR loop. Attempt to establish S/G cooling if necessary.

12 Check If CCW Inleakage Has Stopped:

a. CCW surge tank level - STABLE

a. IF any RHR loop has NOT been checked for leakage. THEN return to Step 10.

IF both RHR loops have been checked, THEN restore RHR loops to operable and go to Step 13.

b. Go to Step 17

13 Check RMW to CCW Surge Tank:

o Verify CCW surge tank fill valve. MOV-823 - CLOSED

o Verify RMW pump(s) - OFF

IF RMW to CCW surge tank. MOV-823. open OR RMW pump running. THEN perform the following:

a. Close CCW surge tank fill valve. MOV-823.

b. Shut off running RMW pumps.

c. IF CCW inleakage stops. THEN go to Step 17.

STEP

ACTION/EXPECTED RESPONSE

RESPONSE NOT OBTAINED

14 Check For Sample Hx Leaks:

- a. Direct AO to locally check nuclear sample room Hxs
 - o Sample Hx (TI-602) common CCW return temperature from sample Hxs - NORMAL (Refer to Aux Bldg log sheet. 3 of 3)
 - o Sample Hx (FI-603) common CCW return flow from sample Hxs - NORMAL (Refer to Aux Bldg log sheet. 3 of 3)
- b. Direct RP Tech to check PASS - SAMPLING IN PROGRESS
- c. Direct RP Tech to terminate PASS sampling
- d. Verify CCW inleakage - STOPPED

- a. Determine which sample Hx CCW outlet temperature is high. THEN perform the following:
 - 1) Isolate the affected Hx.
 - 2) IF CCW inleakage has stopped, THEN go to Step 17.
- b. Go to Step 15.

15 Check SW Header Pressure - LESS THAN 60 PSIG

Dispatch AO to check CCW pump discharge pressure. IF SW pressure greater than CCW pressure, THEN investigate possible SW leak into CCW system.

.....
CAUTION
.....

IF A SAFEGUARDS PUMP IS TO BE REMOVED FROM SERVICE DURING AN EMERGENCY CONDITION, THEN CONSULT WITH PLANT STAFF PRIOR TO STOPPING PUMP.
.....

16 Check Safeguards Pump Status - ALL SAFEGUARDS PUMPS OFF

- SI pumps
- RHR pumps
- CS pumps

IF any event in progress requiring safeguards pump operation, THEN consult Plant Staff for guidance on checking safeguards pumps for CCW leakage.

STEP

ACTION/EXPECTED RESPONSE

RESPONSE NOT OBTAINED

17 Evaluate Plant Conditions:

- a. CCW inleakage - IDENTIFIED AND ISOLATED
- b. Determine if operation can continue (Consult Plant staff if necessary) - OPERATION CAN CONTINUE

- a. Return to Step 2.
- b. IF plant shutdown is required, THEN refer to 0-2.1. NORMAL SHUTDOWN TO HOT SHUTDOWN.

18 Check CCW Surge Tank Level - APPROXIMATELY 50%

Consult RP tech to determine method to drain and dispose of excess CCW.

19 Establish Control Systems In Auto

- a. Verify rods in AUTO
- b. Verify 431K in AUTO
- c. Verify PRZR spray valves in AUTO
- d. Verify PRZR heaters restored:
 - o PRZR proportional heaters breaker - CLOSED
 - o PRZR backup heaters breaker - RESET. IN AUTO
- e. Verify one charging pump in AUTO

- a. Place rods in AUTO. if desired.
- b. Place 431K in AUTO. if desired.
- c. Place PRZR spray valves in AUTO. if desired.
- d. Restore PRZR heaters. if desired.
- e. Place one charging pump in AUTO. if desired.

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STEP

ACTION/EXPECTED RESPONSE

RESPONSE NOT OBTAINED

20 Evaluate MCB Annunciator
Status (Refer to AR
Procedures)

NOTE: Refer to 0-9.3, NRC IMMEDIATE NOTIFICATION, for reporting requirements.

21 Notify Higher Supervision

22 Return To Procedure Or
Guidance In Effect

-END-

EOP: AP-CCW.1	TITLE: . LEAKAGE INTO THE COMPONENT COOLING LOOP	REV: 16 PAGE 1 of 1
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AP-CCW.1 APPENDIX LIST

TITLE

- 1) FIGURE RCP SEAL LEAKOFF (FIG-4.0)
- 2) ATTACHMENT RHR ISOL (ATT-14.2)
- 3) ATTACHMENT LETDOWN (ATT-9.0)
- 4) ATTACHMENT EXCESS L/D (ATT-9.1)

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ROCHESTER GAS AND ELECTRIC CORPORATION

GINNA STATION

CONTROLLED COPY NUMBER 23

Residulin

RESPONSIBLE MANAGER

1-7-2004

EFFECTIVE DATE

CATEGORY 1.0

REVIEWED BY: _____

EOP: E-3	TITLE: . STEAM GENERATOR TUBE RUPTURE	REV: 36 PAGE 2 of 42
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- A. PURPOSE - This procedure provides actions to terminate leakage of reactor coolant into the secondary system following a steam generator tube rupture (SGTR), this procedure should also be used for a SGTR in one S/G and a fault in the other S/G.
- B. ENTRY CONDITIONS/SYMPTOMS
1. ENTRY CONDITIONS - This procedure is entered from:
 - a. E-0, REACTOR TRIP OR SAFETY INJECTION, when condenser air ejector radiation or blowdown radiation is abnormal, or
 - b. E-0, REACTOR TRIP OR SAFETY INJECTION, E-1, LOSS OF REACTOR OR SECONDARY COOLANT, E-2, FAULTED STEAM GENERATOR ISOLATION, and FR-H.3, RESPONSE TO STEAM GENERATOR HIGH LEVEL, when secondary radiation is abnormal, or
 - c. E-0, REACTOR TRIP OR SAFETY INJECTION, E-1, LOSS OF REACTOR OR SECONDARY COOLANT, E-2, FAULTED STEAM GENERATOR ISOLATION, ES-1.2, POST LOCA COOLDOWN AND DEPRESSURIZATION, ECA-3.3, SGTR WITHOUT PRESSURIZER PRESSURE CONTROL, when an intact S/G narrow range level increases in an uncontrolled manner.
 - d. ECA-3.3, SGTR WITHOUT PRESSURIZER PRESSURE CONTROL, when pressurizer pressure control is restored.
 - e. Any FOLDOUT page that has E-3 transition criteria whenever either S/G level increases in an uncontrolled manner or either S/G has abnormal radiation.

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STEAM GENERATOR TUBE RUPTURE

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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 MANUAL ACTION MAY BE REQUIRED TO RESTART SAFEGUARDS EQUIPMENT. (REFER TO ATT-8.5, ATTACHMENT LOSS OF OFFSITE POWER)

.....

2 Identify Ruptured S/G(s):

Perform the following:

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

- 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

o IF THE TDAFW PUMP IS THE ONLY AVAILABLE SOURCE OF FEED FLOW, STEAM SUPPLY TO THE TDAFW PUMP MUST BE MAINTAINED FROM ONE S/G.

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

.....

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

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

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 ATT-16.0, ATTACHMENT RUPTURED S/G, parts A and B).
- 8) Go to step 5.

b. Dispatch AO to complete ruptured S/G isolation (Refer to ATT-16.0, 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

b. Dispatch AO to locally close valve.

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

c. Pull stop MDAFW pump for ruptured S/G

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

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

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

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

e. Verify MDAFW pump crosstie valves - CLOSED

e. Manually close valves.

- MOV-4000A
- MOV-4000B

STEP

ACTION/EXPECTED RESPONSE

RESPONSE NOT OBTAINED

6 Verify Ruptured S/G Isolated:

- | | |
|--|--|
| <ul style="list-style-type: none"> a. Check ruptured MSIV - CLOSED b. Check TDAFW pump steam supply from ruptured S/G - ISOLATED c. Ruptured S/G pressure - GREATER THAN 300 PSIG | <ul style="list-style-type: none"> a. Ensure air ejector/gland steam supply and flange heating steam isolated. (Refer to ATT-16.0. ATTACHMENT RUPTURED S/G, part B). b. Continue efforts to isolate steam supply from ruptured S/G: <ul style="list-style-type: none"> • S/G A. MOV-3505A <u>OR</u> V-3505 • S/G B. MOV-3504A <u>OR</u> V-3504 c. Go to ECA-3.1, SGTR WITH LOSS OF REACTOR COOLANT - SUBCOOLED RECOVERY DESIRED, Step 1. |
|--|--|

7 Establish Condenser Steam Dump Pressure Control:

- | | |
|---|---|
| <ul style="list-style-type: none"> a. Verify condenser available: <ul style="list-style-type: none"> o Intact S/G MSIV - OPEN o Annunciator G-15. STEAM DUMP ARMED - LIT b. Adjust condenser steam dump controller HC-484 to maintain intact S/G pressure and verify in AUTO c. Place steam dump mode selector switch to MANUAL | <ul style="list-style-type: none"> a. Adjust S/G ARV controllers to maintain intact S/G pressure in AUTO and go to Step 8. |
|---|---|

STEP

ACTION/EXPECTED RESPONSE

RESPONSE NOT OBTAINED

.....

CAUTION

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

.....

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 [517 adverse CNMT]
1000 PSIG	512 [504 adverse CNMT]
900 PSIG	499 [490 adverse CNMT]
800 PSIG	484 [475 adverse CNMT]
700 PSIG	468 [457 adverse CNMT]
600 PSIG	449 [437 adverse CNMT]
500 PSIG	428 [413 adverse CNMT]
400 PSIG	402 [384 adverse CNMT]
300 PSIG	369 [344 adverse CNMT]

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

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

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

- o Use faulted S/G.

-OR-

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

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

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

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

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STEP

ACTION/EXPECTED RESPONSE

RESPONSE NOT OBTAINED

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

10 Monitor Intact S/G Level:

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

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) IF NO SW pumps running. THEN
perform the following:

a) Pull stop any D/G that is
NOT supplied by alternate
cooling. AND immediately
depress VOLTAGE SHUTDOWN
pushbutton.

b) Refer to ATT-2.4.
ATTACHMENT NO SW PUMPS.

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

b. Dispatch AO to establish normal
shutdown alignment (Refer to
ATT-17.0. 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

b. Check SW pumps - AT LEAST TWO PUMPS RUNNING

c. Verify turbine building SW isolation valves - OPEN

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

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 perform the following:

- o Start diesel air compressor (refer to ATT-11.2, ATTACHMENT DIESEL AIR COMPRESSOR)

-OR-

- o Evaluate if CNMT RECIRC fans should be stopped (Refer to ATT-4.0, ATTACHMENT CNMT RECIRC FANS)

b. Perform the following:

- 1) Restore IA using service air compressor OR diesel air compressor (refer to ATT-11.2, ATTACHMENT DIESEL AIR COMPRESSOR)

- 2) Go to step 15d.

c. Manually align valves.

This Step continued on the next page.



(Step 15 continued from previous page)

- | | |
|--|--|
| <ul style="list-style-type: none"> d. Verify adequate air compressors
- RUNNING
 e. Check IA supply: <ul style="list-style-type: none"> o Pressure - GREATER THAN
60 PSIG
 o Pressure - STABLE OR
INCREASING
 f. Reset both trains of XY relays
for IA to CNMT AOV-5392
 g. Verify IA to CNMT AOV-5392 - OPEN | <ul style="list-style-type: none"> d. Manually start air compressors
as power supply permits (75 kw
each). <u>IF</u> air compressors can
<u>NOT</u> be started, <u>THEN</u> dispatch A0
to locally reset compressors as
necessary.
 e. Perform the following: <ul style="list-style-type: none"> 1) Continue attempts to restore
IA (Refer to AP-IA.1, LOSS OF
INSTRUMENT AIR).
 2) Continue with Step 16. <u>WHEN</u>
IA restored, <u>THEN</u> do Steps
15f and g. |
|--|--|

.....
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:

- | | |
|---|---|
| <ul style="list-style-type: none"> a. Check RCS pressure - GREATER
THAN 250 psig [465 psig adverse
CNMT]
 b. Stop RHR pumps and place both in
AUTO | <ul style="list-style-type: none"> a. Go to Step 17. |
|---|---|

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

EOP: E-3	TITLE: . STEAM GENERATOR TUBE RUPTURE	REV: 36 PAGE 19 of 42
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STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
18	Check If RCS Cooldown Should Be Stopped:	
	a. Core exit T/Cs - LESS THAN REQUIRED TEMPERATURE	a. Do <u>NOT</u> proceed until core exit T/Cs less than required temperature.
	b. Stop RCS cooldown	
	c. Stabilize core exit T/Cs - LESS THAN REQUIRED TEMPERATURE	
19	Check Ruptured S/G Pressure - STABLE OR INCREASING	<u>IF</u> pressure continues to decrease to less than 250 psi above the pressure of the intact S/G. <u>THEN</u> go to ECA-3.1, SGTR WITH LOSS OF REACTOR COOLANT - SUBCOOLED RECOVERY DESIRED. Step 1.
20	Check RCS Subcooling Based On Core Exit T/Cs - GREATER THAN 20° F USING FIG-1.0, 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:

- | | |
|--|--|
| <p>a. Check the following:</p> <ul style="list-style-type: none"> o Ruptured S/G level - LESS THAN 90% [80% adverse CNMT] o Any RCP - RUNNING o IA to CNMT - AVAILABLE <p>b. Spray PRZR with maximum available spray until ANY of the following conditions satisfied:</p> <ul style="list-style-type: none"> o PRZR level - GREATER THAN 75% [65% adverse CNMT] <li style="padding-left: 40px;">-OR- o RCS pressure - LESS THAN SATURATION USING FIG-1.0. FIGURE MIN SUBCOOLING <li style="padding-left: 40px;">-OR- o <u>BOTH</u> of the following: <ul style="list-style-type: none"> 1) RCS pressure - LESS THAN RUPTURED S/G PRESSURE 2) PRZR level - GREATER THAN 5% [30% adverse CNMT] <p>c. Close normal PRZR spray valves:</p> <ul style="list-style-type: none"> 1) Adjust normal spray valve controller to 0% DEMAND 2) Verify PRZR spray valves - CLOSED <ul style="list-style-type: none"> • PCV-431A • PCV-431B <p>d. Verify auxiliary spray valve (AOV-296) - CLOSED</p> <p>e. Go to Step 24</p> | <p>a. Go to Step 22.</p> <p>c. Stop associated RCP(s).</p> <p>d. Decrease charging speed to minimum and ensure charging valve to loop B cold leg open (AOV-294).</p> |
|--|--|

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
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CAUTION

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

.....

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

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

- | | |
|--|--|
| a. Verify IA to CNMT - AVAILABLE | a. Refer to ATT-12.0, ATTACHMENT N2 PORVS to operate PORVs. |
| b. PRZR PORVs - AT LEAST ONE AVAILABLE | b. <u>IF</u> auxiliary spray available, <u>THEN</u> return to Step 21b. |
| | <u>IF</u> auxiliary spray can <u>NOT</u> be established, <u>THEN</u> go to ECA-3.3, SGTR WITHOUT PRESSURIZER PRESSURE CONTROL, Step 1. |

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:

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

-OR-

- o RCS pressure - LESS THAN SATURATION USING FIG-1.0. FIGURE MIN SUBCOOLING

-OR-

- o BOTH of the following:

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

d. Close PRZR PORVs

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. 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. <u>IF</u> pressure continues to decrease, <u>THEN</u> perform the following: a. Monitor the following conditions for indication of leakage from PRZR PORV: o PORV outlet temp (TI-438) <u>NOT</u> 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:

- | | |
|--|--|
| <ul style="list-style-type: none"> a. RCS subcooling based on core exit T/Cs - GREATER THAN 0°F USING FIG-1.0, FIGURE MIN SUBCOOLING b. Secondary heat sink: <ul style="list-style-type: none"> o Total feed flow to S/G(s) - GREATER THAN 200 GPM AVAILABLE <li style="text-align: center;">-OR- o Narrow range level in at least one intact S/G - GREATER THAN 5% [25% adverse CNMT] c. RCS pressure - STABLE OR INCREASING d. PRZR level - GREATER THAN 5% [30% adverse CNMT] | <ul style="list-style-type: none"> a. Do <u>NOT</u> stop SI pumps. Go to ECA-3.1, SGTR WITH LOSS OF REACTOR COOLANT - SUBCOOLED RECOVERY DESIRED, Step 1. b. <u>IF</u> neither condition satisfied. <u>THEN</u> do <u>NOT</u> stop SI pumps. Go to ECA-3.1, SGTR WITH LOSS OF REACTOR COOLANT - SUBCOOLED RECOVERY DESIRED, Step 1. c. Do <u>NOT</u> stop SI pumps. Go to ECA-3.1, SGTR WITH LOSS OF REACTOR COOLANT - SUBCOOLED RECOVERY DESIRED, Step 1. d. Do <u>NOT</u> 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) <u>IF</u> CCW flow is lost to any RCP thermal barrier <u>OR</u> any RCP #1 seal outlet temperature offscale high, <u>THEN</u> dispatch AO to locally isolate seal injection to affected RCP:
		<ul style="list-style-type: none"> • 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	
27	Monitor SI Reinitiation Criteria:	
	a. RCS subcooling based on core exit T/Cs - GREATER THAN 0°F USING FIG-1.0. 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.
		<u>IF</u> PRZR level can <u>NOT</u> be maintained, <u>THEN</u> manually start SI pumps as necessary and go to ECA-3.1. SGTR WITH LOSS OF REACTOR COOLANT - SUBCOOLED RECOVERY DESIRED, Step 1.

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 FIG-1.0, FIGURE MIN SUBCOOLING
- o PRZR level - GREATER THAN 5% [30% adverse CNMT]

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

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

c. Close SI ACCUM discharge valves

- MOV-841
- MOV-865

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

a. Manually operate SI pumps as necessary and go to ECA-3.1, SGTR WITH LOSS OF REACTOR COOLANT - SUBCOOLED RECOVERY DESIRED, Step 1.

c. Vent any unisolated ACCUMs:

1) Open vent valves for unisolated SI ACCUMs.

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

2) Open HCV-945.

IF an accumulator can NOT be isolated or vented, THEN consult TSC to determine contingency actions.

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STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
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29 Verify Adequate SW Flow To
CCW Hx:

- | | |
|--|---|
| <p>a. Verify at least three SW pumps -
RUNNING</p> | <p>a. Manually start pumps as power supply permits (257 kw each). <u>IF</u> less than two SW pumps can be operated. <u>THEN</u> perform the following:</p> <ol style="list-style-type: none"> 1) <u>IF NO</u> SW pumps running. <u>THEN</u> perform the following: <ol style="list-style-type: none"> a) Pull stop any D/G that is <u>NOT</u> supplied by alternate cooling. <u>AND</u> immediately depress VOLTAGE SHUTDOWN pushbutton. b) Refer to ATT-2.4. ATTACHMENT NO SW PUMPS. 2) <u>IF</u> only one SW pump running. <u>THEN</u> refer to AP-SW.2. LOSS OF SERVICE WATER. 3) Go to Step 36. |
| <p>b. Verify AUX BLDG SW isolation valves - AT LEAST ONE SET OPEN</p> <ul style="list-style-type: none"> • MOV-4615 and MOV-4734 • MOV-4616 and MOV-4735 | <p>b. Manually align valves.</p> |

This Step continued on the next page.

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
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(Step 29 continued from previous page)

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

c. Perform the following:

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

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

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

o IF on normal SW discharge:

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

-OR-

o IF on alternate SW discharge:

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

STEP

ACTION/EXPECTED RESPONSE

RESPONSE NOT OBTAINED

30 Check If Normal CVCS
Operation Can Be Established

- | | |
|--|---|
| <p>a. Verify IA restored:</p> <ul style="list-style-type: none"> o IA to CNMT (AOV-5392) - OPEN o IA pressure - GREATER THAN 60 PSIG <p>b. Verify instrument bus D - ENERGIZED</p> <p>c. CCW pumps - ANY RUNNING</p> <p>d. Charging pump - ANY RUNNING</p> | <p>a. Continue with Step 36. <u>WHEN</u> IA restored, <u>THEN</u> do Steps 30 through 35.</p> <p>b. Energize MCC B. <u>IF</u> MCC B <u>NOT</u> available, <u>THEN</u> perform the following:</p> <ol style="list-style-type: none"> 1) Verify MCC A energized. 2) Place instrument bus D on maintenance supply. <p>c. Perform the following:</p> <ol style="list-style-type: none"> 1) <u>IF</u> any RCP #1 seal outlet temperature offscale high, <u>THEN</u> isolate CCW to thermal barrier of affected RCP(s). <ul style="list-style-type: none"> • RCP A, MOV-749A and MOV-759A • RCP B, MOV-749B and MOV-759B 2) Manually start one CCW pump. <p>d. Continue with Step 36. <u>WHEN</u> any charging pump running, <u>THEN</u> do Steps 31 through 35.</p> |
|--|---|

STEP

ACTION/EXPECTED RESPONSE

RESPONSE NOT OBTAINED

31 Check If Seal Return Flow
Should Be Established:

- | | |
|---|---|
| <p>a. Verify RCP #1 seal outlet temperature - LESS THAN 235°F</p> | <p>a. Go to Step 32.</p> |
| <p>b. Verify RCP seal outlet valves - OPEN</p> <ul style="list-style-type: none"> • AOV-270A • AOV-270B | <p>b. Manually open valves as necessary.</p> |
| <p>c. Reset both trains of XY relays for RCP seal return isolation valve MOV-313</p> | |
| <p>d. Open RCP seal return isolation valve MOV-313</p> | <p>d. Perform the following:</p> <ol style="list-style-type: none"> 1) Place MOV-313 switch to OPEN. 2) Dispatch AO to locally open MOV-313. |
| <p>e. Verify RCP #1 seal leakoff flow - LESS THAN 6.0 GPM</p> | <p>e. Perform the following:</p> <ol style="list-style-type: none"> 1) Trip the affected RCP 2) Allow 4 minutes for pump coast down. <u>THEN</u> close the affected RCP seal discharge valve <ul style="list-style-type: none"> • RCP A. AOV-270A • RCP B. AOV-270B <p><u>IF</u> both RCP seal discharge valves are shut. <u>THEN</u> go to Step 32.</p> |
| <p>f. Verify RCP #1 seal leakoff flow - GREATER THAN 0.8 GPM</p> | <p>f. Refer to AP-RCP.1, RCP SEAL MALFUNCTION.</p> |

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

STEP

ACTION/EXPECTED RESPONSE

RESPONSE NOT OBTAINED

34 Check VCT Makeup System:

- | | |
|--|--|
| <ul style="list-style-type: none"> 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: <ul style="list-style-type: none"> 1) RMW mode selector switch in AUTO 2) RMW control armed - RED LIGHT LIT d. Check VCT level: <ul style="list-style-type: none"> o Level - GREATER THAN 20% <li style="text-align: center;">-OR- o Level - STABLE OR INCREASING | <ul style="list-style-type: none"> c. Adjust controls as necessary. d. Manually increase VCT makeup flow as follows: <ul style="list-style-type: none"> 1) Ensure BA transfer pumps and RMW pumps running. <u>IF NOT</u>, <u>THEN</u> reset MCC C and MCC D UV lockouts as necessary. 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
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CAUTION
RCS AND RUPTURED S/G PRESSURES MUST BE MAINTAINED LESS THAN 1050 PSIG.

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

a. Perform appropriate action(s) from table:

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

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

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

EOP:

E-3

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STEP

ACTION/EXPECTED RESPONSE

RESPONSE NOT OBTAINED

37 Monitor If CNMT Spray Should Be Stopped:

- a. CNMT spray pumps - ANY RUNNING
- b. Verify CNMT pressure - LESS THAN 4 PSIG
- c. Reset CNMT spray
- d. Check NaOH flow (FI-930) - NO FLOW
- e. Stop CNMT spray pumps and place in AUTO
- f. Close CNMT spray pump discharge valves
 - MOV-860A
 - MOV-860B
 - MOV-860C
 - MOV-860D

- a. Go to Step 38.
- b. Continue with Step 38. WHEN CNMT pressure less than 4 psig. THEN do Steps 37c through f.
- d. Place NaOH tank outlet valve switches to CLOSE.
 - AOV-836A
 - AOV-836B

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STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
38	<p>Check If Emergency D/Gs Should Be Stopped:</p> <ul style="list-style-type: none"> a. Verify AC emergency busses energized by offsite power: <ul style="list-style-type: none"> o Emergency D/G output breakers - OPEN o AC emergency bus voltage - GREATER THAN 420 VOLTS o AC emergency bus normal feed breakers - CLOSED b. Stop any unloaded emergency D/G and place in standby (Refer to ATT-8.1. ATTACHMENT D/G STOP) 	<ul style="list-style-type: none"> a. Try to restore offsite power (Refer to ER-ELEC.1. RESTORATION OF OFFSITE POWER).
39	<p>Minimize Secondary System Contamination:</p> <ul style="list-style-type: none"> a. Isolate reject from hotwell to CST: <ul style="list-style-type: none"> o Place hotwell level controller (LC-107) in MANUAL at 50% o Verify hotwell level - STABLE b. Check status of local actions to complete ruptured S/G isolation (Refer to ATT-16.0. ATTACHMENT RUPTURED S/G) 	<ul style="list-style-type: none"> a. <u>IF</u> hotwell level increasing. <u>THEN</u> direct RP to sample hotwells for activity.

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STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
40	Energize PRZR Heaters As Necessary To Saturate PRZR Water At Ruptured S/G Pressure	
41	<p>Check RCP Cooling:</p> <p>a. Check CCW to RCPs:</p> <ul style="list-style-type: none"> 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 <p>b. Check RCP seal injection:</p> <ul style="list-style-type: none"> o Labyrinth seal D/Ps - GREATER THAN 15 INCHES OF WATER <p style="text-align: center;">-OR-</p> <ul style="list-style-type: none"> o RCP seal injection flow to each RCP - GREATER THAN 6 GPM 	<p>Establish normal cooling to RCPs (Refer to ATT-15.2, ATTACHMENT SEAL COOLING).</p>

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

- | | |
|--|--|
| <ul style="list-style-type: none"> a. Both RCPs - STOPPED b. Ensure conditions for starting an RCP. <ul style="list-style-type: none"> o Bus 11A or 11B energized. o Refer to ATT-15.0. ATTACHMENT RCP START. | <ul style="list-style-type: none"> a. Stop all but one RCP and go to step 43. b. <u>IF</u> conditions can <u>NOT</u> be met. <u>THEN</u> perform the following: <ul style="list-style-type: none"> 1) Verify natural circulation (Refer to ATT-13.0. ATTACHMENT NC).

<u>IF</u> natural circulation can <u>NOT</u> be verified, <u>THEN</u> increase dumping steam. 2) Go to step 43. |
|--|--|

This Step continued on the next page.

STEP

ACTION/EXPECTED RESPONSE

RESPONSE NOT OBTAINED

(Step 42 continued from previous page)

c. Check RVLIS level (no RCPs) -
≥ 95%

c. 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 FIG-1.0. FIGURE MIN SUBCOOLING.
- o Energize PRZR heaters as necessary to saturate PRZR water

IF conditions NOT met, THEN continue with step 43. WHEN conditions met, THEN do step 42d.

d. Start one RCP

d. IF an RCP can NOT be started, THEN verify natural circulation (Refer to ATT-13.0. ATTACHMENT NC).

IF natural^{*} circulation can NOT be verified, THEN increase dumping steam.

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:

- | | |
|--|--|
| <p>a. Source range channels -
DEENERGIZED</p> <p>b. Check intermediate range flux -
EITHER CHANNEL LESS THAN
10⁻¹⁰ AMPS</p> <p>c. Check the following:</p> <ul style="list-style-type: none"> o Both intermediate range channels - LESS THAN
10⁻¹⁰ AMPS <p style="text-align: center;">-OR-</p> <ul style="list-style-type: none"> o Greater than 20 minutes since reactor trip <p>d. Verify source range detectors -
ENERGIZED</p> <p>e. Transfer Rk-45 recorder to one source range and one intermediate range channel</p> | <p>a. Go to Step 43e.</p> <p>b. Perform the following:</p> <ul style="list-style-type: none"> 1) <u>IF</u> neither intermediate range channel is decreasing, <u>THEN</u> initiate boration. 2) Continue with Step 44. <u>WHEN</u> flux is LESS THAN 10⁻¹⁰ amps on any operable channel, <u>THEN</u> do Steps 43c through e. <p>c. Continue with Step 44. <u>WHEN</u> either condition met, <u>THEN</u> do Steps 43d and e.</p> <p>d. Manually energize source range detectors by depressing P-6 permissive defeat pushbuttons (2 of 2).</p> <p><u>IF</u> source ranges can <u>NOT</u> be restored, <u>THEN</u> refer to ER-NIS.1, SR MALFUNCTION and go to Step 44.</p> |
|--|--|

STEP

ACTION/EXPECTED RESPONSE

RESPONSE NOT OBTAINED

44 Establish Normal Shutdown Alignment:

a. Check condenser - AVAILABLE

a. Dispatch AO to perform ATT-17.1. 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
- 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)

d. Verify ATT-17.0. ATTACHMENT SD-1 - COMPLETE

STEP

ACTION/EXPECTED RESPONSE

RESPONSE NOT OBTAINED

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

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

-OR-

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

-OR-

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

-END-

EOP: E-3	TITLE: STEAM GENERATOR TUBE RUPTURE	REV: 36 PAGE 1 of 1
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E-3 APPENDIX LIST

TITLE

- 1) RED PATH SUMMARY
- 2) FIGURE MIN SUBCOOLING (FIG-1.0)
- 3) ATTACHMENT CNMT RECIRC FANS (ATT-4.0)
- 4) ATTACHMENT D/G STOP (ATT-8.1)
- 5) ATTACHMENT N2 PORVS (ATT-12.0)
- 6) ATTACHMENT NC (ATT-13.0)
- 7) ATTACHMENT SEAL COOLING (ATT-15.2)
- 8) ATTACHMENT RCP START (ATT-15.0)
- 9) ATTACHMENT RUPTURED S/G (ATT-16.0)
- 10) ATTACHMENT SD-1 (ATT-17.0)
- 11) ATTACHMENT SD-2 (ATT-17.1)
- 12) ATTACHMENT NO SW PUMPS (ATT-2.4)
- 13) ATTACHMENT LOSS OF OFFSITE POWER (ATT-8.5)
- 14) ATTACHMENT DIESEL AIR COMPRESSOR (ATT-11.2)
- 15) FOLDOUT

EOP: E-3	TITLE: STEAM GENERATOR TUBE RUPTURE	REV: 36 PAGE 1 of 1
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RED PATH SUMMARY

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

EOP: E-3	TITLE: STEAM GENERATOR TUBE RUPTURE	REV: 36 PAGE 1 of 1
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FOLDOUT PAGE

1. LOSS OF SW CRITERIA

IF no SW pumps are available, THEN perform the following:

- a. Pull stop any D/G that is NOT supplied by alternate cooling, AND immediately depress associated VOLTAGE SHUTDOWN pushbutton.
- b. Refer to ATT-2.4, ATTACHMENT NO SW PUMPS.

2. SI REINITIATION CRITERIA

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

- o RCS subcooling based on core exit T/Cs - LESS THAN 0° F USING REQUIREMENTS OF FIG-1.0, FIGURE MIN SUBCOOLING.

OR

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

3. 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.

4. 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.

5. 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).

6. MULTIPLE S/G TUBE RUPTURE CRITERIA

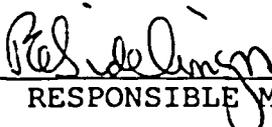
IF any intact S/G level increases in in an uncontrolled manner OR IF any intact S/G has abnormal radiation, THEN go to ECA-3.1, SGTR WITH LOSS OF REACTOR COOLANT - SUBCOOLED RECOVERY DESIRED, Step 1.

EOP: ECA-0.1	TITLE: LOSS OF ALL AC POWER RECOVERY WITHOUT SI REQUIRED	REV: 23 PAGE 1 of 21
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ROCHESTER GAS AND ELECTRIC CORPORATION

GINNA STATION

CONTROLLED COPY NUMBER 23



RESPONSIBLE MANAGER

1-7-2004
EFFECTIVE DATE

CATEGORY 1.0

REVIEWED BY: _____

EOP: ECA-0.1	TITLE: LOSS OF ALL AC POWER RECOVERY WITHOUT SI REQUIRED	REV: 23 PAGE 2 of 21
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A. PURPOSE - This procedure provides actions to use normal operational systems to stabilize plant conditions following restoration of AC emergency power.

B. ENTRY CONDITIONS/SYMPTOMS

1. ENTRY CONDITIONS - This procedure is entered from:

- a. ECA-0.0, LOSS OF ALL AC POWER, when AC emergency power is restored and SI is not required.

STEP

ACTION/EXPECTED RESPONSE

RESPONSE NOT OBTAINED

.....

CAUTION

IF AN SI SIGNAL IS ACTUATED PRIOR TO PERFORMING STEP 10 OF THIS PROCEDURE, THEN SI SHOULD BE RESET TO PERMIT MANUAL LOADING OF EQUIPMENT ON AN AC EMERGENCY BUS.

.....

- NOTE:
- o CSFSTs should be monitored for information only. FR procedures should not be implemented prior to completion of Step 10.
 - 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.
 - o FOLDOUT page should be open and monitored periodically.

1 Check RCP Seal Isolation Status:

- | | |
|---|---|
| <ul style="list-style-type: none"> a. RCP seal injection needle valves - CLOSED <ul style="list-style-type: none"> • V-300A • V-300B b. RCP CCW return valves - CLOSED <ul style="list-style-type: none"> • MOV-759A • MOV-759B | <ul style="list-style-type: none"> a. Dispatch A0 to locally close valves before starting charging pump. b. <u>IF</u> valves open or position not known, <u>THEN</u> check CCW pump status: <ul style="list-style-type: none"> 1) <u>IF</u> pump running, <u>THEN</u> go to Step 2. 2) <u>IF</u> pump <u>NOT</u> running, <u>THEN</u> manually close valves. <p><u>IF</u> valve(s) can <u>NOT</u> be closed, <u>THEN</u> place switches for RCP thermal barrier CCW outlet valves to CLOSE.</p> <ul style="list-style-type: none"> • AOV-754A • AOV-754B |
|---|---|

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
2	Check CI Annunciator A-26, CONTAINMENT ISOLATION - EXTINGUISHED	Perform the following: a. Depress CI reset pushbutton b. Verify annunciator A-26, CONTAINMENT ISOLATION, extinguished.

STEP

ACTION/EXPECTED RESPONSE

RESPONSE NOT OBTAINED

3 Establish IA to CNMT:

a. Verify non-safeguards busses energized from offsite power

o Bus 13 normal feed - CLOSED

-OR-

o Bus 15 normal feed - CLOSED

b. Check SW pumps - AT LEAST TWO PUMPS RUNNING

c. Verify turbine building SW isolation valves - OPEN

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

a. Perform the following:

1) Close non-safeguards bus tie breakers:

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

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

IF no SW pumps are available.
THEN perform the following:

1) Pull stop any D/G that is NOT supplied by alternate cooling, AND immediately depress associated VOLTAGE SHUTDOWN pushbutton.

2) Refer to ATT-2.4. ATTACHMENT NO SW PUMPS.

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

1) Restore IA using service air compressor OR diesel air compressor (Refer to ATT-11.2. ATTACHMENT DIESEL AIR COMPRESSOR).

2) Go to Step 3d.

c. Perform the following:

1) Manually align valves.

2) Dispatch AO to locally reset compressors as necessary.

This Step continued on the next page.

STEP

ACTION/EXPECTED RESPONSE

RESPONSE NOT OBTAINED

(Step 3 continued from previous page)

- | | |
|--|---|
| <p>d. Start adequate air compressor(s)
(75 kw each)</p> <p>e. Check IA supply:</p> <ul style="list-style-type: none">o Pressure - GREATER THAN
60 PSIGo Pressure - STABLE OR
INCREASING <p>f. Reset both trains of XY relays
for IA to CNMT (AOV-5392) if
necessary</p> <p>g. Verify IA to CNMT AOV-5392 - OPEN</p> | <p>d. <u>IF</u> electric air compressors can
<u>NOT</u> be started. <u>THEN</u> start
diesel air compressor (Refer to
ATT-11.2, ATTACHMENT DIESEL AIR
COMPRESSOR).</p> <p>e. Perform the following:</p> <ol style="list-style-type: none">1) Continue attempts to restore
IA (Refer to AP-IA.1. LOSS OF
INSTRUMENT AIR).2) Continue with Step 4. <u>WHEN</u>
IA restored. <u>THEN</u> do Steps 3f
and g. |
|--|---|

STEP

ACTION/EXPECTED RESPONSE

RESPONSE NOT OBTAINED

.....
CAUTION
 THE LOADS PLACED ON THE ENERGIZED AC EMERGENCY BUS SHOULD NOT EXCEED THE
 CAPACITY OF THE POWER SOURCE.

4 Manually Load Following
 Equipment On AC Emergency
 Busses:

- a. Start one CCW pump (122 kw)
- b. Energize MCCs as power supply permits
 - MCC A from Bus 13
 - MCC B from Bus 15
 - MCC E from Bus 15
 - MCC F from Bus 15
- c. Verify instrument bus D -
 ENERGIZED
- d. WHEN bus 15 restored. THEN reset
 control room lighting
- e. Start at least one CNMT RECIRC
 fan
- f. Restore Rx head cooling as power
 supply permits:
 - 1) Start one Rx compartment
 cooling fan (23 kw each)
 - 2) Start both control rod shroud
 fans (45 kw each)
- g. Dispatch AO to establish normal
 shutdown alignment (Refer to
 ATT-17.0. ATTACHMENT SD-1)

- c. Restore power to instrument bus
 D from MCC B or MCC A
 (maintenance supply).
- 1) 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)
- 2) Manually start at least one
 fan (45 kw)

STEP

ACTION/EXPECTED RESPONSE

RESPONSE NOT OBTAINED

5 Check If Charging Flow Has
Been Established:

a. Charging pumps - ANY RUNNING

a. Perform the following:

1) Ensure seal injection needle valves to both RCPs isolated:

- RCP A, V-300A
- RCP B, V-300B

2) Ensure HCV-142 open. demand at 0%.

b. Charging pump suction aligned to RWST:

b. Manually align valves as necessary.

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

IF LCV-112B can NOT be opened. THEN dispatch AO to locally open V-358, manual charging pump suction from RWST (charging pump room).

IF LCV-112C can NOT be closed. THEN perform the following:

1) Direct AO to locally open V-358, manual charging pump suction from RWST (charging pump room).

2) Verify charging pump A NOT running and place in PULL STOP.

3) WHEN V-358 open, THEN direct AO to close V-268 to isolate charging pumps B and C from VCT (charging pump room).

c. Start charging pumps (75 kw each) as necessary and adjust charging flow to restore PRZR level.

EOP:

ECA-0.1

TITLE: .

LOSS OF ALL AC POWER RECOVERY WITHOUT SI
REQUIRED

REV: 23

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STEP

ACTION/EXPECTED RESPONSE

RESPONSE NOT OBTAINED

* 6 Monitor SI Initiation
Criteria:

- a. RCS subcooling based on core exit T/Cs - GREATER THAN 0°F USING FIG-1.0. FIGURE MIN SUBCOOLING
- b. PRZR level - GREATER THAN 5% [30% adverse CNMT]

a. Go to ECA-0.2, LOSS OF ALL AC POWER RECOVERY WITH SI REQUIRED, Step 1.

b. Control charging flow to maintain PRZR level.

IF PRZR level can NOT be maintained, THEN go to ECA-0.2, LOSS OF ALL AC POWER RECOVERY WITH SI REQUIRED, Step 1.

7 Check PRZR Level - GREATER THAN 13% [40% FOR ADVERSE CONTAINMENT]

Control charging flow as necessary.

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

.....

CAUTION

- o 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).
- o IF S/G NR LEVEL DECREASES TO LESS THAN 5% [25% ADVERSE CNMT] AND FEED FLOW IS LESS THAN 200 GPM, THEN THE MDAFW PUMPS SHOULD BE MANUALLY LOADED ON AC EMERGENCY BUS TO SUPPLY WATER TO THE S/G(S).

.....

- NOTE:
- o If MDAFW pump operation is not required, pump switches should be maintained in PULL-STOP to prevent automatic start.
 - o TDAFW pump flow control AOVs may drift open on loss of IA.

* 8 Monitor Intact S/G Levels:

- | | |
|--|---|
| <ul style="list-style-type: none"> a. Narrow range level - GREATER THAN 5% [25% adverse CNMT] | <ul style="list-style-type: none"> a. Maintain total feed flow greater than 200 gpm until narrow range level greater than 5% [25% adverse CNMT] in at least one S/G. <p><u>IF</u> feed flow less than 200 gpm.
<u>THEN</u> perform the following:</p> <ol style="list-style-type: none"> 1) Verify MDAFW pump discharge valves open. <ul style="list-style-type: none"> • MOV-4007 • MOV-4008 2) Manually start MDAFW pumps as necessary (223 kw each). |
| <ul style="list-style-type: none"> b. Control feed flow to maintain narrow range level between 17% [25% adverse CNMT] and 52% | |

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

9 Establish S/G Pressure Control:

- a. Adjust S/G ARV controllers to maintain existing S/G pressure
- b. Verify S/G ARV controllers in AUTO
- c. Dispatch AO to perform ATT-17.1. ATTACHMENT SD-2

.....

CAUTION

IF AN SI SIGNAL IS ACTUATED AFTER THE SI PUMP SWITCHES ARE PLACED IN AUTO, THEN ECA-0.2, LOSS OF ALL AC POWER RECOVERY WITH SI REQUIRED, SHOULD BE PERFORMED.

.....

NOTE: Safeguards pump switches should be placed in AUTO only if associated bus is energized.

10 Place Following Pump Switches In AUTO:

- SI pumps
- RHR pumps
- CNMT spray pumps

EOP:

ECA-0.1

TITLE: .

LOSS OF ALL AC POWER RECOVERY WITHOUT SI
REQUIRED

REV: 23

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STEP

ACTION/EXPECTED RESPONSE

RESPONSE NOT OBTAINED

NOTE: FR procedures may now be implemented as necessary.

11 Verify Adequate SW Flow To
CCW Hx:

a. Verify at least two SW pumps -
RUNNING

b. Verify AUX BLDG SW isolation
valves - OPEN

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

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

- 1) IF NO SW pumps running, THEN
perform the following:
 - a) Pull stop any D/G that is
NOT supplied by alternate
cooling. AND immediately
depress associated VOLTAGE
SHUTDOWN pushbutton.
 - b) Refer to ATT-2.4,
ATTACHMENT NO SW PUMPS.
- 2) IF only one SW pump running,
THEN refer to AP-SW.2. LOSS
OF SERVICE WATER.
- 3) Go to Step 17.

b. Manually align valves. IF
valves must be locally operated,
THEN continue with Step 17.
WHEN SW restored to AUX BLDG,
THEN do Steps 11c through 16.

This Step continued on the next page.

EOP:

ECA-0.1

TITLE:

LOSS OF ALL AC POWER RECOVERY WITHOUT SI
REQUIRED

REV: 23

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STEP

ACTION/EXPECTED RESPONSE

RESPONSE NOT OBTAINED

(Step 11 continued from previous page)

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

c. Perform the following:

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

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

2) Direct AO to adjust SW flow
to required value

o IF on normal SW discharge:

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

-OR-

o IF on alternate SW
discharge:

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

EOP: ECA-0.1	TITLE: LOSS OF ALL AC POWER RECOVERY WITHOUT SI REQUIRED	REV: 23 PAGE 14 of 21
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STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
12	Check If Normal CVCS Operation Can Be Established	
	a. Verify IA restored: <ul style="list-style-type: none"> o IA to CNMT (AOV-5392) - OPEN o IA pressure - GREATER THAN 60 PSIG b. Charging pump - ANY RUNNING	a. Continue with Step 17. <u>WHEN</u> IA restored, <u>THEN</u> do Steps 12 through 16. . . b. Continue with Step 17. <u>WHEN</u> any charging pump running, <u>THEN</u> do Steps 13 through 16.
13	Verify PRZR Level - GREATER THAN 13% [40% adverse CNMT]	Continue with Step 17. <u>WHEN</u> PRZR level increases to greater than 13% [40% adverse CNMT], <u>THEN</u> do Steps 14 through 16.

STEP

ACTION/EXPECTED RESPONSE

RESPONSE NOT OBTAINED

14 Establish Normal Letdown:

Consult TSC to determine if excess
letdown should be placed in service.

- 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)
 - AOV-371, letdown isolation
valve
 - AOV-427, loop B cold leg to
REGEN Hx
- 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 if
necessary
- e. Open AOV-371 and AOV-427
- f. Open letdown orifice valves as
necessary
- g. Place PCV-135 in AUTO at 250 psig
- h. Place TCV-130 in AUTO at the
normal setpoint
- i. Adjust charging pump speed and
HCV-142 as necessary

STEP

ACTION/EXPECTED RESPONSE

RESPONSE NOT OBTAINED

15 Check VCT Makeup System:

a. Verify the following:

- 1) Boric acid and RMW flow control valves - SET FOR REQUIRED CSD CONCENTRATION (Refer to FIG-2.0, FIGURE SDM)
- 2) At least one BA and RMW pump in AUTO
- 3) RMW mode selector switch in AUTO
- 4) RMW control armed - RED LIGHT LIT

b. Check VCT level

- o Level - GREATER THAN 20%
-OR-
- o Level - STABLE OR INCREASING

a. IF VCT auto makeup can NOT be established, THEN manually control VCT level (Refer to ER-CVCS.1, REACTOR MAKEUP CONTROL MALFUNCTION).

b. Manually increase VCT makeup flow as follows:

- 1) Ensure BA transfer pumps and RMW pumps running. IF NOT, THEN dispatch AO to 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.

IF VCT level can NOT be restored, THEN go to Step 17.

EOP:

ECA-0.1

TITLE: .

LOSS OF ALL AC POWER RECOVERY WITHOUT SI
REQUIRED

REV: 23

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STEP

ACTION/EXPECTED RESPONSE

RESPONSE NOT OBTAINED

16 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 17. WHEN
VCT level greater than 40%.
THEN do Step 16b.b. Verify charging pumps aligned to
VCT

o LCV-112C - OPEN

o LCV-112B - CLOSED

b. Manually align valves as
necessary.

17 Control PRZR Level:

a. Check letdown - IN SERVICE

a. Stop and start charging pumps as
necessary to control PRZR level.b. Maintain PRZR level between 13%
[40% adverse CNMT] and 50%

STEP

ACTION/EXPECTED RESPONSE

RESPONSE NOT OBTAINED

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

18 Establish PRZR Pressure Control:

a. Check letdown - IN SERVICE

a. Perform the following:

- 1) Use PRZR heaters and one PRZR PORV to maintain RCS pressure.

IF IA NOT available. THEN
Refer to ATT-12.0, ATTACHMENT
N2 PORVS to operate PORV.

- 2) Go to Step 19.

b. Use PRZR heaters and auxiliary spray valve (AOV-296) to maintain RCS pressure

19 Verify Natural Circulation:

Increase dumping steam from intact S/Gs.

- o RCS subcooling based on core exit T/Cs - GREATER THAN 0°F USING FIG-1.0. FIGURE MIN SUBCOOLING
- o S/G pressures - STABLE OR DECREASING
- o RCS hot leg temperatures - STABLE OR DECREASING
- o Core exit T/Cs - STABLE OR DECREASING
- o RCS cold leg temperatures - AT SATURATION TEMPERATURE FOR S/G PRESSURE

EOP: ECA-0.1	TITLE: LOSS OF ALL AC POWER RECOVERY WITHOUT SI REQUIRED	REV: 23 PAGE 19 of 21
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STEP

ACTION/EXPECTED RESPONSE

RESPONSE NOT OBTAINED

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

20 Check If Source Range Detectors Should Be Energized:

a. Source range channels -
DEENERGIZED

b. Check intermediate range flux -
EITHER CHANNEL LESS THAN
10⁻¹⁰ AMPS

c. Check the following:

- o Both intermediate range channels - LESS THAN 10⁻¹⁰ AMPS

-OR-

- o Greater than 20 minutes since reactor trip

d. Verify source range detectors -
ENERGIZED

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

a. Go to Step 20e.

b. Perform the following:

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

2) Continue with Step 21. WHEN flux is LESS THAN 10⁻¹⁰ amps on any operable channel, THEN do Steps 20c through e.

c. Continue with Step 21. WHEN either condition met, THEN do Steps 20d and e.

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 21.

EOP:

ECA-0.1

TITLE:

LOSS OF ALL AC POWER RECOVERY WITHOUT SI
REQUIRED

REV: 23

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STEP

ACTION/EXPECTED RESPONSE

RESPONSE NOT OBTAINED

21 Verify Adequate Shutdown
Margin:

- a. Direct RP to sample RCS and PRZR liquid for boron concentration
- b. Verify boron concentration - GREATER THAN REQUIREMENTS OF FIG-2.0, FIGURE SDM

b. Borate as necessary.

22 Maintain Stable Plant
Conditions

- a. RCS pressure - STABLE
- b. RCS temperature - STABLE
- c. PRZR level - BETWEEN 13% [40% adverse CNMT] and 50%
- d. Intact S/G level - BETWEEN 17% [25% adverse CNMT] and 52%

a. Control PRZR heaters and auxiliary spray if available.

b. Control dumping steam as necessary.

c. Control charging as necessary.

d. Control S/G feed flow as necessary.

*23 Monitor SI Initiation
Criteria:

- a. RCS subcooling based on core exit T/Cs - GREATER THAN 0°F USING FIG-1.0, FIGURE MIN SUBCOOLING
- b. PRZR level - GREATER THAN 5% [30% adverse CNMT]

a. Go to ECA-0.2, LOSS OF ALL AC POWER RECOVERY WITH SI REQUIRED, Step 1.

b. Control charging flow to maintain PRZR level.

IF PRZR level can NOT be maintained, THEN go to ECA-0.2, LOSS OF ALL AC POWER RECOVERY WITH SI REQUIRED, Step 1.

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
24	Try To Restore Offsite Power To All AC Busses (Refer to ER-ELEC.1, RESTORATION OF OFFSITE POWER)	Maintain plant condition stable using AC emergency power.
25	Implement Plant Recovery Procedures:	
	a. Review plant systems for realignment to normal conditions (Refer to ATT-26.0. ATTACHMENT RETURN TO NORMAL OPERATIONS)	
	b. Consult plant staff to determine if RCS cooldown is necessary	b. <u>IF</u> cooldown <u>NOT</u> required, <u>THEN</u> go to O-3. HOT SHUTDOWN WITH XENON PRESENT.
	c. At least one RCP - OPERABLE	c. Go to ES-0.2. NATURAL CIRCULATION COOLDOWN.
	d. Go to O-2.2. PLANT SHUTDOWN FROM HOT SHUTDOWN TO COLD SHUTDOWN	

-END-

EOP: ECA-0.1	TITLE: LOSS OF ALL AC POWER RECOVERY WITHOUT SI REQUIRED	REV: 23 PAGE 1 of 1
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ECA-0.1 APPENDIX LIST

TITLE

- 1) FIGURE MIN SUBCOOLING (FIG-1.0)
- 2) FIGURE SDM (FIG-2.0)
- 3) ATTACHMENT SD-1 (ATT-17.0)
- 4) ATTACHMENT SD-2 (ATT-17.1)
- 5) ATTACHMENT N2 PORVS (ATT-12.0)
- 6) ATTACHMENT NO SW PUMPS (ATT-2.4)
- 7) ATTACHMENT RETURN TO NORMAL OPERATIONS (ATT-26.0)
- 8) ATTACHMENT DIESEL AIR COMPRESSOR (ATT-11.2)
- 9) FOLDOUT

EOP: ECA-0.1	TITLE: . LOSS OF ALL AC POWER RECOVERY WITHOUT SI REQUIRED	REV: 23 PAGE 1 of 1
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FOLDOUT PAGE

1. LOSS OF SW CRITERIA

IF no SW pumps are available, THEN perform the following:

- a. Pull stop any D/G that is NOT supplied by alternate cooling, AND immediately depress associated VOLTAGE SHUTDOWN pushbutton.
- b. Refer to ATT-2.4, ATTACHMENT NO SW PUMPS.

EOP: ECA-2.1	TITLE: UNCONTROLLED DEPRESSURIZATION OF BOTH STEAM GENERATORS	REV: 27 PAGE 1 of 36
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ROCHESTER GAS AND ELECTRIC CORPORATION

GINNA STATION

CONTROLLED COPY NUMBER 23

Residling
RESPONSIBLE MANAGER

1-7-2004
EFFECTIVE DATE

CATEGORY 1.0

REVIEWED BY: _____

EOP: ECA-2.1	TITLE: . UNCONTROLLED DEPRESSURIZATION OF BOTH STEAM GENERATORS	REV: 27 PAGE 2 of 36
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- A. PURPOSE - This procedure provides actions to mitigate and minimize a loss of secondary coolant from both steam generators.
- B. ENTRY CONDITIONS/SYMPTOMS
 - 1. ENTRY CONDITIONS - This procedure is entered from:
 - a. E-2, FAULTED STEAM GENERATOR ISOLATION, when an uncontrolled depressurization of both steam generators occurs.

STEP

ACTION/EXPECTED RESPONSE

RESPONSE NOT OBTAINED

.....
CAUTION
 IF THE TDAFW PUMP IS THE ONLY AVAILABLE SOURCE OF FEED FLOW, THEN STEAM SUPPLY TO THE TDAFW PUMP MUST BE MAINTAINED FROM ONE S/G.

- NOTE:
- o FOLDOUT page should be open AND monitored periodically.
 - 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 Check Secondary Pressure Boundary:

Manually close valves one loop at a time.

- o MSIVs - CLOSED
- o MFW flow control valves - CLOSED
 - MFW regulating valves
 - MFW bypass valves
- o MFW pump discharge valves - CLOSED
- o S/G blowdown and sample valves - CLOSED
- o TDAFW pump steam supply valves - PULL STOP
- o TDAFW pump flow control valves - CLOSED
- o S/G ARVs - CLOSED
- o Dispatch AO to locally isolate S/Gs (Refer to ATT-10.0, ATTACHMENT FAULTED S/G)

IF valves can NOT be closed, THEN dispatch AO to locally isolate flowpaths, as necessary, one loop at a time.

STEP

ACTION/EXPECTED RESPONSE

RESPONSE NOT OBTAINED

.....

CAUTION

A MINIMUM FEED FLOW OF 50 GPM MUST BE MAINTAINED TO EACH S/G WITH A NARROW RANGE LEVEL LESS THAN 5% [25% ADVERSE CNMT].

.....

NOTE: Shutdown margin should be monitored during RCS cooldown (Refer to FIG-2.0. FIGURE SDM).

2 Control Feed Flow To Minimize RCS Cooldown:

- | | |
|--|---|
| a. Check cooldown rate in RCS cold legs - LESS THAN 100°F/HR | a. Decrease feed flow to 50 gpm to each S/G and go to Step 2c. |
| b. Check narrow range level in both S/Gs - LESS THAN 50% | b. Control feed flow to maintain narrow range level less than 50% in both S/Gs. |
| c. Check RCS hot leg temperatures - STABLE OR DECREASING | c. Control feed flow or dump steam to stabilize RCS hot leg temperatures. |

* 3 Monitor RCP Trip Criteria:

- | | |
|---|------------------|
| a. RCP status - ANY RCP RUNNING | a. Go to Step 4. |
| b. SI pumps - AT LEAST TWO RUNNING | b. Go to Step 4. |
| c. RCS pressure minus maximum S/G pressure - LESS THAN 175 psig [400 psig adverse CNMT] | c. Go to Step 4. |
| d. Stop both RCPs | |

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 4B).

* 4 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 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

5 Check Secondary Radiation Levels - NORMAL

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

- 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

.....

CAUTION

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

.....

6 Reset SI

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.

.....

* 7 Monitor If RHR Pumps Should Be Stopped:

- | | |
|--|---|
| <ul style="list-style-type: none"> a. RHR pumps - ANY RUNNING IN INJECTION MODE b. Check RCS Pressure: <ul style="list-style-type: none"> 1) Pressure - GREATER THAN 250 psig [465 psig adverse CNMT] 2) Pressure - STABLE OR INCREASING c. Stop RHR pumps and place in AUTO | <ul style="list-style-type: none"> a. Go to Step 8. 1) Go to E-1. LOSS OF REACTOR OR SECONDARY COOLANT. Step 1. 2) Go to Step 8. |
|--|---|

STEP

ACTION/EXPECTED RESPONSE

RESPONSE NOT OBTAINED

* 8 Monitor If CNMT Spray Should Be Stopped:

- | | |
|---|--|
| <p>a. CNMT spray pumps - RUNNING</p> <p>b. Check the following:</p> <ul style="list-style-type: none"> o CNMT pressure - LESS THAN 4 PSIG o Sodium hydroxide tank level - LESS THAN 55% <p>c. Reset CNMT spray</p> <p>d. Check NaOH flow (FI-930) - NO FLOW</p> <p>e. Stop CNMT spray pumps and place in AUTO</p> <p>f. Close CNMT spray pump discharge valves</p> <ul style="list-style-type: none"> • MOV-860A • MOV-860B • MOV-860C • MOV-860D | <p>a. Go to Step 9.</p> <p>b. Continue with Step 9. <u>WHEN BOTH</u> conditions satisfied, <u>THEN</u> do Steps 8c through f.</p> <p>d. Place NaOH tank outlet valve switches to CLOSE.</p> <ul style="list-style-type: none"> • AOV-836A • AOV-836B |
|---|--|

STEP

ACTION/EXPECTED RESPONSE

RESPONSE NOT OBTAINED

9 Check RWST Level - GREATER THAN 28%

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

10 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.

11 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) IF NO SW pumps running, THEN perform the following:
 - a) Pull stop any D/G that is NOT supplied by alternate cooling, AND immediately depress associated VOLTAGE SHUTDOWN pushbutton.
 - b) Refer to ATT-2.4. ATTACHMENT NO SW PUMPS.
- 3) IF only one SW pump running, THEN refer to AP-SW.2. LOSS OF SERVICE WATER.

- b. Dispatch AO to establish normal shutdown alignment (Refer to ATT-17.0. ATTACHMENT SD-1)

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STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
12 Establish IA to CNMT:	<p>a. Verify non-safeguards busses energized from offsite power</p> <ul style="list-style-type: none"> o Bus 13 normal feed - CLOSED <p style="text-align: center;">-OR-</p> <ul style="list-style-type: none"> o Bus 15 normal feed - CLOSED 	<p>a. Perform the following:</p> <ol style="list-style-type: none"> 1) Close non-safeguards bus tie breakers: <ul style="list-style-type: none"> • Bus 13 to Bus 14 tie • Bus 15 to Bus 16 tie 2) Verify adequate emergency D/G capacity to run air compressors (75 kw each). <u>IF NOT, THEN</u> perform the following: <ul style="list-style-type: none"> o Start diesel air compressor (Refer to ATT-11.2, ATTACHMENT DIESEL AIR COMPRESSOR) <p style="text-align: center;">-OR-</p> <ul style="list-style-type: none"> o Evaluate if CNMT RECIRC fans should be stopped (Refer to ATT-4.0, ATTACHMENT CNMT RECIRC FANS). 3) <u>WHEN</u> bus 15 restored, <u>THEN</u> reset control room lighting.
b. Check SW pumps - AT LEAST TWO PUMPS RUNNING		<p>b. Perform the following:</p> <ol style="list-style-type: none"> 1) Restore IA using service air compressor <u>OR</u> diesel air compressor (Refer to ATT-11.2, ATTACHMENT DIESEL AIR COMPRESSOR) 2) Go to Step 12d.

This Step continued on the next page.

EOP:

ECA-2.1

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UNCONTROLLED DEPRESSURIZATION OF BOTH STEAM
GENERATORS

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STEP

ACTION/EXPECTED RESPONSE

RESPONSE NOT OBTAINED

(Step 12 continued from previous page)

c. Verify SW isolation valves to
turbine building - OPEN

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

d. Verify adequate air
compressor(s) - RUNNING

e. Check IA supply:

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

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

g. Verify IA to CNMT AOV-5392 - OPEN

c. Perform the following:

- 1) Manually align valves.
- 2) Dispatch AO to locally reset
compressors as necessary.

d. Manually start electric air
compressors as power supply
permits (75 kw each). IF
electric air compressors can NOT
be started, THEN start diesel
air compressor (Refer to
ATT-11.2, ATTACHMENT DIESEL AIR
COMPRESSOR).

e. Perform the following:

- 1) Continue attempts to restore
IA (Refer to AP-IA.1, LOSS OF
INSTRUMENT AIR).
- 2) Continue with Step 13. WHEN
IA restored, THEN do Steps
12f and g.

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
13	Check If SI ACCUMs Should Be Isolated:	
	a. Both RCS hot leg temperatures - LESS THAN 400°F	a. Go to Step 14.
	b. Dispatch AO with locked valve key to locally close breakers for SI ACCUM discharge valves	
	<ul style="list-style-type: none"> • MOV-841. MCC C position 12F • MOV-865. MCC D position 12C 	
	c. Close SI ACCUM discharge valves	c. Vent any unisolated ACCUMs:
	<ul style="list-style-type: none"> • MOV-841 • MOV-865 	1) Open vent valves for unisolated SI ACCUMs.
		<ul style="list-style-type: none"> • ACCUM A. AOV-834A • ACCUM B. AOV-834B
		2) Open HCV-945.
		<u>IF</u> an accumulator can <u>NOT</u> be isolated or vented, <u>THEN</u> consult TSC for contingency actions.
	d. Locally reopen breakers for MOV-841 and MOV-865	
14	Check Normal Power Available To Charging Pumps:	
	o Bus 14 normal feed breaker - CLOSED	Verify adequate emergency D/G capacity to run charging pumps (75 kw each).
	o Bus 16 normal feed breaker - CLOSED	<u>IF NOT</u> , <u>THEN</u> evaluate if CNMT RECIRC fans can be stopped (Refer to ATT-4.0, ATTACHMENT CNMT RECIRC FANS).

STEP

ACTION/EXPECTED RESPONSE

RESPONSE NOT OBTAINED

15 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 to close seal injection needle valve(s) to affected RCP:

- RCP A. V-300A
- RCP B. V-300B

2) Ensure HCV-142 open. demand at 0%.

b. Align charging pump suction to RWST:

b. IF LCV-112B can NOT be opened, THEN dispatch AO to locally open V-358. manual charging pump suction from RWST (charging pump room).

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

IF LCV-112C can NOT be closed, THEN perform the following:

1) Direct AO to locally open V-358. manual charging pump suction from RWST (charging pump room).

2) Verify charging pump A NOT running and place in PULL STOP.

3) WHEN V-358 open, THEN direct AO to close V-268 to isolate charging pumps B and C from VCT (charging pump room).

c. Start charging pumps as necessary and adjust charging flow to restore PRZR level

STEP

ACTION/EXPECTED RESPONSE

RESPONSE NOT OBTAINED

***16 Monitor SI Termination
Criteria:**

- | | |
|---|--|
| <p>a. SI pumps - ANY RUNNING</p> | <p>a. Go to Step 18.</p> |
| <p>b. Check RCS pressure:</p> <ul style="list-style-type: none"> o Pressure - GREATER THAN 1625 psig [1825 psig adverse CNMT] o Pressure - STABLE OR INCREASING | <p>b. DO <u>NOT</u> stop SI pumps. Perform the following:</p> <ul style="list-style-type: none"> 1) Energize PRZR heaters and operate PRZR spray as necessary to stabilize RCS pressure greater than 1625 psig [1825 psig adverse CNMT] 2) Return to Step 2. |
| <p>c. RCS subcooling based on core exit T/Cs - GREATER THAN 0°F USING FIG-1.0. FIGURE MIN SUBCOOLING</p> | <p>c. DO <u>NOT</u> stop SI pumps. Return to Step 2.</p> |
| <p>d. PRZR level - GREATER THAN 5% [30% adverse CNMT]</p> | <p>d. Do <u>NOT</u> stop SI pumps. Perform the following:</p> <ul style="list-style-type: none"> 1) <u>IF</u> normal PRZR spray available, <u>THEN</u> try to stabilize RCS pressure with PRZR spray. 2) Return to Step 16a. |

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STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
<u>NOTE:</u>	<ul style="list-style-type: none"> o Following SI termination, RCP trip criteria is no longer applicable. o Foldout Page E-2 transition criteria does not apply while performing steps 17 and 18. 	
17	Stop SI and RHR Pumps And Place In Auto	
18	Monitor SI Reinitiation Criteria:	
	<ul style="list-style-type: none"> a. RCS subcooling based on core exit T/Cs - GREATER THAN 0°F USING FIG-1.0. FIGURE MIN SUBCOOLING b. PRZR level - GREATER THAN 5% [30% adverse CNMT] 	<ul style="list-style-type: none"> a. Manually start SI pumps as necessary and return to Step 2. b. Control charging flow to maintain PRZR level. <u>IF</u> PRZR level can <u>NOT</u> be maintained, <u>THEN</u> manually start SI pumps as necessary and return to Step 2.
19	Check RCS Hot Leg Temperatures - STABLE OR DECREASING	Control feed flow or dump steam to stabilize RCS hot leg temperatures.
20	Check Narrow Range Level In Both S/Gs - LESS THAN 50%	Control feed flow to maintain narrow range level less than 50% in both S/Gs.

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STEP

ACTION/EXPECTED RESPONSE

RESPONSE NOT OBTAINED

21 Verify Adequate SW Flow To
CCW Hx:

a. Verify at least two SW pumps -
RUNNING

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

1) IF NO SW pumps running. THEN
perform the following:

a) Pull stop any D/G that is
NOT supplied by alternate
cooling. AND immediately
depress associated VOLTAGE
SHUTDOWN pushbutton.

b) Refer to ATT-2.4.
ATTACHMENT NO SW PUMPS.

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

3) Go to Step 27.

b. Verify AUX BLDG SW isolation
valves - OPEN

b. Manually align valves.

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

This Step continued on the next page.

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

(Step 21 continued from previous page)

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

c. Perform the following:

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

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

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

o IF on normal SW discharge:

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

-OR-

o IF on alternate SW discharge:

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

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
22	Check If Normal CVCS Operation Can Be Established	
a.	Verify IA restored: <ul style="list-style-type: none"> o IA to CNMT (AOV-5392) - OPEN o IA pressure - GREATER THAN 60 PSIG 	a. Continue with Step 27. <u>WHEN</u> IA restored, <u>THEN</u> do Steps 22 through 26.
b.	Verify instrument bus D - ENERGIZED	b. Energize MCC B. <u>IF</u> MCC B <u>NOT</u> available, <u>THEN</u> perform the following: <ol style="list-style-type: none"> 1) Verify MCC A energized. 2) Place instrument bus D on maintenance supply.
c.	CCW pumps - ANY RUNNING	c. Perform the following: <ol style="list-style-type: none"> 1) <u>IF</u> any RCP #1 seal outlet temperature offscale high, <u>THEN</u> isolate CCW to thermal barrier of affected RCP(s). <ul style="list-style-type: none"> • RCP A. MOV-749A and MOV-759A • RCP B. MOV-749B and MOV-759B 2) Manually start one CCW pump.
d.	Charging pump - ANY RUNNING	d. Continue with Step 27. <u>WHEN</u> any charging pump running, <u>THEN</u> do Steps 23 through 26.

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
23	Verify PRZR Level - GREATER THAN 13% [40% adverse CNMT]	Continue with Step 25. <u>WHEN</u> PRZR level increases to greater than 13% [40% adverse CNMT]. <u>THEN</u> do Step 24.
24	<p>Establish Normal Letdown:</p> <ol style="list-style-type: none"> a. Verify charging line flow to REGEN Hx - GREATER THAN 20 GPM b. Place the following switches to CLOSE: <ul style="list-style-type: none"> • Letdown orifice valves (AOV-200A, AOV-200B, and AOV-202) • AOV-371, letdown isolation valve • AOV-427, loop B cold leg to REGEN Hx c. Place letdown controllers in MANUAL at 40% open <ul style="list-style-type: none"> • TCV-130 • PCV-135 d. Reset both trains of XY relays for AOV-371 and AOV-427 e. Open AOV-371 and AOV-427 f. Open letdown orifice valves as necessary g. Place PCV-135 in AUTO at 250 psig h. Place TCV-130 in AUTO at the normal setpoint i. Adjust charging pump speed and HCV-142 as necessary 	<p><u>IF</u> RCP seal return has been established, <u>THEN</u> establish excess letdown as follows:</p> <ul style="list-style-type: none"> o Place excess letdown divert valve, AOV-312, to NORMAL. o Ensure CCW from excess letdown open, (AOV-745). o Open excess letdown isolation valve AOV-310. o Slowly open HCV-123 to maintain excess letdown temperature less than 195°F and pressure less than 100 psig. o Adjust charging pump speed as necessary. <p><u>IF</u> RCP seal return <u>NOT</u> established, <u>THEN</u> consult TSC to determine if excess letdown should be placed in service.</p>

STEP

ACTION/EXPECTED RESPONSE

RESPONSE NOT OBTAINED

25 Check VCT Makeup System:

- | | |
|--|--|
| <ul style="list-style-type: none"> 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: <ul style="list-style-type: none"> 1) RMW mode selector switch in AUTO 2) RMW control armed - RED LIGHT LIT d. Check VCT level: <ul style="list-style-type: none"> o Level - GREATER THAN 20% <li style="text-align: center;">-OR- o Level - STABLE OR INCREASING | <ul style="list-style-type: none"> c. Adjust controls as necessary. d. Manually increase VCT makeup flow as follows: <ul style="list-style-type: none"> 1) Ensure BA transfer pumps and RMW pumps running. <u>IF NOT</u>, <u>THEN</u> reset MCC C and MCC D UV lockouts as necessary. 2) Place RMW flow control valve HCV-111 in MANUAL and increase RMW flow. 3) Increase boric acid flow as necessary. |
|--|--|

EOP:

ECA-2.1

TITLE:

UNCONTROLLED DEPRESSURIZATION OF BOTH STEAM GENERATORS

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STEP

ACTION/EXPECTED RESPONSE

RESPONSE NOT OBTAINED

26 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 27. WHEN VCT level greater than 40%. THEN do Step 26b.

b. Verify charging pumps aligned to VCT:

b. Manually align valves as necessary.

o LCV-112C - OPEN

o LCV-112B - CLOSED

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STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
27 Check RCP Cooling:	<p>a. Check CCW to RCPs:</p> <ul style="list-style-type: none"> 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 <p>b. Check RCP seal injection:</p> <ul style="list-style-type: none"> o Labyrinth seal D/Ps - GREATER THAN 15 INCHES OF WATER <p style="text-align: center;">-OR-</p> <ul style="list-style-type: none"> o RCP seal injection flow to each RCP - GREATER THAN 6 GPM 	Establish normal cooling to RCPs (Refer to ATT-15.2, ATTACHMENT SEAL COOLING).

STEP

ACTION/EXPECTED RESPONSE

RESPONSE NOT OBTAINED

28 Check If Seal Return Flow
Should Be Established:

- | | |
|--|--|
| <p>a. Verify RCP #1 seal outlet temperature - LESS THAN 235°F</p> <p>b. Verify RCP seal outlet valves - OPEN</p> <ul style="list-style-type: none"> • AOV-270A • AOV-270B <p>c. Reset both trains of XY relays for RCP seal return isolation valve MOV-313</p> <p>d. Open RCP seal return isolation valve MOV-313</p> <p>e. Verify RCP #1 seal leakoff flow - LESS THAN 6.0 GPM</p> <p>f. Verify RCP #1 seal leakoff flow - GREATER THAN 0.8 GPM</p> | <p>a. Go to Step 29.</p> <p>b. Manually open valves as necessary.</p> <p>d. Perform the following:</p> <ol style="list-style-type: none"> 1) Place MOV-313 switch to OPEN. 2) Dispatch AO to locally open MOV-313. <p>e. Perform the following:</p> <ol style="list-style-type: none"> 1) Trip the affected RCP 2) Allow 4 minutes for pump coast down. <u>THEN</u> close the affected RCP seal discharge valve <ul style="list-style-type: none"> • RCP A, AOV-270A • RCP B, AOV-270B <p><u>IF</u> both RCP seal discharge valves are shut. <u>THEN</u> go to Step 29.</p> <p>f. Refer to AP-RCP.1. RCP SEAL MALFUNCTION.</p> |
|--|--|

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STEP

ACTION/EXPECTED RESPONSE

RESPONSE NOT OBTAINED

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

29 Energize Heaters And Operate Normal Spray As Necessary To Maintain RCS Pressure Stable

IF normal spray NOT available and letdown is in service, THEN use auxiliary spray valve (AOV-296).

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

IF IA NOT available, THEN refer to ATT-12.0, ATTACHMENT N2 PORVS.

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STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
30	<p>Verify All AC Busses - ENERGIZED BY OFFSITE POWER</p> <ul style="list-style-type: none"> o Normal feed breakers to all 480 volt busses - CLOSED o 480 bus voltage - GREATER THAN 420 VOLTS o Emergency D/G output breakers - OPEN 	<p>Perform the following:</p> <ul style="list-style-type: none"> a. <u>IF</u> any AC emergency bus normal feed breaker open, <u>THEN</u> ensure associated D/G breaker closed. b. Perform the following, as necessary: <ul style="list-style-type: none"> 1) Close non-safeguards bus tie breakers: <ul style="list-style-type: none"> • Bus 13 to Bus 14 tie • Bus 15 to Bus 16 tie 2) Place the following pumps in PULL STOP: <ul style="list-style-type: none"> • EH pumps • Turning gear oil pump • HP seal oil backup pump 3) Restore power to MCCs. <ul style="list-style-type: none"> • A from Bus 13 • B from Bus 15 • E from Bus 15 • F from Bus 15 4) Start HP seal oil backup pump 5) Ensure D/G load within limits. 6) <u>WHEN</u> bus 15 restored, <u>THEN</u> reset control room lighting. 7) Refer to ATT-8.4, ATTACHMENT SI/UV for other equipment lost with loss of offsite power. c. Try to restore offsite power to all AC busses (Refer to ER-ELEC.1, RESTORATION OF OFFSITE POWER).

EOP:

ECA-2.1

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UNCONTROLLED DEPRESSURIZATION OF BOTH STEAM GENERATORS

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STEP

ACTION/EXPECTED RESPONSE

RESPONSE NOT OBTAINED

CAUTION

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

31 Check RCP Status

a. Both RCPs - STOPPED

a. Go to Step 32.

b. Check RVLIS level (no RCPs) -
≥ 95%

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 FIG-1.0. FIGURE MIN SUBCOOLING
- o Energize PRZR heaters as necessary to saturate PRZR water

IF conditions NOT met. THEN continue with Step 32. WHEN conditions met. THEN do Steps 31c and d.

This Step continued on the next page.

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STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
	(Step 31 continued from previous page)	
c. Establish conditions for starting an RCP:	<ul style="list-style-type: none"> o Ensure Bus 11A or 11B energized. o Refer to ATT-15.0, ATTACHMENT RCP START. 	c. <u>IF</u> conditions can <u>NOT</u> be met, <u>THEN</u> perform the following:
		1) Verify natural circulation (Refer to ATT-13.0, ATTACHMENT NC).
		<u>IF</u> natural circulation can <u>NOT</u> be verified, <u>THEN</u> increase feed flow or dumping steam.
		2) Go to Step 32.
d. Start one RCP.		d. <u>IF</u> an RCP can <u>NOT</u> be started, <u>THEN</u> verify natural circulation (Refer to ATT-13.0, ATTACHMENT NC).
		<u>IF</u> natural circulation can <u>NOT</u> be verified, <u>THEN</u> increase feed flow or dumping steam.

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STEP

ACTION/EXPECTED RESPONSE

RESPONSE NOT OBTAINED

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

32 Check If Source Range Detectors Should Be Energized:

- | | |
|---|--|
| <p>a. Source range channels - DEENERGIZED</p> <p>b. Check intermediate range flux - EITHER CHANNEL LESS THAN 10⁻¹⁰ AMPS</p> <p>c. Check the following:</p> <ul style="list-style-type: none"> o Both intermediate range channels - LESS THAN 10⁻¹⁰ AMPS <p style="text-align: center;">-OR-</p> <ul style="list-style-type: none"> o Greater than 20 minutes since reactor trip <p>d. Verify source range detectors - ENERGIZED</p> <p>e. Transfer Rk-45 recorder to one source range and one intermediate range channel.</p> | <p>a. Go to Step 32e.</p> <p>b. Perform the following:</p> <ul style="list-style-type: none"> 1) <u>IF</u> neither intermediate range channel is decreasing <u>THEN</u> initiate boration. 2) Continue with Step 33. <u>WHEN</u> flux is LESS THAN 10⁻¹⁰ amps on any operable channel. <u>THEN</u> do Steps 32c, d and e. <p>c. Continue with step 33. <u>WHEN</u> either condition met. <u>THEN</u> do Steps 32d and e.</p> <p>d. Manually energize source range detectors by depressing P-6 permissive defeat pushbuttons (2 of 2).</p> <p><u>IF</u> source ranges can <u>NOT</u> be restored, <u>THEN</u> refer to ER-NIS.1. SR MALFUNCTION and go to Step 33.</p> |
|---|--|

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STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
33 Check If Emergency D/Gs Should Be Stopped:	<ul style="list-style-type: none"> a. Verify AC emergency busses energized by offsite power: <ul style="list-style-type: none"> o Emergency D/G output breakers - OPEN o AC emergency bus voltage - GREATER THAN 420 VOLTS o AC emergency bus normal feed breakers - CLOSED b. Stop any unloaded emergency D/G and place in standby (Refer to ATT-8.1. ATTACHMENT D/G STOP) 	<ul style="list-style-type: none"> a. Try to restore offsite power (Refer to ER-ELEC.1. RESTORATION OF OFFSITE POWER).

STEP

ACTION/EXPECTED RESPONSE

RESPONSE NOT OBTAINED

34 Establish Normal Shutdown Alignment:

a. Check condenser - AVAILABLE

a. Dispatch AO to perform ATT-17.1, 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
- 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)

d. Verify ATT-17.0, ATTACHMENT SD-1 - COMPLETE

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ECA-2.1

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UNCONTROLLED DEPRESSURIZATION OF BOTH STEAM GENERATORS

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STEP

ACTION/EXPECTED RESPONSE

RESPONSE NOT OBTAINED

35 Maintain Plant Conditions -
STABLE

- o RCS pressure
- o PRZR level
- o RCS temperatures

Control plant systems as necessary to maintain conditions stable.

36 Monitor SI Reinitiation
Criteria:

- a. RCS subcooling based on core exit T/Cs - GREATER THAN 0°F USING FIG-1.0. FIGURE MIN SUBCOOLING
- b. PRZR level - GREATER THAN 5% [30% adverse CNMT]

a. Manually start SI pumps as necessary. Return to Step 2.

b. Control charging flow to maintain PRZR level.

IF PRZR level can NOT be maintained, THEN manually start SI pumps as necessary. Return to Step 2.

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STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
37	Check If SI ACCUMs Should Be Isolated:	
	<ul style="list-style-type: none"> a. Check the following: <ul style="list-style-type: none"> o RCS subcooling based on core exit T/Cs - GREATER THAN 0°F USING FIG-1.0. FIGURE MIN SUBCOOLING o PRZR level - GREATER THAN 5% [30% adverse CNMT] 	a. Go to Step 38.
	<ul style="list-style-type: none"> b. Dispatch AO with locked valve key to locally close breakers for SI ACCUM discharge valves <ul style="list-style-type: none"> • MOV-841, MCC C position 12F • MOV-865, MCC D position 12C 	
	<ul style="list-style-type: none"> c. Close SI ACCUM discharge valves <ul style="list-style-type: none"> • MOV-841 • MOV-865 	<ul style="list-style-type: none"> c. Vent any unisolated ACCUMs: <ul style="list-style-type: none"> 1) Open vent valves for unisolated SI ACCUMs. <ul style="list-style-type: none"> • ACCUM A, AOV-834A • ACCUM B, AOV-834B 2) Open HCV-945. <p><u>IF</u> an accumulator can <u>NOT</u> be isolated or vented, <u>THEN</u> consult TSC for contingency actions.</p>
	<ul style="list-style-type: none"> d. Locally reopen breakers for MOV-841 and MOV-865 	

STEP

ACTION/EXPECTED RESPONSE

RESPONSE NOT OBTAINED

**38 Verify Adequate Shutdown
Margin**

- a. Direct RP to sample RCS for boron concentration
- b. Verify boron concentration -
GREATER THAN REQUIREMENTS OF
FIG-2.0, FIGURE SDM

b. Borate as necessary.

**39 Check RCS Hot Leg
Temperatures - LESS THAN 350°F**Control feed flow and dump steam to
establish RCS cooldown rate less
than 100°F/hr in RCS cold legs.***40 Monitor RCP Operation:**

- a. RCPs - ANY RUNNING
- b. Check the following:
 - o RCP #1 seal D/P - GREATER
THAN 220 PSID
 - o RCP #1 seal leakoff - WITHIN
THE NORMAL OPERATING RANGE OF
FIG-4.0, FIGURE RCP SEAL
LEAKOFF

a. Go to Step 41.

b. Stop affected RCP(s).

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STEP

ACTION/EXPECTED RESPONSE

RESPONSE NOT OBTAINED

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

***41** Check RCS Pressure - LESS THAN 400 PSIG [300 PSIG adverse CNMT]

Perform the following:

- a. Depressurize RCS using normal PRZR spray.
IF normal spray NOT available and letdown is in service, THEN use auxiliary spray.
IF NOT, THEN use one PRZR PORV.
IF IA NOT available, THEN refer to ATT-12.0, ATTACHMENT N2 PORVS.
- b. Maintain RCS subcooling based on core exit T/Cs - GREATER THAN 0°F using FIG-1.0, FIGURE MIN SUBCOOLING.
- c. Return to Step 36.

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
42 Check If RHR Normal Cooling Can Be Established:		
a. RCS cold leg temperature - LESS THAN 350°F		a. Return to Step 36.
b. RCS pressure - LESS THAN 400 psig [300 psig adverse CNMT]		b. Return to Step 40.
c. Place letdown pressure controller (PCV-135) in MANUAL CLOSED		
d. Check following valves - OPEN <ul style="list-style-type: none"> • AOV-371. letdown isolation valve • AOV-427. loop B cold leg to REGEN Hx • At least one letdown orifice valve (AOV-200A, AOV-200B, or AOV-202) 		d. Perform the following: <ol style="list-style-type: none"> 1) Reset both trains of XY relays for AOV-371 and AOV-427. 2) Open AOV-371 and AOV-427. 3) Open one letdown orifice valve.
e. Verify pressure on PI-135 - LESS THAN 400 PSIG		e. Return to Step 40.
f. Place RCS overpressure protection system in service (Refer to O-7, ALIGNMENT AND OPERATION OF THE REACTOR VESSEL OVERPRESSURE PROTECTION SYSTEM)		f. <u>IF</u> RCS overpressure protection system can <u>NOT</u> be placed in service, <u>THEN</u> notify TSC of potential Tech Spec violation if RHR system is placed in service.
g. Establish RHR normal cooling (Refer to ATT-14.1, ATTACHMENT RHR COOL)		

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ECA-2.1

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GENERATORS

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STEP

ACTION/EXPECTED RESPONSE

RESPONSE NOT OBTAINED

43 Continue RCS Cooldown To Cold
Shutdown:

a. Maintain cooldown rate in RCS
cold legs - LESS THAN 100°F/HR

b. Check narrow range level in both
S/Gs - LESS THAN 50%

b. Control feed flow to maintain
narrow range level less than 50%
in both S/Gs.

44 Check Core Exit T/Cs - LESS
THAN 200°F

Return to Step 43.

45 Evaluate Long Term Plant
Status:

a. Maintain cold shutdown conditions

b. Consult TSC

-END-

EOP: ECA-2.1	TITLE: UNCONTROLLED DEPRESSURIZATION OF BOTH STEAM GENERATORS	REV: 27 PAGE 1 of 1
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ECA-2.1 APPENDIX LIST

TITLE

- 1) RED PATH SUMMARY
- 2) FIGURE MIN SUBCOOLING (FIG-1.0)
- 3) FIGURE SDM (FIG-2.0)
- 4) FIGURE RCP SEAL LEAKOFF (FIG-4.0)
- 5) ATTACHMENT FAULTED S/G (ATT-10.0)
- 6) ATTACHMENT CNMT RECIRC FANS (ATT-4.0)
- 7) ATTACHMENT NC (ATT-13.0)
- 8) ATTACHMENT RCP START (ATT-15.0)
- 9) ATTACHMENT N2 PORVS (ATT-12.0)
- 10) ATTACHMENT SEAL COOLING (ATT-15.2)
- 11) ATTACHMENT SI/UV (ATT-8.4)
- 12) ATTACHMENT D/G STOP (ATT-8.1)
- 13) ATTACHMENT SD-1 (ATT-17.0)
- 14) ATTACHMENT SD-2 (ATT-17.1)
- 15) ATTACHMENT RHR COOL (ATT-14.1)
- 16) ATTACHMENT NO SW PUMPS (ATT-2.4)
- 17) ATTACHMENT LOSS OF OFFSITE POWER (ATT-8.5)
- 18) ATTACHMENT DIESEL AIR COMPRESSOR (ATT-11.2)
- 19) FOLDOUT

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RED PATH SUMMARY

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

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FOLDOUT PAGE

1. LOSS OF SW CRITERIA

IF no SW pumps are available, THEN perform the following:

- a. Pull stop any D/G that is NOT supplied by alternate cooling, AND immediately depress associated VOLTAGE SHUTDOWN pushbutton.
- b. Refer to ATT-2.4, ATTACHMENT NO SW PUMPS.

2. SI REINITIATION CRITERIA

Manually start SI pumps as necessary if EITHER condition listed below occurs:

- o RCS subcooling based on core exit TCs - LESS THAN 0°F USING REQUIREMENTS OF FIG-1.0, FIGURE MIN SUBCOOLING
- o PRZR level - CHARGING CAN NOT CONTROL LEVEL GREATER THAN 5% [30% ADVERSE CNMT]

3. E-2 TRANSITION CRITERIA

IF any S/G pressure increases at any time (except while performing SI termination in Steps 17 and 18), THEN go to E-2, FAULTED STEAM GENERATOR ISOLATION, Step 1.

4. 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.

5. 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).

6. E-3 TRANSITION CRITERIA

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

EOP: ECA-3.3	TITLE: SGTR WITHOUT PRESSURIZER PRESSURE CONTROL	REV: 30 PAGE 1 of 30
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ROCHESTER GAS AND ELECTRIC CORPORATION

GINNA STATION

CONTROLLED COPY NUMBER 23

Paul Delmonico
RESPONSIBLE MANAGER

1-7-2004
EFFECTIVE DATE

CATEGORY 1.0

REVIEWED BY: _____

EOP: ECA-3.3	TITLE: . SGTR WITHOUT PRESSURIZER PRESSURE CONTROL	REV: 30 PAGE 2 of 30
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A. PURPOSE - This procedure provides actions for a SGTR with coincident loss of normal and auxiliary PRZR sprays and PORVs.

B. ENTRY CONDITIONS/SYMPTOMS

1. ENTRY CONDITIONS - This procedure is entered from:

- a. E-3, STEAM GENERATOR TUBE RUPTURE, when PRZR pressure control is not available.

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STEP

ACTION/EXPECTED RESPONSE

RESPONSE NOT OBTAINED

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.

1 Check Ruptured S/G Narrow Range Level - LESS THAN 80% [60% adverse CNMT]

Go to Step 8.

2 Check RCP Status - AT LEAST ONE RUNNING

Try to start one RCP:

a. Establish conditions for starting RCP.

o Bus 11A and Bus 11B energized

o Refer to ATT-15.0, ATTACHMENT RCP START

b. Start one RCP. IF no RCP can be started, THEN go to Step 4.

3 Check IF Normal PRZR Spray Available:

a. Verify the following:

1) Verify IA to CNMT - AVAILABLE

2) Verify spray valve associated with running RCP - OPERABLE

a. Perform the following:

1) Place PRZR proportional heaters in PULL STOP.

2) Place PRZR backup heaters to OFF.

3) Place normal spray valve controllers to MANUAL at 0%.

4) Go to Step 4.

b. Go to E-3, STEAM GENERATOR TUBE RUPTURE, Step 21

STEP

ACTION/EXPECTED RESPONSE

RESPONSE NOT OBTAINED

4 Try To Restore PRZR PORV:

a. Block valves - AT LEAST ONE OPEN

- MOV-516 for PCV-430
- MOV-515 for PCV-431C

b. Check IA to CNMT - AVAILABLE

c. Verify at least one PRZR PORV flow path - AVAILABLE

d. Go to E-3, STEAM GENERATOR TUBE RUPTURE, Step 22

a. Open one block valve unless it was closed to isolate an open PORV.

If block valves can NOT be opened, THEN dispatch AO to locally ensure breakers to block valves closed.

- MOV-515, MCC D position 6C
- MOV-516, MCC C position 6C

b. Refer to ATT-12.0, ATTACHMENT N2 PORVS to operate PORVs.

c. Go to Step 5.

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STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
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NOTE: If auxiliary spray is the only means of RCS pressure control, THEN the 320°F ΔT limit between the spray line and PRZR does not apply.

5 Try To Establish Auxiliary Spray:

a. Charging pumps - AT LEAST ONE 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 locally isolate seal injection to affected RCP.

- RCP A. V-300A
- RCP B. V-300B

2) Ensure HCV-142 demand at 0%.

3) Start charging pumps as necessary.

IF charging not available, THEN go to Step 6.

b. Establish auxiliary spray flow:

b. IF auxiliary spray can NOT be established, THEN go to Step 6.

1) Open auxiliary spray valve (AOV-296)

2) Close charging valve to loop B cold leg (AOV-294)

c. Go to E-3, STEAM GENERATOR TUBE RUPTURE, Step 21b

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

* 6 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 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.

7 Check PRZR Level - GREATER THAN 5% [30% adverse CNMT]

Return to Step 1.

STEP

ACTION/EXPECTED RESPONSE

RESPONSE NOT OBTAINED

8 Check If SI Can Be Terminated:

- | | |
|--|---|
| <p>a. RCS subcooling based on core exit T/Cs - GREATER THAN 0°F USING FIG-1.0, FIGURE MIN SUBCOOLING</p> <p>b. Secondary heat sink:</p> <ul style="list-style-type: none"> o Total feed flow to intact S/Gs - GREATER THAN 200 GPM AVAILABLE <p style="text-align: center;">-OR-</p> <ul style="list-style-type: none"> o Narrow range level in intact S/G - GREATER THAN 5% [25% adverse CNMT] <p>c. RVLIS indication</p> <ul style="list-style-type: none"> o Level (no RCPs) - GREATER THAN 77% [82% adverse CNMT] <p style="text-align: center;">-OR-</p> <ul style="list-style-type: none"> o Fluid fraction (any RCP running) - GREATER THAN 84% <p>d. Any ruptured S/G narrow range level - INCREASING IN AN UNCONTROLLED MANNER OR OFFSCALE HIGH</p> | <p>a. Do <u>NOT</u> stop SI pumps. Go to ECA-3.1, SGTR WITH LOSS OF REACTOR COOLANT - SUBCOOLED RECOVERY DESIRED, Step 1.</p> <p>b. <u>IF</u> neither condition satisfied, <u>THEN</u> do <u>NOT</u> stop SI pumps. Go to ECA-3.1, SGTR WITH LOSS OF REACTOR COOLANT - SUBCOOLED RECOVERY DESIRED, Step 1.</p> <p>c. Do <u>NOT</u> stop SI pumps. Go to ECA-3.1, SGTR WITH LOSS OF REACTOR COOLANT - SUBCOOLED RECOVERY DESIRED, Step 1.</p> <p>d. Do <u>NOT</u> stop SI pumps. Return to Step 2.</p> |
|--|---|

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

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STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
10	Check If Charging Flow Has Been Established:	
	a. Charging pumps - ANY RUNNING	a. Perform the following: <ol style="list-style-type: none"> 1) <u>IF</u> CCW flow is lost to any RCP thermal barrier <u>OR</u> any RCP #1 seal outlet temperature offscale high. <u>THEN</u> dispatch AO to close seal injection needle valve(s) to affected RCP: <ul style="list-style-type: none"> • RCP A. V-300A • RCP B. V-300B 2) Ensure HCV-142 open. demand at 0%.
	b. Charging pump suction aligned to RWST: <ul style="list-style-type: none"> o LCV-112B - OPEN o LCV-112C - CLOSED 	b. Manually align valves as necessary. <p><u>IF</u> LCV-112B can <u>NOT</u> be opened. <u>THEN</u> dispatch AO to locally open V-358, manual charging pump suction from RWST (charging pump room).</p> <p><u>IF</u> LCV-112C can <u>NOT</u> be closed. <u>THEN</u> perform the following:</p> <ol style="list-style-type: none"> 1) Direct AO to locally open V-358, manual charging pump suction from RWST (charging pump room). 2) Verify charging pump A <u>NOT</u> running and place in PULL STOP. 3) <u>WHEN</u> V-358 open. <u>THEN</u> direct AO to close V-268 to isolate charging pumps B and C from VCT (charging pump room).
	c. Start charging pumps as necessary and adjust charging flow to perform the following: <ul style="list-style-type: none"> o Restore PRZR level o Maintain RCS subcooling based on core exit T/Cs - GREATER THAN 0°F USING FIG-1.0. FIGURE MIN SUBCOOLING 	

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STEP

ACTION/EXPECTED RESPONSE

RESPONSE NOT OBTAINED

11 Monitor RCS Inventory:

- o RCS subcooling based on core exit T/Cs - GREATER THAN 0°F USING FIG-1.0, FIGURE MIN SUBCOOLING
- o RVLIS indication
 - o Level (no RCPs) - GREATER THAN 77% [82% adverse CNMT]

-OR-

- o Fluid fraction (any RCP running) - GREATER THAN 84%

Perform the following:

- a. Manually start SI pumps as necessary.
- b. Go to ECA-3.1, SGTR WITH LOSS OF REACTOR COOLANT - SUBCOOLED RECOVERY DESIRED, Step 1.

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
12 Verify Adequate SW Flow To CCW Hx:	a. Verify at least two SW pumps - RUNNING	a. Manually start pumps as power supply permits (257 kw per pump). <u>IF</u> less than two SW pumps can be operated. <u>THEN</u> perform the following:
		1) <u>IF NO</u> SW pumps running. <u>THEN</u> perform the following:
		a) Pull stop any D/G that is <u>NOT</u> supplied by alternate cooling. <u>AND</u> immediately depress associated VOLTAGE SHUTDOWN pushbutton.
		b) Refer to ATT-2.4. ATTACHMENT NO SW PUMPS.
		2) <u>IF</u> only one SW pump running. <u>THEN</u> refer to AP-SW.2. LOSS OF SERVICE WATER.
		3) Go to Step 20.
	b. Verify AUX BLDG SW isolation valves - OPEN	b. Manually align valves.
	<ul style="list-style-type: none"> • MOV-4615 and MOV-4734 • MOV-4616 and MOV-4735 	

This Step continued on the next page.

STEP

ACTION/EXPECTED RESPONSE

RESPONSE NOT OBTAINED

(Step 12 continued from previous page)

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

c. Perform the following:

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

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

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

o IF on normal SW discharge:

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

-OR-

o IF on alternate SW
discharge:

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

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
13	Check If Normal CVCS Operation Can Be Established	
a.	Verify IA restored: <ul style="list-style-type: none"> o IA to CNMT (AOV-5392) - OPEN o IA pressure - GREATER THAN 60 PSIG 	a. Continue with Step 17. <u>WHEN</u> IA restored, <u>THEN</u> do Steps 13 through 16.
b.	Verify instrument bus D - ENERGIZED	b. Energize MCC B. <u>IF</u> MCC B <u>NOT</u> available, <u>THEN</u> perform the following: <ol style="list-style-type: none"> 1) Verify MCC A energized. 2) Place instrument bus D on maintenance supply.
c.	CCW pumps - ANY RUNNING	c. Perform the following: <ol style="list-style-type: none"> 1) <u>IF</u> any RCP #1 seal outlet temperature offscale high, <u>THEN</u> isolate CCW to thermal barrier of affected RCP(s). <ul style="list-style-type: none"> • RCP A, MOV-749A and MOV-759A • RCP B, MOV-749B and MOV-759B 2) Manually start one CCW pump.
d.	Charging pump - ANY RUNNING	d. Continue with Step 20. <u>WHEN</u> any charging pump running, <u>THEN</u> do Steps 14 through 17.

STEP

ACTION/EXPECTED RESPONSE

RESPONSE NOT OBTAINED

NOTE: If PRZR level is less than 13%, letdown may be established by placing AOV-427 to OPEN.

14 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)
 - AOV-371, letdown isolation valve
 - AOV-427, loop B cold leg to REGEN Hx
- 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 PCV-135 in AUTO at 250 psig
- h. Place TCV-130 in AUTO at the normal setpoint
- 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

15 Check VCT Makeup System:

- | | |
|--|--|
| <ul style="list-style-type: none"> 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: <ul style="list-style-type: none"> 1) RMW mode selector switch in AUTO 2) RMW control armed - RED LIGHT LIT d. Check VCT level: <ul style="list-style-type: none"> o Level - GREATER THAN 20% <li style="padding-left: 40px;">-OR- o Level - STABLE OR INCREASING | <ul style="list-style-type: none"> c. Adjust controls as necessary. d. Manually increase VCT makeup flow as follows: <ul style="list-style-type: none"> 1) Ensure BA transfer pumps and RMW pumps running. <u>IF NOT</u>. <u>THEN</u> reset MCC C and MCC D UV lockouts as necessary. 2) Place RMW flow control valve HCV-111 in MANUAL. 3) Increase RMW flow. |
|--|--|

STEP

ACTION/EXPECTED RESPONSE

RESPONSE NOT OBTAINED

16 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 17. WHEN VCT level greater than 40%. THEN do Step 16b.

b. Verify charging pumps aligned to VCT

b. Manually align valves as necessary.

o LCV-112C - OPEN

o LCV-112B - CLOSED

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STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
17	<p>Check RCP Cooling:</p> <p>a. Check CCW to RCPs:</p> <ul style="list-style-type: none"> 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 <p>b. Check RCP seal injection:</p> <ul style="list-style-type: none"> o Labyrinth seal D/Ps - GREATER THAN 15 INCHES OF WATER <p style="text-align: center;">-OR-</p> <ul style="list-style-type: none"> o RCP seal injection flow to each RCP - GREATER THAN 6 GPM 	<p>Establish normal cooling to RCPs (Refer to ATT-15.2, ATTACHMENT SEAL COOLING).</p>

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
18	Check If Seal Return Flow Should Be Established:	
a.	Verify RCP #1 seal outlet temperature - LESS THAN 235°F	a. Go to Step 19.
b.	Verify RCP seal outlet valves - OPEN • 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 A0 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 19.
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

19 Equalize Charging And Letdown Flows:

- a. Verify charging pump controllers in manual
- b. Control charging and seal injection flows to equal letdown and seal leakoff flows

20 Check If Emergency D/Gs Should Be Stopped:

- a. Verify AC emergency busses energized by offsite power:
 - o Emergency D/G output breakers - OPEN
 - o AC emergency bus voltage - GREATER THAN 420 VOLTS
 - o AC emergency bus normal feed breakers - CLOSED
 - b. Stop any unloaded emergency D/G and place in standby (Refer to ATT-8.1. ATTACHMENT D/G STOP)
- a. Try to restore offsite power (Refer to ER-ELEC.1. RESTORATION OF OFFSITE POWER).

STEP

ACTION/EXPECTED RESPONSE

RESPONSE NOT OBTAINED

21 Minimize Secondary System Contamination:

- a. Isolate reject from hotwell to CST:
 - o Place hotwell level controller (HC-107) in MANUAL at 50%
 - o Verify hotwell level - STABLE
- b. Verify local actions to complete isolation of ruptured S/G (Refer to ATT-16.0. ATTACHMENT RUPTURED S/G)

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

STEP

ACTION/EXPECTED RESPONSE

RESPONSE NOT OBTAINED

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

22 Check If Source Range Detectors Should Be Energized:

a. Source range channels -
DEENERGIZED

b. Check intermediate range flux -
EITHER CHANNEL LESS THAN
10⁻¹⁰ AMPS

c. Check the following:

- o Both intermediate range channels - LESS THAN 10⁻¹⁰ AMPS

-OR-

- o Greater than 20 minutes since reactor trip

d. Verify source range detectors -
ENERGIZED

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

a. Go to Step 22e.

b. Perform the following:

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

2) Continue with Step 23. WHEN flux is LESS THAN 10⁻¹⁰ amps on any operable channel, THEN do Steps 22c through e.

c. Continue with Step 23. WHEN either condition met, THEN do Steps 22d and e.

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 22.

STEP

ACTION/EXPECTED RESPONSE

RESPONSE NOT OBTAINED

23 Establish Normal Shutdown Alignment:

a. Check condenser - AVAILABLE

a. Dispatch AO to perform ATT-17.1, 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
- 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)

d. Verify ATT-17.0. ATTACHMENT SD-1 - COMPLETE

STEP

ACTION/EXPECTED RESPONSE

RESPONSE NOT OBTAINED

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

24 Check If SI ACCUMs Should Be Isolated:

a. Check the following:

- o RCS subcooling based on core exit T/Cs - GREATER THAN 0°F USING FIG-1.0, FIGURE MIN SUBCOOLING
- o RVLIS indication
 - o Level (no RCPs - GREATER THAN 77% [82% adverse CNMT])

-OR-

- o Fluid fraction (any RCP running) - GREATER THAN 84%

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

a. Return to Step 11.

c. Vent any unisolated ACCUMs:

1) Open vent valves for unisolated SI ACCUMs.

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

2) Open HCV-945.

IF an accumulator can NOT be isolated or vented, THEN consult TSC for contingency actions.

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

STEP

ACTION/EXPECTED RESPONSE

RESPONSE NOT OBTAINED

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

25 Verify Adequate Shutdown Margin

- a. Direct RP to sample RCS and ruptured S/G for boron concentration
- b. Verify boron concentration - GREATER THAN REQUIREMENTS OF FIG-2.0, FIGURE SDM

b. Borate as necessary.

26 Maintain Required RCP Seal Injection Flow And Labyrinth Seal D/P:

- o Labyrinth seal D/P to each RCP - GREATER THAN 15 INCHES OF WATER
- o RCP seal injection flow - GREATER THAN 6 GPM

Perform the following:

- o Adjust charging flow to REGEN Hx. HCV-142 as necessary.

-OR-

- o Dispatch AO to adjust seal injection needle valves V-300A and V-300B if necessary.

27 Initiate RCS Cooldown to 350° F In RCS Cold Legs:

- a. Establish and maintain cooldown rate in RCS cold legs - LESS THAN 100° F/HR
- b. Dump steam to condenser from intact S/G

b. Manually or locally dump steam using intact S/G ARV.

IF no intact S/G available, THEN use faulted S/G.

STEP

ACTION/EXPECTED RESPONSE

RESPONSE NOT OBTAINED

.....
CAUTION
.....

RCS AND RUPTURED S/G PRESSURES MUST BE MAINTAINED LESS THAN THE RUPTURED S/G ARV SETPOINT.
.....

28 Control Charging Flow To Maintain RCS Subcooling:

- | | |
|--|--|
| a. RCS subcooling based on core exit T/Cs - GREATER THAN 20°F USING FIG-1.0, FIGURE MIN SUBCOOLING | a. Increase charging flow to maintain subcooling greater than 20°F using FIG-1.0, FIGURE MIN SUBCOOLING and go to Step 29. |
| b. Ruptured S/G narrow range level - LESS THAN 90% [80% adverse CNMT] | b. Control charging flow to maintain RCS pressure at ruptured S/G pressure and go to Step 29. |
| c. Ruptured S/G narrow range level - STABLE OR DECREASING | c. <u>IF</u> ruptured S/G level increasing, <u>THEN</u> decrease charging flow to stabilize level. Maintain RCS subcooling greater than 20°F using FIG-1.0, FIGURE MIN SUBCOOLING. |

29 Check If RCS Cooldown Should Be Stopped:

- | | |
|--|-----------------------|
| a. RCS cold leg temperatures - LESS THAN 350°F | a. Return to Step 25. |
| b. Stop RCS cooldown | |

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STEP

ACTION/EXPECTED RESPONSE

RESPONSE NOT OBTAINED

30 Check RCS Pressure - GREATER THAN 400 PSIG [300 PSIG adverse CNMT]

Go to Step 33.

*31 Monitor Ruptured S/G Narrow Range Level - GREATER THAN 17% [25% adverse CNMT]

Refill ruptured S/G to 80% [60% adverse CNMT] using feed flow.

IF any of the following conditions occurs, THEN stop feed flow to ruptured S/G:

- o Ruptured S/G pressure decreases in an uncontrolled manner.

-OR-

- o Ruptured S/G pressure increases to 1020 psig.

-OR-

- o Ruptured S/G pressure decreases to 350 psig AND ruptured S/G level greater than 5% [25% adverse CNMT]

STEP

ACTION/EXPECTED RESPONSE

RESPONSE NOT OBTAINED

.....
CAUTION
 o STEAM SHOULD NOT BE RELEASED FROM A RUPTURED S/G IF WATER MAY EXIST IN ITS STEAMLINE.
 o RUPTURED S/G PRESSURE MAY DECREASE RAPIDLY WHEN STEAM IS RELEASED.

32 Depressurize RCS And Ruptured S/G To 400 PSIG [300 PSIG adverse CNMT]

- a. Perform the following:
 - o Decrease charging and increase letdown to initiate backfill
 - OR-
 - o Initiate blowdown from ruptured S/G
 - OR-
 - o Dump steam from ruptured S/G
- b. Check RCS pressure - LESS THAN 400 psig [300 psig adverse CNMT]
- c. Stop RCS depressurization

b. Return to Step 31.

STEP

ACTION/EXPECTED RESPONSE

RESPONSE NOT OBTAINED

33 Check If RHR Normal Cooling
Can Be Established:

- | | |
|--|---|
| <p>a. RCS cold leg temperature - LESS THAN 350°F</p> | <p>a. Return to Step 27.</p> |
| <p>b. RCS pressure - LESS THAN 400 psig [300 psig adverse CNMT]</p> | <p>b. Return to Step 31.</p> |
| <p>c. Place RCS overpressure protection system in service (Refer to 0-7, ALIGNMENT AND OPERATION OF THE REACTOR VESSEL OVERPRESSURE PROTECTION SYSTEM)</p> | <p>c. <u>IF</u> RCS overpressure protection system can <u>NOT</u> be placed in service, <u>THEN</u> notify TSC of potential Tech Spec violation if RHR system is placed in service.</p> |
| <p>d. Establish RHR normal cooling (Refer to ATT-14.1, ATTACHMENT RHR COOL)</p> | |

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

34 Verify Adequate Shutdown
Margin

- | | |
|---|--------------------------------|
| <p>a. Direct RP to sample RCS and ruptured S/G for boron concentration</p> | |
| <p>b. Verify boron concentration - GREATER THAN REQUIREMENTS OF FIG-2.0, FIGURE SDM</p> | <p>b. Borate as necessary.</p> |

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STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
35	<p>Initiate RCS Cooldown To Cold Shutdown:</p> <ul style="list-style-type: none"> a. Establish and maintain cooldown rate in RCS cold legs - LESS THAN 100°F/HR b. Use RHR system if in service c. Dump steam to condenser from intact S/G 	<ul style="list-style-type: none"> c. Manually or locally dump steam from intact S/G using ARVs. <p><u>IF</u> no intact S/G available and RHR system <u>NOT</u> in service, <u>THEN</u> use faulted S/G.</p>
36	<p>Control Charging Flow To Maintain RCS Subcooling:</p> <ul style="list-style-type: none"> a. RCS subcooling based on core exit T/Cs - GREATER THAN 20°F USING FIG-1.0. FIGURE MIN SUBCOOLING b. Ruptured S/G narrow range level - LESS THAN 90% [80% adverse CNMT] c. Ruptured S/G narrow range level - STABLE OR DECREASING 	<ul style="list-style-type: none"> a. Increase charging flow to maintain subcooling greater than 20°F using FIG-1.0. FIGURE MIN SUBCOOLING and go to Step 37. b. Control charging flow to maintain RCS pressure at ruptured S/G pressure and go to Step 37. c. <u>IF</u> ruptured S/G level increasing, <u>THEN</u> decrease charging flow to stabilize level. Maintain RCS subcooling greater than 20°F using FIG-1.0. FIGURE MIN SUBCOOLING.

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STEP

ACTION/EXPECTED RESPONSE

RESPONSE NOT OBTAINED

***37 Monitor RCP Operation:**

- | | |
|---|---|
| <ul style="list-style-type: none"> a. RCPs - ANY RUNNING b. Check the following: <ul style="list-style-type: none"> o RCP #1 seal D/P - GREATER THAN 220 PSID o Check RCP seal leakage - WITHIN THE NORMAL OPERATING RANGE OF FIG-4.0, FIGURE RCP SEAL LEAKOFF | <ul style="list-style-type: none"> a. Go to Step 39. b. Stop the affected RCP(s). |
|---|---|

38 Check Core Exit T/Cs - LESS THAN 200° F	Return to Step 34.
--	--------------------

39 Evaluate Long Term Plant Status:

- a. Maintain cold shutdown conditions
- b. Consult TSC

-END-

EOP: ECA-3.3	TITLE: SGTR WITHOUT PRESSURIZER PRESSURE CONTROL	REV: 30 PAGE 1 of 1
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ECA-3.3 APPENDIX LIST

TITLE

- 1) RED PATH SUMMARY
- 2) FIGURE MIN SUBCOOLING (FIG-1.0)
- 3) FIGURE SDM (FIG-2.0)
- 4) FIGURE RCP SEAL LEAKOFF (FIG-4.0)
- 5) ATTACHMENT RCP START (ATT-15.0)
- 6) ATTACHMENT N2 PORVS (ATT-12.0)
- 7) ATTACHMENT RUPTURED S/G (ATT-16.0)
- 8) ATTACHMENT D/G STOP (ATT-8.1)
- 9) ATTACHMENT SD-1 (ATT-17.0)
- 10) ATTACHMENT SEAL COOLING (ATT-15.2)
- 11) ATTACHMENT SD-2 (ATT-17.1)
- 12) ATTACHMENT RHR COOL (ATT-14.1)
- 13) ATTACHMENT NO SW PUMPS (ATT-2.4)
- 14) FOLDOUT

EOP: ECA-3.3	TITLE: SGTR WITHOUT PRESSURIZER PRESSURE CONTROL	REV: 30 PAGE 1 of 1
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FOLDOUT PAGE

1. LOSS OF SW CRITERIA

IF no SW pumps are available, THEN perform the following:

- a. Pull stop any D/G that is NOT supplied by alternate cooling, AND immediately depress associated VOLTAGE SHUTDOWN pushbutton.
- b. Refer to ATT-2.4, ATTACHMENT NO SW PUMPS.

2. SI REINITIATION CRITERIA

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

- o RCS subcooling based on core exit TCs - LESS THAN 0°F USING REQUIREMENTS OF FIG-1.0, FIGURE MIN SUBCOOLING

- OR -

- o Check RVLIS indication:

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

3. 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.

4. 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.

5. AFW SUPPLY SWITCHOVER CRITERION

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

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ROCHESTER GAS AND ELECTRIC CORPORATION

GINNA STATION

CONTROLLED COPY NUMBER 23

Residing
RESPONSIBLE MANAGER

1-7-2004
EFFECTIVE DATE

CATEGORY 1.0

REVIEWED BY: _____

EOP: ES-1.1	TITLE: SI TERMINATION	REV: 26 PAGE 2 of 26
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A. PURPOSE - This procedure provides the necessary instructions to terminate safety injection and stabilize plant conditions.

B. ENTRY CONDITIONS/SYMPTOMS

1. ENTRY CONDITIONS - This procedure is entered from:

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

STEP

ACTION/EXPECTED RESPONSE

RESPONSE NOT OBTAINED

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

- NOTE:
- o FOLDOUT page should be open AND monitored periodically.
 - o Critical Safety Function Status Trees should be monitored (Refer to Appendix I for Red Path Summary).
 - o Adverse CNMT values should be used whenever CNMT pressure is greater than 4 psig or CNMT radiation is greater than 10^{+05} R/hr.

1 Reset SI

2 Reset CI:

- 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.

3 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
4	Verify Adequate SW Flow: a. Check at least two SW pumps - RUNNING	a. Manually start SW pumps as power supply permits (257 kw each). <u>IF</u> less than two SW pumps running, <u>THEN</u> perform the following: 1) Ensure SW isolation. 2) <u>IF NO</u> SW pumps running, <u>THEN</u> perform the following: a) Pull stop any D/G that is <u>NOT</u> supplied by alternate cooling. <u>AND</u> immediately depress VOLTAGE SHUTDOWN pushbutton. b) Refer to ATT-2.4, ATTACHMENT NO SW PUMPS. 3) <u>IF</u> only one SW pump running, <u>THEN</u> refer to AP-SW.2. LOSS OF SERVICE WATER.
	b. Dispatch AO to establish normal shutdown alignment (Refer to ATT-17.0, ATTACHMENT SD-1)	

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
5 Establish IA to CNMT:	<p>a. Verify non-safeguards busses energized from offsite power</p> <ul style="list-style-type: none"> o Bus 13 normal feed - CLOSED <p style="text-align: center;">-OR-</p> <ul style="list-style-type: none"> o Bus 15 normal feed - CLOSED <p>b. Check SW pumps - AT LEAST TWO PUMPS RUNNING</p>	<p>a. Perform the following:</p> <ol style="list-style-type: none"> 1) Close non-safeguards bus tie breakers: <ul style="list-style-type: none"> • Bus 13 to Bus 14 tie • Bus 15 to Bus 16 tie 2) Verify adequate emergency D/G capacity to run air compressors (75 kw each). <u>IF NOT, THEN</u> perform the following: <ul style="list-style-type: none"> o Start diesel air compressor (refer to ATT-11.2, ATTACHMENT DIESEL AIR COMPRESSOR) <p style="text-align: center;">-OR-</p> <ul style="list-style-type: none"> o Evaluate if CNMT RECIRC fans should be stopped (Refer to ATT-4.0, ATTACHMENT CNMT RECIRC FANS) 3) <u>WHEN</u> bus 15 restored, <u>THEN</u> reset control room lighting. <p>b. Perform the following:</p> <ol style="list-style-type: none"> 1) Restore IA using service air compressor <u>OR</u> diesel air compressor (refer to ATT-11.2, ATTACHMENT DIESEL AIR COMPRESSOR) 2) Go to step 5d.

This Step continued on the next page.

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
	(Step 5 continued from previous page)	
c. Verify SW isolation valves to turbine building - OPEN <ul style="list-style-type: none"> • MOV-4613 and MOV-4670 • MOV-4614 and MOV-4664 		c. Perform the following: 1) Manually align valves. 2) Dispatch AO to locally reset compressors as necessary.
d. Verify adequate air compressor(s) - RUNNING		d. Manually start electric air compressors as power supply permits (75 kw each). <u>IF</u> electric air compressors can <u>NOT</u> be started, <u>THEN</u> start diesel air compressor (refer to ATT-11.2, ATTACHMENT DIESEL AIR COMPRESSOR).
e. Check IA supply: <ul style="list-style-type: none"> o Pressure - GREATER THAN 60 PSIG o Pressure - STABLE OR INCREASING 		e. Perform the following: 1) Continue attempts to restore IA (Refer to AP-IA.1. LOSS OF INSTRUMENT AIR). 2) Continue with Step 6. <u>WHEN</u> IA restored, <u>THEN</u> do Steps 5f and g.
f. Reset both trains of XY relays for IA to CNMT AOV-5392		
g. Verify IA to CNMT AOV-5392 - OPEN		

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STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
6 Check If Charging Flow Has Been Established:		
a. Charging pumps - ANY RUNNING		a. Perform the following: <ol style="list-style-type: none"> 1) <u>IF</u> CCW flow is lost to any RCP thermal barrier <u>OR</u> any RCP #1 seal outlet temperature offscale high, <u>THEN</u> dispatch AO to close seal injection needle valve(s) to affected RCP: <ul style="list-style-type: none"> • RCP A, V-300A • RCP B, V-300B 2) Ensure HCV-142 open, demand at 0%.
b. Charging pump suction aligned to RWST: <ul style="list-style-type: none"> o LCV-112B - OPEN o LCV-112C - CLOSED 		b. Manually align valves as necessary. <p><u>IF</u> LCV-112B can <u>NOT</u> be opened, <u>THEN</u> dispatch AO to locally open V-358, manual charging pump suction from RWST (charging pump room).</p> <p><u>IF</u> LCV-112C can <u>NOT</u> be closed, <u>THEN</u> perform the following:</p> <ol style="list-style-type: none"> 1) Direct AO to locally open V-358, manual charging pump suction from RWST (charging pump room). 2) Verify charging pump A <u>NOT</u> running and place in <u>PULL STOP</u>. 3) <u>WHEN</u> V-358 open, <u>THEN</u> direct AO to close V-268 to isolate charging pumps B and C from VCT (charging pump room).
c. Start charging pumps as necessary and adjust charging flow to restore PRZR level		

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
7	Stop SI And RHR Pumps And Place In AUTO	
8	Monitor SI Reinitiation Criteria:	
	a. RCS subcooling based on core exit T/Cs - GREATER THAN 0°F USING FIG-1.0. FIGURE MIN SUBCOOLING	a. Manually start SI pumps as necessary and go to E-1. LOSS OF REACTOR OR SECONDARY COOLANT, Step 1.
	b. PRZR level - GREATER THAN 5% [30% adverse CNMT]	b. Control charging flow to maintain PRZR level.
		<u>IF</u> PRZR level can <u>NOT</u> be maintained, <u>THEN</u> manually start SI pumps as necessary and go to E-1. LOSS OF REACTOR OR SECONDARY COOLANT, Step 1.

EOP:

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STEP

ACTION/EXPECTED RESPONSE

RESPONSE NOT OBTAINED

* 9 Monitor If CNMT Spray Should Be Stopped:

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

- a. Go to Step 10.
- b. Continue with Step 10. WHEN CNMT pressure less than 4 psig. THEN do Steps 9c through f.
- d. Place NaOH tank outlet valve switches to CLOSE.
 - AOV-836A
 - AOV-836B

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STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
10	Verify MRPI Indicates - ALL CONTROL AND SHUTDOWN RODS ON BOTTOM	<p><u>IF</u> one or more control rods <u>NOT</u> fully inserted. <u>THEN</u> perform the following:</p> <ul style="list-style-type: none"> a. Place RMW mode selector switch to BORATE. b. Adjust boric acid flow control valve, FCV-110A, for desired flowrate. c. Set boric acid integrator to desired amount (650 gallons for each control rod not fully inserted). d. Place RMW control to start and verify flow. <u>IF</u> flow can <u>NOT</u> be established. <u>THEN</u> refer to ER-CVCS.1, REACTOR MAKEUP CONTROL MALFUNCTION.
11	<p>Establish Condenser Steam Dump Pressure Control:</p> <ul style="list-style-type: none"> a. Verify condenser available: <ul style="list-style-type: none"> o Any MSIV - OPEN o Annunciator G-15. STEAM DUMP ARMED - LIT b. Adjust condenser steam dump controller HC-484 to desired pressure and verify in AUTO. c. Place steam dump mode selector switch to MANUAL. 	<ul style="list-style-type: none"> a. Place S/G ARV controllers in AUTO at desired pressure and go to Step 12.

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STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
12	Check RCS Hot Leg Temperatures - STABLE	Control steam dump and total feed flow to stabilize RCS temperature.
13	Verify Adequate SW Flow To CCW Hx:	
	a. Verify at least two SW pumps - RUNNING	a. Manually start pumps as power supply permits (257 kw each). <u>IF</u> less than two SW pumps can be operated, <u>THEN</u> perform the following:
		1) <u>IF NO</u> SW pumps running, <u>THEN</u> perform the following:
		a) Pull stop any D/G that is <u>NOT</u> supplied by alternate cooling, <u>AND</u> immediately depress VOLTAGE SHUTDOWN pushbutton.
		b) Refer to ATT-2.4, ATTACHMENT NO SW PUMPS.
		2) <u>IF</u> only one SW pump running, <u>THEN</u> refer to AP-SW.2, LOSS OF SERVICE WATER.
		3) Go to Step 19.
	b. Verify AUX BLDG SW isolation valves - OPEN	b. Manually align valves.
	• MOV-4615 and MOV-4734 • MOV-4616 and MOV-4735	
	c. Verify CNMT RECIRC fan annunciator C-2, HIGH TEMPERATURE ALARM - EXTINGUISHED	c. Manually start an additional SW pump as power supply permits (257 kw each).

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STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
14	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 19. <u>WHEN</u> IA can be restored. <u>THEN</u> do Steps 14 through 18.
b.	Verify instrument bus D - ENERGIZED	b. Energize MCC B. <u>IF</u> MCC B <u>NOT</u> available. <u>THEN</u> perform the following: 1) Verify MCC A energized. 2) Place instrument bus D on maintenance supply.
c.	CCW pumps - ANY RUNNING	c. Perform the following: 1) <u>IF</u> any RCP #1 seal outlet temperature offscale high. <u>THEN</u> isolate CCW to thermal barrier of affected RCP(s). <ul style="list-style-type: none">• RCP A, MOV-749A and MOV-759A• RCP B, MOV-749B and MOV-759B
d.	Charging pump - ANY RUNNING	d. Continue with Step 19. <u>WHEN</u> any charging pump running. <u>THEN</u> do Steps 15 through 18.

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STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
15	Verify PRZR Level - GREATER THAN 13% [40% adverse CNMT]	Continue with Step 17. <u>WHEN</u> PRZR level increases to greater than 13% [40% adverse CNMT], <u>THEN</u> do Step 16.
16	<p>Establish Normal Letdown:</p> <ol style="list-style-type: none"> a. Establish charging line flow to REGEN Hx - GREATER THAN 20 GPM b. Place the following switches to CLOSE: <ul style="list-style-type: none"> • Letdown orifice valves (AOV-200A, AOV-200B, and AOV-202) • AOV-371, letdown isolation valve • AOV-427, loop B cold leg to REGEN Hx c. Place letdown controllers in MANUAL at 40% open <ul style="list-style-type: none"> • TCV-130 • PCV-135 d. Reset both trains of XY relays for AOV-371 and AOV-427 e. Open AOV-371 and AOV-427 f. Open letdown orifice valves as necessary g. Place PCV-135 in AUTO at 250 psig h. Place TCV-130 in AUTO at the normal setpoint i. Adjust charging pump speed and HCV-142 as necessary to control PRZR level 	<p><u>IF</u> RCP seal return has been established, <u>THEN</u> establish excess letdown as follows:</p> <ul style="list-style-type: none"> o Place excess letdown divert valve, AOV-312, to NORMAL. o Ensure CCW from excess letdown open. (AOV-745). o Open excess letdown isolation valve AOV-310. o Slowly open HCV-123 to maintain excess letdown temperature less than 195°F and pressure less than 100 psig. o Adjust charging pump speed as necessary. <p><u>IF</u> RCP seal return <u>NOT</u> established, <u>THEN</u> consult Plant Staff to determine if excess letdown should be placed in service.</p>

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

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
18 Check Charging Pump Suction Aligned To VCT:		
a. VCT level - GREATER THAN 20%		a. <u>IF</u> VCT level can <u>NOT</u> be maintained greater than 5%. <u>THEN</u> perform the following:
		1) Ensure charging pump suction aligned to RWST
		o LCV-112B open
		o LCV-112C closed
		2) Continue with Step 19. <u>WHEN</u> VCT level greater than 40%. <u>THEN</u> do Step 18b.
b. Verify charging pumps aligned to VCT		b. Manually align valves as necessary.
	o LCV-112C - OPEN	
	o LCV-112B - CLOSED	

STEP

ACTION/EXPECTED RESPONSE

RESPONSE NOT OBTAINED

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

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

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

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

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

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

*20 Monitor Intact S/G Levels:

- | | |
|--|--|
| <ol style="list-style-type: none"> a. Narrow range level - GREATER THAN 5% [25% adverse CNMT] b. Control feed flow to maintain narrow range level between 17% [25% adverse CNMT] and 50% | <ol style="list-style-type: none"> a. Maintain total feed flow greater than 200 gpm until narrow range level greater than 5% [25% adverse CNMT] in at least one S/G. b. <u>IF</u> narrow range level in any S/G continues to increase, <u>THEN</u> stop feed flow to that S/G. |
|--|--|

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

21 Check RCP Cooling:

Establish normal cooling to RCPs
(Refer to ATT-15.2, ATTACHMENT SEAL
COOLING).

a. Check CCW to RCPs:

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

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

b. Check RCP seal injection:

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

- OR-

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

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

STEP

ACTION/EXPECTED RESPONSE

RESPONSE NOT OBTAINED

23 Verify All AC 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) Reset Bus 13 and Bus 15 lighting breakers.
 - 3) Dispatch AO to locally reset and start two IA compressors.
 - 4) Place the following pumps in PULL STOP:
 - EH pumps
 - Turning gear oil pump
 - HP seal oil backup pump
 - 5) Restore power to MCCs.
 - A from Bus 13
 - B from Bus 15
 - E from Bus 15
 - F from Bus 15
 - 6) Start HP seal oil backup pump.
 - 7) Start CNMT RECIRC fans as necessary.
 - 8) Ensure D/G load within limits.
 - 9) Refer to ATT-8.4, ATTACHMENT SI/UV for other equipment lost with loss of offsite power.
- c. Try to restore offsite power to all AC busses (Refer to ER-ELEC.1, RESTORATION OF OFFSITE POWER).

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

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STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
25	Check If Emergency D/Gs Should Be Stopped:	
	<ul style="list-style-type: none"> a. Verify AC emergency busses energized by offsite power: <ul style="list-style-type: none"> o Emergency D/G output breakers - OPEN o AC emergency bus voltage - GREATER THAN 420 VOLTS o AC emergency bus normal feed breakers - CLOSED b. Stop any unloaded emergency D/G and place in standby (Refer to ATT-8.1, ATTACHMENT D/G STOP) 	<ul style="list-style-type: none"> a. Try to restore offsite power (Refer to ER-ELEC.1, RESTORATION OF OFFSITE POWER).

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
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CAUTION
 IF RCP SEAL COOLING HAD PREVIOUSLY BEEN LOST, THEN THE AFFECTED RCP SHOULD NOT BE STARTED PRIOR TO A STATUS EVALUATION.

26 Check RCP Status

- | | |
|---|--|
| <ul style="list-style-type: none"> a. Both RCPs - STOPPED b. Ensure conditions for starting an RCP: <ul style="list-style-type: none"> o Ensure bus 11A or 11B energized. o Refer to ATT-15.0, ATTACHMENT RCP START. | <ul style="list-style-type: none"> a. Go to step 27. b. <u>IF</u> conditions can <u>NOT</u> be met. <u>THEN</u> perform the following: <ul style="list-style-type: none"> 1) Verify natural circulation (Refer to ATT-13.0, ATTACHMENT NC).

<u>IF</u> natural circulation can <u>NOT</u> be verified, <u>THEN</u> increase dumping steam from intact S/Gs. 2) Go to step 27. |
|---|--|

This Step continued on the next page.

STEP

ACTION/EXPECTED RESPONSE

RESPONSE NOT OBTAINED

(Step 26 continued from previous page)

c. Check RVLIS level (no RCPs) -
 $\geq 95\%$

c. 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 FIG-1.0. FIGURE MIN SUBCOOLING.
- o Energize PRZR heaters as necessary to saturate PRZR water.

IF conditions NOT met. THEN continue with Step 27. WHEN conditions met. THEN do Step 26d.

d. Start one RCP

d. IF an RCP can NOT be started. THEN verify natural circulation (Refer to ATT-13.0. ATTACHMENT NC).

IF natural circulation NOT verified. THEN increase dumping steam from intact S/Gs.

EOP: ES-1.1	TITLE: . SI TERMINATION	REV: 26 PAGE 24 of 26
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STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
27	Establish Normal Shutdown Alignment:	
	a. Check condenser - AVAILABLE	a. Dispatch AO to perform ATT-17.1, ATTACHMENT SD-2.
	b. Perform the following:	
	o Open generator disconnects	
	<ul style="list-style-type: none"> • 1G13A71 • 9X13A73 	
	o Place voltage regulator to OFF	
	o Open turbine drain valves	
	o Rotate reheater steam supply controller cam to close valves	
	o Place reheater dump valve switches to HAND	
	o Stop all but one condensate pump (Refer to T-5F, STARTING OR STOPPING THE CONDENSATE PUMPS)	
	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: <ul style="list-style-type: none"> o Dispatch AO to reset UV relays at MCC C and MCC D. o Manually start one fan as power supply permits (23 kw)
	d. Verify ATT-17.0, ATTACHMENT SD-1 - COMPLETE	

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
28	Maintain Plant Conditions Stable:	
	<ul style="list-style-type: none"> a. RCS pressure - BETWEEN 1800 PSIG AND 2235 PSIG b. PRZR level - BETWEEN 35% AND 40% c. Intact S/G narrow range levels - BETWEEN 17% AND 52% d. RCS cold leg temperature - STABLE 	<ul style="list-style-type: none"> a. Control PRZR heaters and spray as necessary. b. Control charging as necessary. c. Control S/G feed flow as necessary. d. Control dumping steam as necessary. <u>IF</u> cooldown continues, <u>THEN</u> close both MSIVs.
29	Monitor SI Reinitiation Criteria:	
	<ul style="list-style-type: none"> a. RCS subcooling based on core exit T/Cs - GREATER THAN 0°F USING FIG-1.0. FIGURE MIN SUBCOOLING b. PRZR level - GREATER THAN 5% [30% adverse CNMT] 	<ul style="list-style-type: none"> a. Manually start SI pumps as necessary and go to E-1. LOSS OF REACTOR OR SECONDARY COOLANT. Step 1. b. Control charging flow to maintain PRZR level. <p><u>IF</u> PRZR level can <u>NOT</u> be maintained, <u>THEN</u> manually start SI pumps as necessary and go to E-1. LOSS OF REACTOR OR SECONDARY COOLANT. Step 1.</p>

EOP:

ES-1.1

TITLE: .

SI TERMINATION

REV: 26

PAGE 26 of 26

STEP

ACTION/EXPECTED RESPONSE

RESPONSE NOT OBTAINED

30 Implement Plant Recovery
Procedures:

- a. Review plant systems for
realignment to normal conditions
(Refer to ATT-26.0. ATTACHMENT
RETURN TO NORMAL OPERATIONS)
- b. Go to 0-2.1. NORMAL SHUTDOWN TO
HOT SHUTDOWN

-END-

EOP: ES-1.1	TITLE: SI TERMINATION	REV: 26 PAGE 1 of 1
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ES-1.1 APPENDIX LIST

TITLE

- 1) RED PATH SUMMARY
- 2) FIGURE MIN SUBCOOLING (FIG-1.0)
- 3) ATTACHMENT CNMT RECIRC FANS (ATT-4.0)
- 4) ATTACHMENT D/G STOP (ATT-8.1)
- 5) ATTACHMENT NC (ATT-13.0)
- 6) ATTACHMENT SEAL COOLING (ATT-15.2)
- 7) ATTACHMENT RCP START (ATT-15.0)
- 8) ATTACHMENT SD-1 (ATT-17.0)
- 9) ATTACHMENT SD-2 (ATT-17.1)
- 10) ATTACHMENT SI/UV (ATT-8.4)
- 11) ATTACHMENT NO SW PUMPS (ATT-2.4)
- 12) ATTACHMENT RETURN TO NORMAL OPERATIONS (ATT-26.0)
- 13) ATTACHMENT LOSS OF OFFSITE POWER (ATT-8.5)
- 14) ATTACHMENT DIESEL AIR COMPRESSOR (ATT-11.2)
- 15) FOLDOUT

EOP: ES-1.1	TITLE: SI TERMINATION	REV: 26 PAGE 1 of 1
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RED PATH SUMMARY

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

EOP: ES-1.1	TITLE: . SI TERMINATION	REV: 26 PAGE 1 of 1
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FOLDOUT PAGE

1. LOSS OF SW CRITERIA

IF no SW pumps are available, THEN perform the following:

- a. Pull stop any D/G that is NOT supplied by alternate cooling, AND immediately depress associated VOLTAGE SHUTDOWN pushbutton.
- b. Refer to ATT-2.4, ATTACHMENT NO SW PUMPS.

2. SI REINITIATION CRITERIA

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

- o RCS subcooling based on core exit T/Cs - LESS THAN 0°F USING FIG-1.0, FIGURE MIN SUBCOOLING
- OR -
- o PRZR level - CHARGING CAN NOT CONTROL LEVEL GREATER THAN 5% [30% adverse CNMT]

3. 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.

4. AFW SUPPLY SWITCHOVER CRITERION

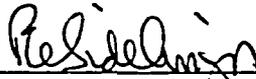
IF CST level decreases to less than 5 feet, THEN switch to alternate AFW water supply (Refer to ER-AFW.1, ALTERNATE WATER SUPPLY TO AFW PUMPS).

EOP: FR-I.1	TITLE: RESPONSE TO HIGH PRESSURIZER LEVEL	REV: 17 PAGE 1 of 15
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ROCHESTER GAS AND ELECTRIC CORPORATION

GINNA STATION

CONTROLLED COPY NUMBER 23



RESPONSIBLE MANAGER

1-7-2004

EFFECTIVE DATE

CATEGORY 1.0

REVIEWED BY: _____

EOP: FR-I.1	TITLE: . RESPONSE TO HIGH PRESSURIZER LEVEL	REV: 17 PAGE 2 of 15
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- A. PURPOSE - This procedure provides actions to respond to a high PRZR level.
- B. ENTRY CONDITIONS/SYMTOMS
 - 1. ENTRY CONDITIONS - This procedure is entered from:
 - a. F-0.6, INVENTORY Critical Safety Function Status Tree on a YELLOW condition.

STEP

ACTION/EXPECTED RESPONSE

RESPONSE NOT OBTAINED

NOTE: Foldout Page should be open and monitored periodically.

1 Check RCS Hot Leg Temperature
- STABLE OR DECREASING

Dump steam from intact S/G(s) to
stabilize RCS temperature.

EOP: FR-I.1	TITLE: RESPONSE TO HIGH PRESSURIZER LEVEL	REV: 17 PAGE 4 of 15
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STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
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2 Verify Adequate SW Flow:

- | | |
|--|--|
| <p>a. At least three SW pumps - RUNNING</p> <p>b. Dispatch AO to establish normal shutdown alignment (Refer to ATT-17.0, ATTACHMENT SD-1)</p> <p>c. Verify AUX BLDG SW isolation valves - AT LEAST ONE SET OPEN</p> <ul style="list-style-type: none"> • MOV-4615 and MOV-4734 • MOV-4616 and MOV-4735 | <p>a. Manually start pumps as power supply permits (257 kw each). <u>IF</u> less than two SW pumps can be operated, <u>THEN</u> perform the following:</p> <ol style="list-style-type: none"> 1) Ensure SW isolation 2) <u>IF NO</u> SW pumps running, <u>THEN</u> perform the following: <ol style="list-style-type: none"> a) Pull stop any D/G that is <u>NOT</u> supplied by alternate cooling. <u>AND</u> immediately depress associated VOLTAGE SHUTDOWN pushbutton. b) Refer to ATT-2.4, ATTACHMENT NO SW PUMPS. 3) <u>IF</u> only one SW pump running, <u>THEN</u> refer to AP-SW.2, LOSS OF SERVICE WATER. 4) Go to Step 3. <p>c. Manually align valves.</p> |
|--|--|

This Step continued on the next page.

STEP

ACTION/EXPECTED RESPONSE

RESPONSE NOT OBTAINED

(Step 2 continued from previous page)

d. Verify CNMT RECIRC fans
annunciator C-2, HIGH
TEMPERATURE ALARM - EXTINGUISHED

d. Perform the following:

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

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

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

o IF on normal SW discharge:

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

-OR-

o IF on alternate SW
discharge:

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

EOP: FR-I.1	TITLE: RESPONSE TO HIGH PRESSURIZER LEVEL	REV: 17 PAGE 6 of 15
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STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
3 Establish IA to CNMT:	<p>a. Verify non-safeguards busses energized from offsite power</p> <ul style="list-style-type: none"> o Bus 13 normal feed - CLOSED <p style="text-align: center;">-OR-</p> <ul style="list-style-type: none"> o Bus 15 normal feed - CLOSED <p>b. Check SW pumps - AT LEAST TWO PUMPS RUNNING</p>	<p>a. Perform the following:</p> <ol style="list-style-type: none"> 1) Close non-safeguards bus tie breakers: <ul style="list-style-type: none"> • Bus 13 to Bus 14 tie • Bus 15 to Bus 16 tie 2) Verify adequate emergency D/G capacity to run air compressors (75 kw each). <u>IF NOT, THEN</u> perform the following: <ul style="list-style-type: none"> o Start diesel air compressor (Refer to ATT-11.2, ATTACHMENT DIESEL AIR COMPRESSOR) <p style="text-align: center;">-OR-</p> <ul style="list-style-type: none"> o Evaluate if CNMT RECIRC fans should be stopped (Refer to ATT-4.0, ATTACHMENT CNMT RECIRC FANS) 3) <u>WHEN</u> bus 15 restored, <u>THEN</u> reset control room lighting. <p>b. Perform the following:</p> <ol style="list-style-type: none"> 1) Restore IA using service air compressor <u>OR</u> diesel air compressor (refer to ATT-11.2, ATTACHMENT DIESEL AIR COMPRESSOR). 2) Go to Step 3d.

This Step continued on the next page.

EOP: FR-I.1	TITLE: . RESPONSE TO HIGH PRESSURIZER LEVEL	REV: 17 PAGE 7 of 15
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STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
	(Step 3 continued from previous page)	
c. Verify SW isolation valves to turbine building - OPEN • MOV-4613 and MOV-4670 • MOV-4614 and MOV-4664		c. Perform the following: 1) Manually align valves. 2) Dispatch A0 to locally reset compressors as necessary.
d. Verify adequate air compressor(s) - RUNNING		d. Manually start electric air compressors as power supply permits (75 kw each). <u>IF</u> electric air compressors can <u>NOT</u> be started, <u>THEN</u> start diesel air compressor (Refer to ATT-11.2. ATTACHMENT DIESEL AIR COMPRESSOR).
e. Check IA supply: o Pressure - GREATER THAN 60 PSIG o Pressure - STABLE OR INCREASING		e. Perform the following: 1) Continue attempts to restore IA (Refer to AP-IA.1. LOSS OF INSTRUMENT AIR). 2) Continue with Step 7. <u>WHEN</u> IA restored, <u>THEN</u> do Steps 3f and g.
f. Reset both trains of XY relays for IA to CNMT AOV-5392		
g. Verify IA to CNMT AOV-5392 - OPEN		

STEP

ACTION/EXPECTED RESPONSE

RESPONSE NOT OBTAINED

.....
CAUTION
 CHARGING AND LETDOWN FLOW SHOULD BE CAREFULLY CONTROLLED TO AVOID SUDDEN RCS PRESSURE CHANGES SINCE THE PRZR MAY BE WATER SOLID.

4 Check If Normal CVCS Operation Can Be Established

- | | |
|--|---|
| <p>a. Verify IA restored:</p> <ul style="list-style-type: none"> o IA to CNMT (AOV-5392) - OPEN o IA pressure - GREATER THAN 60 PSIG <p>b. Verify instrument bus D - ENERGIZED</p> <p>c. Check SW pumps - AT LEAST TWO PUMPS RUNNING</p> <p>d. CCW pumps - ANY RUNNING</p> | <p>a. Continue with Step 7. <u>WHEN</u> IA restored, <u>THEN</u> do Steps 4 through 6.</p> <p>b. Energize MCC B. <u>IF</u> MCC B <u>NOT</u> available, <u>THEN</u> perform the following:</p> <ul style="list-style-type: none"> 1) Verify MCC A energized. 2) Place instrument bus D on maintenance supply. <p>c. Go to Step 7.</p> <p>d. Perform the following:</p> <ul style="list-style-type: none"> 1) <u>IF</u> any RCP #1 seal outlet temperature offscale high, <u>THEN</u> isolate CCW to thermal barrier of affected RCP(s).. <ul style="list-style-type: none"> • RCP A, MOV-749A and MOV-759A • RCP B, MOV-749B and MOV-759B 2) Manually start one CCW pump. |
|--|---|

STEP

ACTION/EXPECTED RESPONSE

RESPONSE NOT OBTAINED

5 Check If Seal Return Flow Should Be Established:

- | | |
|--|--|
| <p>a. Verify RCP #1 seal outlet temperature - LESS THAN 235°F</p> <p>b. Verify RCP seal outlet valves - OPEN</p> <ul style="list-style-type: none"> • AOV-270A • AOV-270B <p>c. Reset both trains of XY relays for RCP seal return isolation valve MOV-313</p> <p>d. Open RCP seal return isolation valve MOV-313</p> <p>e. Verify RCP #1 seal leakoff flow - LESS THAN 6.0 GPM</p> <p>f. Verify RCP #1 seal leakoff flow - GREATER THAN 0.8 GPM</p> | <p>a. Go to Step 7.</p> <p>b. Manually open valves as necessary.</p> <p>d. Perform the following:</p> <ol style="list-style-type: none"> 1) Place MOV-313 switch to OPEN. 2) Dispatch AO to locally open MOV-313. <p>e. Perform the following:</p> <ol style="list-style-type: none"> 1) Trip the affected RCP 2) Allow 4 minutes for pump coast down. <u>THEN</u> close the affected RCP seal discharge valve <ul style="list-style-type: none"> • RCP A, AOV-270A • RCP B, AOV-270B <p><u>IF</u> both RCP seal discharge valves are shut, <u>THEN</u> go to Step 7.</p> <p>f. Refer to AP-RCP.1, RCP SEAL MALFUNCTION.</p> |
|--|--|

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
6 Check Normal Letdown - IN SERVICE		Establish excess letdown as follows: <ul style="list-style-type: none">o Place AOV-312 to NORMALo Ensure open CCW from excess letdown. 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.

STEP

ACTION/EXPECTED RESPONSE

RESPONSE NOT OBTAINED

7 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 to locally close seal injection needle valve(s) to affected RCP:

- RCP A, V-300A
- RCP B, V-300B

2) Ensure HCV-142 open, demand at 0%.

b. Charging pump suction aligned to RWST:

b. Manually align valves as necessary.

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

IF LCV-112B can NOT be opened, THEN dispatch AO to locally open V-358, manual charging pump suction from RWST (charging pump room).

IF LCV-112C can NOT be closed, THEN perform the following:

1) Direct AO to locally open V-358, manual charging pump suction from RWST (charging pump room).

2) Verify charging pump A NOT running and place in PULL STOP.

3) WHEN V-358 open, THEN direct AO to close V-268 to isolate charging pumps B and C from VCT (charging pump room).

c. Start charging pumps as necessary and adjust charging flow to restore PRZR level

EOP: FR-I.1	TITLE: RESPONSE TO HIGH PRESSURIZER LEVEL	REV: 17 PAGE 12 of 15
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STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
8	Check Normal Letdown - IN SERVICE	<p>Establish Normal Letdown:</p> <ol style="list-style-type: none"> a. Establish charging flow to REGEN Hx greater than 20 gpm. b. Place the following switches to CLOSE: <ul style="list-style-type: none"> • Letdown orifice valves (AOV-200A, AOV-200B, and AOV-202) • AOV-427, loop B cold leg to REGEN Hx • AOV-371, letdown isolation valves c. Place letdown controllers TCV-130 and PCV-135 in MANUAL at 40% open <ul style="list-style-type: none"> • TCV-130 • PCV-135 d. Reset both trains of XY relays for AOV-371 and AOV-427 e. Open AOV-371 and AOV-427 f. Open letdown orifice valves as necessary g. Place PCV-135 in AUTO at 250 psig h. Place TCV-130 in AUTO at the normal setpoint i. Adjust charging pump speed and HCV-142 as necessary j. <u>WHEN</u> normal letdown in service. <u>THEN</u> secure excess letdown. <ul style="list-style-type: none"> o Close excess letdown flow control valve, HCV-123. o Close excess letdown isolation valve, AOV-310.

EOP: FR-I.1	TITLE: . RESPONSE TO HIGH PRESSURIZER LEVEL	REV: 17 PAGE 13 of 15
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STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
9 Check PRZR Pressure:	<p>a. Pressure - LESS THAN 2335 PSIG</p> <p>b. Pressure - LESS THAN 2260 PSIG</p>	<p>a. Verify at least one PRZR PORV and block valve open. <u>IF NOT, THEN</u> open one PORV and block valve as necessary until pressure less than 2335 psig. <u>IF IA NOT</u> available, <u>THEN</u> refer to ATT-12.0, ATTACHMENT N2 PORVS to operate PORVs.</p> <p>b. Control charging and letdown flow as necessary to decrease PRZR pressure to less than 2260 psig.</p>
10 Verify PRZR PORVs - CLOSED		Manually close PORVs. <u>IF</u> any valve can <u>NOT</u> be closed, <u>THEN</u> manually close its block valve.
11 Restore PRZR To Saturation Conditions:	<p>a. Verify letdown - IN SERVICE</p> <p>b. Energize PRZR heaters</p>	<p>a. Do <u>NOT</u> energize PRZR heaters. Continue with Step 13. <u>WHEN</u> letdown established, <u>THEN</u> energize PRZR heaters.</p>

EOP: FR-I.1	TITLE: RESPONSE TO HIGH PRESSURIZER LEVEL	REV: 17 PAGE 14 of 15
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STEP

ACTION/EXPECTED RESPONSE

RESPONSE NOT OBTAINED

12 Check PRZR Spray Valves:

a. Auxiliary spray valve (AOV-296)
- CLOSED

a. Manually close auxiliary spray valve. IF valve can NOT be closed, THEN perform the following:

1) Establish excess letdown (Refer to Step 6).

2) Close loop B cold leg to REGEN Hx (AOV-427).

3) Ensure HCV-142 demand at 0%.

b. Verify normal PRZR spray valves
- CLOSED

b. Place controllers in manual at 0% demand. IF valves can NOT be closed, THEN stop associated RCP(s).

- PCV-431A
- PCV-431B

NOTE: PRZR temperature at which bubble should form may be determined from steam table.

13 Control Charging And Letdown Flow As Necessary To Maintain RCS Pressure Stable

14 Check PRZR level - LESS THAN 87%

Return to Step 13.

EOP: FR-I.1	TITLE: . RESPONSE TO HIGH PRESSURIZER LEVEL	REV: 17 PAGE 15 of 15
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STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
15	Return To Procedure And Step In Effect	
		-END-

EOP: FR-I.1	TITLE: . RESPONSE TO HIGH PRESSURIZER LEVEL	REV: 17 PAGE 1 of 1
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FR-I.1 APPENDIX LIST

TITLE

- 1) ATTACHMENT N2 PORVS (ATT-12.0)
- 2) ATTACHMENT SD-1 (ATT-17.0)
- 3) ATTACHMENT NO SW PUMPS (ATT-2.4)
- 4) ATTACHMENT DIESEL AIR COMPRESSOR (ATT-11.2)
- 5) ATTACHMENT CNMT RECIRC FANS (ATT-4.0)
- 6) FOLDOUT

EOP: FR-I.1	TITLE: . RESPONSE TO HIGH PRESSURIZER LEVEL	REV: 17 PAGE 1 of 1
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FOLDOUT PAGE

NOTE: This Foldout Page applies to all FR-I series procedures.

1. LOSS OF SW CRITERIA

IF no SW pumps are available, THEN perform the following:

- a. Pull stop any D/G that is NOT supplied by alternate cooling, AND immediately depress associated VOLTAGE SHUTDOWN pushbutton.
- b. Refer to ATT-2.4, ATTACHMENT NO SW PUMPS.

EOP: FR-I.3	TITLE: RESPONSE TO VOIDS IN REACTOR VESSEL	REV: 19 PAGE 1 of 19
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ROCHESTER GAS AND ELECTRIC CORPORATION

GINNA STATION

CONTROLLED COPY NUMBER 23

Residman

RESPONSIBLE MANAGER

1-7-2004

EFFECTIVE DATE

CATEGORY 1.0

REVIEWED BY: _____

EOP: FR-I.3	TITLE: . RESPONSE TO VOIDS IN REACTOR VESSEL	REV: 19 PAGE 2 of 19
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A. PURPOSE - This procedure provides actions to respond to voids in the reactor vessel head.

B. ENTRY CONDITIONS/SYMPTOMS

1. ENTRY CONDITIONS - This procedure is entered from:

a. F-0.6, INVENTORY Critical Safety Function Status Tree on a YELLOW condition.

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

.....

CAUTION

IF A CONTROLLED NATURAL CIRCULATION COOLDOWN IS IN PROGRESS AND A VOID IN THE REACTOR VESSEL UPPER HEAD IS EXPECTED, THIS PROCEDURE SHOULD NOT BE PERFORMED.

.....

- NOTE:
- 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.
 - o Foldout Page should be open and monitored periodically.

1 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.

EOP: FR-I.3	TITLE: . RESPONSE TO VOIDS IN REACTOR VESSEL	REV: 19 PAGE 4 of 19
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STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
------	--------------------------	-----------------------

2 Verify Adequate SW Flow To
CCW Hx:

a. Verify at least two SW pumps -
RUNNING

a. Perform the following:

1) Verify adequate power to
operate two SW pumps (257 kw
per pump).

IF NOT, THEN shed sufficient
non-essential loads.

- CNMT RECIRC fans
- Charging pumps
- IA compressors
- PRZR heaters
- Rx compartment cooling fans
- Control rod shroud fans

2) Ensure two SW pumps running.

3) IF less than two SW pumps can
be operated. THEN perform the
following:

a) IF NO SW pumps running.
THEN perform the following:

1. Pull stop any D/G that
is not supplied by
alternate cooling. AND
immediately depress
associated VOLTAGE
SHUTDOWN pushbutton.

2. Refer to ATT-2.4.
ATTACHMENT NO SW PUMPS.

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

c) Go to Step 3.

This Step continued on the next page.

STEP

ACTION/EXPECTED RESPONSE

RESPONSE NOT OBTAINED

(Step 2 continued from previous page)

b. Verify AUX BLDG SW isolation valves - OPEN

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

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

b. Manually align valves.

c. Perform the following:

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

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

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

o IF on normal SW discharge:

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

-OR-

o IF on alternate SW discharge:

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



3 Establish IA to CNMT:

- a. Verify non-safeguards busses energized from offsite power
 - o Bus 13 normal feed - CLOSED
 - OR-
 - o Bus 15 normal feed - CLOSED

- b. Check SW pumps - AT LEAST TWO PUMPS RUNNING

- 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 perform the following:
 - o Start diesel air compressor (Refer to ATT-11.2. ATTACHMENT DIESEL AIR COMPRESSOR)
 - OR-
 - o Evaluate if CNMT RECIRC fans should be stopped (Refer to ATT-4.0. ATTACHMENT CNMT RECIRC FANS).
 - 3) WHEN bus 15 restored, THEN reset control room lighting.

- b. Perform the following:
 - 1) Restore IA using service air compressor OR diesel air compressor (Refer to ATT-11.2. ATTACHMENT DIESEL AIR COMPRESSOR).
 - 2) Go to Step 3d.

This Step continued on the next page.

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STEP

ACTION/EXPECTED RESPONSE

RESPONSE NOT OBTAINED

(Step 3 continued from previous page)

c. Verify SW isolation valves to turbine building - OPEN

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

d. Verify adequate air compressor(s) - RUNNING

e. Check IA supply:

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

f. Reset both trains of XY relays for IA to CI valve AOV-5392

g. Open IA AOV-5392

c. Perform the following:

- 1) Manually align valves.
- 2) Dispatch AO to locally reset air compressors as necessary.

d. Manually start electric air compressors as power supply permits (75 kw each). IF electric air compressors can NOT be started, THEN start diesel air compressor (Refer to ATT-11.2, ATTACHMENT DIESEL AIR COMPRESSOR)

e. Perform the following:

- 1) Continue attempts to restore IA (Refer to AP-IA.1, LOSS OF INSTRUMENT AIR).
- 2) Continue with Step 4. WHEN IA restored, THEN do Steps 3f and g.

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
4	<p>Check If Charging Flow Has Been Established:</p> <p>a. Charging pumps - ANY RUNNING</p> <p>b. Charging pump suction aligned to RWST:</p> <ul style="list-style-type: none"> o LCV-112B - OPEN o LCV-112C - CLOSED <p>c. Start charging pumps as necessary and adjust charging flow to control PRZR level</p>	<p>a. Perform the following:</p> <ol style="list-style-type: none"> 1) <u>IF</u> CCW flow is lost to any RCP thermal barrier <u>OR</u> any RCP #1 seal outlet temperature offscale high. <u>THEN</u> dispatch AO to close seal injection needle valve(s) to affected RCP: <ul style="list-style-type: none"> • RCP A. V-300A • RCP B. V-300B 2) Ensure HCV-142 open, demand at 0%. <p>b. Manually align valves as necessary.</p> <p><u>IF</u> LCV-112B can <u>NOT</u> be opened. <u>THEN</u> dispatch AO to locally open V-358. manual charging pump suction from RWST (in charging pump room).</p> <p><u>IF</u> LCV-112C can <u>NOT</u> be closed. <u>THEN</u> perform the following:</p> <ol style="list-style-type: none"> 1) Direct AO to locally open V-358. manual charging pump suction from RWST (charging pump room). 2) Verify charging pump A <u>NOT</u> running and place in PULL STOP. 3) <u>WHEN</u> V-358 open. <u>THEN</u> direct AO to close V-268 to isolate charging pumps B and C from VCT (charging pump room). <p>c. <u>IF</u> at least 20 gpm charging flow can <u>NOT</u> be established. <u>THEN</u> return to procedure and step in effect.</p>

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
5 Check If Normal CVCS Operation Can Be Established	<p>a. Verify IA restored:</p> <ul style="list-style-type: none"> o IA to CNMT (AOV-5392) - OPEN o IA pressure - GREATER THAN 60 PSIG <p>b. Verify instrument bus D - ENERGIZED</p> <p>c. CCW pumps - ANY RUNNING</p>	<p>a. Continue with Step 8. <u>WHEN</u> IA restored, <u>THEN</u> do Steps 5 through 7.</p> <p>b. Energize MCC B. <u>IF</u> MCC B <u>NOT</u> available, <u>THEN</u> perform the following:</p> <ol style="list-style-type: none"> 1) Verify MCC A energized. 2) Place instrument bus D on maintenance supply. <p>c. Perform the following:</p> <ol style="list-style-type: none"> 1) <u>IF</u> any RCP #1 seal outlet temperature offscale high, <u>THEN</u> isolate CCW to thermal barrier of affected RCP(s). <ul style="list-style-type: none"> • RCP A, MOV-749A and MOV-759A • RCP B, MOV-749B and MOV-759B 2) Manually start one CCW pump.
6 Verify PRZR Level - GREATER THAN 13% [40% adverse CNMT]	<p>Continue with Step 8. <u>WHEN</u> PRZR level increases to greater than 13% [40% adverse CNMT], <u>THEN</u> do Step 7.</p>	

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

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
11	Control Charging And Letdown As Necessary To Maintain PRZR Level Greater Than 13% [40% adverse CNMT]	
12	Check RVLIS Indication:	
	a. Level (no RCPs) - INCREASING	a. Go to Step 13.
	b. Level (no RCPs) - GREATER THAN 95%	b. Return to Step 10.
	c. Turn off PRZR heaters to stabilize RCS pressure	
	d. Return to procedure and step in effect	

STEP

ACTION/EXPECTED RESPONSE

RESPONSE NOT OBTAINED

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

13 Try To Start One RCP:

- | | |
|--|--|
| <p>a. Establish the following conditions prior to RCP start:</p> <ul style="list-style-type: none"> o PRZR level - GREATER THAN 65% [82% adverse CNMT] o RCS subcooling based on core exit T/Cs - GREATER THAN 20°F USING FIG-1.0, FIGURE MIN SUBCOOLING o Energize PRZR heaters as necessary to saturate PRZR water o Bus 11A or 11B - ENERGIZED o Refer to ATT-15.0. ATTACHMENT RCP START <p>b. Start one RCP</p> | <p>a. <u>IF</u> conditions can <u>NOT</u> be established, <u>THEN</u> go to Step 16.</p> |
|--|--|

STEP

ACTION/EXPECTED RESPONSE

RESPONSE NOT OBTAINED

14 Check RVLIS Indication

Go to Step 16.

- o Level (no RCPs) - GREATER THAN 95%

-OR-

- o Fluid fraction (any RCP running) - GREATER THAN 97%

15 Go To Step 24

16 Direct RP To Start CNMT Hydrogen Monitors

17 Check If SI Should Be Blocked:

- a. PRZR pressure - GREATER THAN 1750 PSIG
- b. PRZR pressure - LESS THAN 1950 PSIG

a. Go to Step 18.

b. Decrease PRZR pressure to less than 1950 psig using normal PRZR spray.

IF normal spray NOT available and letdown in service, THEN use auxiliary spray (AOV-296). IF NOT, THEN use one PRZR PORV.

c. Block SI

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STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
18	Record RCS Pressure and CNMT Hydrogen Concentration on ATT-20.0, ATTACHMENT VENT TIME	
19	Establish Following RCS Conditions:	
a.	PRZR level - GREATER THAN 65% [82% adverse CNMT]	Control charging and letdown as necessary to establish the required PRZR level. <u>WHEN</u> PRZR level is greater than 65% [82% adverse]. <u>THEN</u> continue with step 19b.
b.	RCS pressure - STABLE	Energize PRZR heaters and use normal PRZR spray as necessary. <u>IF</u> normal spray <u>NOT</u> available and letdown in service, <u>THEN</u> use auxiliary spray (AOV-296).
c.	RCS subcooling based on core exit T/Cs - GREATER THAN 50°F USING FIG-1.0. FIGURE MIN SUBCOOLING	Dump steam as necessary.
d.	RCS hot leg temperatures - STABLE	Control steam dump and total feed flow as necessary to stabilize RCS temperature.

STEP

ACTION/EXPECTED RESPONSE

RESPONSE NOT OBTAINED

20 Prepare CNMT For Reactor Vessel Venting:

- a. Verify CNMT ventilation isolation valves - CLOSED
 - CNMT MINI PURGE EXH VLVs (AOV-7970, AOV-7971)
 - CNMT MINI PURGE SPLY VLVs (AOV-7445, AOV-7448)
 - CNMT AIR SAMPLE ISO VLVs (AOV-1597, AOV-1598, AOV-1599)
- b. Verify the following CNMT ventilation equipment in service:
 - All CNMT RECIRC fans
 - One reactor compartment cooling fan
 - One control rod shroud fan

- a. Manually close valves.
- b. Manually start fans as power supply permits.

21 Determine Maximum Allowable Venting Time:

- a. CNMT hydrogen concentration - LESS THAN 3%
- b. Determine maximum venting time (Refer to ATT-20.0. ATTACHMENT VENT TIME)

- a. Consult TSC to evaluate methods to reduce hydrogen concentration to less than 3%.

STEP

ACTION/EXPECTED RESPONSE

RESPONSE NOT OBTAINED

22 Review Reactor Vessel Venting Termination Criteria:

- o RCS subcooling based on core exit T/Cs -LESS THAN 10°F USING FIG-1.0, FIGURE MIN SUBCOOLING

-OR-

- o PRZR level - LESS THAN 13% [40% adverse CNMT]

-OR-

- o RCS pressure - DECREASES BY 200 PSI

-OR-

- o Venting time - GREATER THAN MAXIMUM TIME CALCULATED IN STEP 21

-OR-

- o RVLIS level (no RCPs) - GREATER THAN 95%

-OR-

- o RVLIS fluid fraction (any RCP running) - GREATER THAN 97%

STEP

ACTION/EXPECTED RESPONSE

RESPONSE NOT OBTAINED

.....
CAUTION
VENTING SHOULD BE STOPPED IF ANY VENTING TERMINATION CRITERION IN STEP 22 IS EXCEEDED.
.....

NOTE: The reactor vessel head vents should not be opened unless specifically directed by PORC.

23 Vent Reactor Vessel:

- | | |
|---|---|
| <ul style="list-style-type: none"> a. Open train A Rx vessel head vent valves <ul style="list-style-type: none"> • SOV-590 • SOV-592 b. Any venting termination criterion - EXCEEDED c. Close all vent valves | <ul style="list-style-type: none"> a. <u>IF</u> either valve fails to open. <u>THEN</u> close both valves and open train B valves. <ul style="list-style-type: none"> • SOV-591 • SOV-593 b. Continue venting. <u>WHEN</u> any venting termination criterion is exceeded. <u>THEN</u> do Steps 23c. 24. 25 and 26. |
|---|---|

24 Check RVLIS Indication -

- o Level (no RCPs) - GREATER THAN 95%
- OR-
- o Fluid fraction (any RCP running) - GREATER THAN 97%

Increase RCS pressure to value recorded in Step 18. Return to Step 16.

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STEP

ACTION/EXPECTED RESPONSE

RESPONSE NOT OBTAINED

25 Check PRZR Level - STABLE

Control charging and letdown as necessary to stabilize PRZR level.

26 Return To Procedure And Step In Effect

-END-

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FR-I.3 APPENDIX LIST

TITLE

- 1) FIGURE MIN SUBCOOLING (FIG-1.0)
- 2) FIGURE TECH SPEC C/D (FIG-9.0)
- 3) FIGURE CNMT HYDROGEN (FIG-12.0)
- 4) ATTACHMENT VENT TIME (ATT-20.0)
- 5) ATTACHMENT RCP START (ATT-15.0)
- 6) ATTACHMENT NO SW PUMPS (ATT-2.4)
- 7) ATTACHMENT DIESEL AIR COMPRESSOR (ATT-11.2)
- 8) ATTACHMENT CNMT RECIRC FANS (ATT-4.0)
- 9) FOLDOUT

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FOLDOUT PAGE

NOTE: This Foldout Page applies to all FR-I series procedures.

1. LOSS OF SW CRITERIA

IF no SW pumps are available, THEN perform the following:

- a. Pull stop any D/G that is NOT supplied by alternate cooling, AND immediately depress associated VOLTAGE SHUTDOWN pushbutton.
- b. Refer to ATT-2.4, ATTACHMENT NO SW PUMPS.

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ROCHESTER GAS AND ELECTRIC CORPORATION

GINNA STATION

CONTROLLED COPY NUMBER 23



RESPONSIBLE MANAGER

1-7-2004

EFFECTIVE DATE

CATEGORY 1.0

REVIEWED BY: _____

EOP: FR-P.1	TITLE: . RESPONSE TO IMMINENT PRESSURIZED THERMAL SHOCK CONDITION	REV: 28 PAGE 2 of 23
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A. PURPOSE - This procedure provides actions to avoid, or limit, thermal shock or pressurized thermal shock to the reactor pressure vessel, or overpressure conditions at low temperature.

B. ENTRY CONDITIONS/SYMPTOMS

1. ENTRY CONDITIONS - This procedure is entered from:

- a. F-0.4, INTEGRITY Critical Safety Function Status Tree, on either a RED or ORANGE condition.

STEP

ACTION/EXPECTED RESPONSE

RESPONSE NOT OBTAINED

.....

CAUTION

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 THE AFW PUMPS).

.....

- NOTE:
- 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.
 - o Foldout Page should be open and monitored periodically.

1 Check RCS Pressure - GREATER THAN 250 PSIG [465 PSIG adverse CNMT]

IF RHR flow greater than 475 gpm. THEN return to procedure and step in effect.

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

CAUTION
 IF THE TDAFW PUMP IS THE ONLY AVAILABLE SOURCE OF FEED FLOW, THEN STEAM SUPPLY TO THE TDAFW PUMP MUST BE MAINTAINED FROM ONE S/G.

2 Check RCS Cold Leg
 Temperatures - STABLE OR
 INCREASING

- Try to stop RCS cooldown:
- a. Ensure S/G ARVs closed.
 - b. Close both S/G MSIVs.
 - c. Ensure MFW flow control valves closed.
 - MFW regulating valves
 - MFW bypass valves
 - d. Ensure MFW pumps tripped.
 - e. Ensure reheater steam supply valves are closed.
 - f. IF S/G pressure less than condensate pressure, THEN stop all condensate pumps.
 - g. IF RHR system in service, THEN stop any cooldown from RHR system.
 - h. Control total feed flow to non-faulted S/G(s) greater than 200 gpm until narrow range level greater than 5% [25% adverse CNMT] in at least one non-faulted S/G. WHEN S/G level greater than 5% [25% adverse CNMT] in one non-faulted S/G, THEN limit feed flow to stop RCS cooldown.

STEP

ACTION/EXPECTED RESPONSE

RESPONSE NOT OBTAINED

NOTE: A faulted S/G is any S/G that is depressurizing in an uncontrolled manner or is completely depressurized.

3 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

Minimize cooldown from faulted
S/G(s):

- a. Close faulted S/G(s) TDAFW pump
steam supply valve(s).
 - S/G A, MOV-3505A
 - S/G B, MOV-3504A
- b. IF both S/G(s) faulted, THEN
control feed flow at 50 gpm to
each S/G.
- c. IF any S/G NOT faulted, THEN
isolate all feedwater to faulted
S/G unless necessary for RCS
temperature control. IF a
faulted S/G is necessary for RCS
temperature control, THEN
control feed flow at 50 gpm to
that S/G.

4 Check PRZR PORV Block Valves:

- a. Power to PORV block valves -
AVAILABLE
- b. Block valves - AT LEAST ONE OPEN

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. Open one block valve unless it
was closed to isolate an open
PORV.

IF at least one block valve can
NOT be opened, THEN dispatch AO
to locally check breaker.

- MOV-515, MCC D position 6C
- MOV-516, MCC C position 6C

STEP

ACTION/EXPECTED RESPONSE

RESPONSE NOT OBTAINED

.....
CAUTION
 IF ANY PRZR PORV OPENS BECAUSE OF HIGH PRZR PRESSURE, THEN STEP 5 SHOULD BE PERFORMED AFTER PRESSURE DECREASES TO LESS THAN THE APPLICABLE PORV SETPOINT.

5 Check PRZR PORV Status:

- | | |
|---|--|
| a. Check Reactor Vessel Overpressure Protection System - IN SERVICE | a. Go to Step 5d. |
| b. Check RCS pressure - LESS THAN 410 PSIG | b. Perform the following:
1) Ensure at least one PRZR PORV open.
2) Continue with Step 6. <u>WHEN</u> pressure less than setpoint, <u>THEN</u> do Step 5e. |
| c. Go to Step 5e | |
| d. PRZR pressure - LESS THAN 2335 PSIG | d. Perform the following:
1) Ensure at least one PRZR PORV open.
2) Continue with Step 6. <u>WHEN</u> pressure less than setpoint, <u>THEN</u> do Step 5e. |
| e. Verify PRZR PORVs - CLOSED | e. Manually close valve.

<u>IF</u> any valve can <u>NOT</u> be closed, <u>THEN</u> manually close its block valve. |

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
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6 Check SI Pumps - ANY RUNNING	Go to Step 14.
--------------------------------	----------------

<p>7 Check If SI Can Be Terminated:</p> <ul style="list-style-type: none"> o RCS subcooling based on core exit T/Cs - GREATER THAN 50°F USING FIG-1.0, FIGURE MIN SUBCOOLING o Check RVLIS indication: <ul style="list-style-type: none"> o Level (no RCPs) - GREATER THAN 77% [82% adverse CNMT] -OR- o Fluid fraction (any RCP running) - GREATER THAN 84% 	<p>Perform the following:</p> <ul style="list-style-type: none"> a. <u>IF</u> RCS subcooling based on core exit T/Cs greater than 0°F using FIG-1.0, FIGURE MIN SUBCOOLING and no RCP running, <u>THEN</u> attempt to start an RCP: <ol style="list-style-type: none"> 1) Establish conditions for starting an RCP: <ul style="list-style-type: none"> o Bus 11A or 11B energized o Refer to ATT-15.0. ATTACHMENT RCP START 2) <u>IF</u> conditions established, <u>THEN</u> start one RCP. b. Go to Step 28.
--	---

.....

CAUTION

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

.....

8 Reset SI

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STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
9	Stop SI And RHR Pumps And Place In AUTO	
10	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.
11	Verify Adequate SW Flow:	
	a. Check at least two SW pumps - RUNNING	a. Manually start SW pumps as power supply permits (257 kw each).
		<u>IF</u> less than two SW pumps running. <u>THEN</u> perform the following:
		1) Ensure SW isolation.
		2) <u>IF NO</u> SW pumps running. <u>THEN</u> perform the following:
		a) Pull stop any D/G that is <u>NOT</u> supplied by alternate cooling. <u>AND</u> immediately depress associated VOLTAGE SHUTDOWN pushbutton.
		b) Refer to ATT-2.4. ATTACHMENT NO SW PUMPS.
		3) <u>IF</u> only one SW pump running. <u>THEN</u> refer to AP-SW.2. LOSS OF SERVICE WATER.
	b. Dispatch A0 to establish normal shutdown alignment (Refer to ATT-17.0. ATTACHMENT SD-1)	

STEP

ACTION/EXPECTED RESPONSE

RESPONSE NOT OBTAINED

12 Establish IA to CNMT:

- a. Verify non-safeguards busses energized from offsite power
- o Bus 13 normal feed - CLOSED
- OR-
- o Bus 15 normal feed - CLOSED

- b. Check SW pumps - AT LEAST TWO PUMPS RUNNING

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 perform the following:

- o Start diesel air compressor (Refer to ATT-11.2. ATTACHMENT DIESEL AIR COMPRESSOR)

-OR-

- o Evaluate if CNMT RECIRC fans should be stopped (Refer to ATT-4.0. ATTACHMENT CNMT RECIRC FANS).

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

b. Perform the following:

- 1) Restore IA using service air compressor OR diesel air compressor (Refer to ATT-11.2. ATTACHMENT DIESEL AIR COMPRESSOR).

- 2) Go to Step 12d.

This Step continued on the next page.

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STEP

ACTION/EXPECTED RESPONSE

RESPONSE NOT OBTAINED

(Step 12 continued from previous page)

c. Verify SW isolation valves to turbine building - OPEN

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

d. Verify adequate air compressor(s) - RUNNING

e. Check IA supply:

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

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

g. Verify IA to CNMT AOV-5392 - OPEN

c. Perform the following:

- 1) Manually align valves.
- 2) Dispatch A0 to locally reset compressors as necessary.

d. Manually start electric air compressors as power supply permits (75 kw each). IF electric air compressors can NOT be started, THEN start diesel air compressor (Refer to ATT-11.2, ATTACHMENT DIESEL AIR COMPRESSOR).

e. Perform the following:

- 1) Continue attempts to restore IA (Refer to AP-IA.1, LOSS OF INSTRUMENT AIR).
- 2) Continue with Step 13. WHEN IA restored, THEN do Steps 12f and g.

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STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
13 Check If Charging Flow Has Been Established:	a. Charging pumps - ANY RUNNING	a. Perform the following:
	b. Align charging pump suction to RWST:	1) <u>IF</u> CCW flow is lost to any RCP thermal barrier <u>OR</u> any RCP #1 seal outlet temperature offscale high. <u>THEN</u> dispatch AO to locally close seal injection needle valve(s) to affected RCP:
	o LCV-112B - OPEN	• RCP A, V-300A • RCP B, V-300B
	o LCV-112C - CLOSED	2) Ensure HCV-142 open, demand at 0%.
	c. Start charging pumps as necessary to establish charging line flow to REGEN HX - GREATER THAN 20 GPM	b. <u>IF</u> LCV-112B can <u>NOT</u> be opened. <u>THEN</u> dispatch AO to locally open V-358, manual charging pump suction from RWST (charging pump room).
		<u>IF</u> LCV-112C can <u>NOT</u> be closed. <u>THEN</u> perform the following:
		1) Direct AO to locally open V-358, manual charging pump suction from RWST (charging pump room).
		2) Verify charging pump A <u>NOT</u> running and place in <u>PULL STOP</u> .
		3) <u>WHEN</u> V-358 open, <u>THEN</u> direct AO to close V-268 to isolate charging pumps B and C from VCT (charging pump room).

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STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
*14	<p>Monitor SI Reinitiation Criteria:</p> <ul style="list-style-type: none"> o RCS subcooling based on core exit T/Cs - GREATER THAN FIG-1.0, FIGURE MIN SUBCOOLING o RVLIS indication: <ul style="list-style-type: none"> o Level - GREATER THAN 77% [82% adverse CNMT] <p style="text-align: center;">-OR-</p> <ul style="list-style-type: none"> o Fluid fraction (any RCP running) - GREATER THAN 84% 	<p>Manually start SI pumps as necessary and perform the following:</p> <ul style="list-style-type: none"> a. <u>IF</u> RCS subcooling based on core exit T/Cs greater than FIG-1.0, FIGURE MIN SUBCOOLING and no RCP running, <u>THEN</u> attempt to start a RCP: <ol style="list-style-type: none"> 1) Establish conditions for starting an RCP: <ul style="list-style-type: none"> o Bus 11A or 11B energized o Refer to ATT-15.0, ATTACHMENT RCP START 2) <u>IF</u> conditions established, <u>THEN</u> start one RCP. b. Go to Step 28.
15	<p>Check RCS Hot Leg Temperatures - STABLE</p>	<p><u>IF</u> increasing, <u>THEN</u> control feed flow and dump steam to stabilize RCS hot leg temperatures.</p> <p><u>IF</u> decreasing, <u>THEN</u> verify that actions of Step 2 and 3 have been performed before continuing with procedure.</p>

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STEP

ACTION/EXPECTED RESPONSE

RESPONSE NOT OBTAINED

16 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 FIG-1.0, FIGURE MIN SUBCOOLING

- o RVLIS indication:

- o Level - GREATER THAN 77% [82% adverse CNMT]

-OR-

- o Fluid fraction (any RCP running) - GREATER THAN 84%

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

a. Return to Step 14.

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.

3) Continue with Step 17. Do NOT decrease RCS pressure to less than unisolated ACCUM pressure.

IF an accumulator can NOT be isolated or vented, THEN consult TSC to determine contingency actions.

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

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
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CAUTION
 o THE RCS SHOULD NOT BE DEPRESSURIZED TO LESS THAN SI ACCUM PRESSURE UNTIL SI ACCUMS ISOLATED.
 o THE UPPER HEAD REGION MAY VOID DURING RCS DEPRESSURIZATION IF RCPS ARE NOT RUNNING. THIS WILL RESULT IN A RAPIDLY INCREASING PRZR LEVEL.

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

17 Depressurize RCS To Decrease RCS Subcooling:

- | | |
|---|---|
| <p>a. Depressurize using normal PRZR spray if available</p> | <p>a. <u>IF</u> normal spray <u>NOT</u> available, <u>THEN</u> use one PRZR PORV. <u>IF</u> IA <u>NOT</u> available, <u>THEN</u> refer to ATT-12.0, ATTACHMENT N2 PORVS.

 <u>IF</u> no PRZR PORV available, <u>THEN</u> use auxiliary spray valve (AOV-296).</p> |
| <p>b. Depressurize RCS until one of the following conditions satisfied:</p> <ul style="list-style-type: none"> o RCS subcooling based on core exit T/Cs - LESS THAN 10°F USING FIG-1.0, FIGURE MIN SUBCOOLING
 -OR- o PRZR level - GREATER THAN 75% [65% adverse CNMT]
 -OR- o RCS pressure - LESS THAN 160 psig [200 psig adverse CNMT] | |
| <p>c. Stop RCS depressurization</p> | |

STEP

ACTION/EXPECTED RESPONSE

RESPONSE NOT OBTAINED

***18 Monitor RCP Operation:**

- a. RCPs - ANY RUNNING
- b. Check the following:
 - o RCP #1 seal D/P - GREATER THAN 220 PSID
 - o RCP #1 seal leakoff - WITHIN THE NORMAL OPERATING RANGE OF FIG-4.0, FIGURE RCP SEAL LEAKOFF

- a. Go to Step 19.
- b. Stop affected RCP(s).

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CAUTION

AN INCREASE IN RCS PRESSURE MAY RESULT IN EXCESSIVE REACTOR VESSEL STRESS. RCS PRESSURE AND TEMPERATURE SHOULD BE MAINTAINED STABLE WHILE PERFORMING SUBSEQUENT STEPS IN THIS PROCEDURE.

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19 Check PRZR Level - GREATER THAN 13% [40% adverse CNMT]

Try to restore level with charging while maintaining stable RCS pressure. IF level can NOT be restored, THEN go to Step 27.

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
20	Verify Adequate SW Flow To CCW Hx:	
a.	Verify at least two SW pumps - RUNNING	a. Manually start pumps as power supply permits (257 kw each). <u>IF</u> less than two SW pumps can be operated, <u>THEN</u> perform the following:
		1) <u>IF NO</u> SW pumps running, <u>THEN</u> perform the following:
		a) Pull stop any D/G that is <u>NOT</u> supplied by alternate cooling. <u>AND</u> immediately depress associated VOLTAGE SHUTDOWN pushbutton.
		b) Refer to ATT-2.4, ATTACHMENT NO SW PUMPS.
		2) <u>IF</u> only one SW pump running, <u>THEN</u> refer to AP-SW.2, LOSS OF SERVICE WATER.
		3) Go to Step 25.
		<u>WHEN</u> two SW pumps can be operated <u>THEN</u> do Steps 21 through 24.
b.	Verify AUX BLDG SW isolation valves - OPEN	b. Manually align valves.
	<ul style="list-style-type: none"> • MOV-4615 and MOV-4734 • MOV-4616 and MOV-4735 	
c.	Verify CNMT RECIRC fan annunciator C-2, HIGH TEMPERATURE ALARM - EXTINGUISHED	c. Manually start an additional SW pump as power supply permits (257 kw each).

STEP

ACTION/EXPECTED RESPONSE

RESPONSE NOT OBTAINED

21 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

b. Verify instrument bus D -
ENERGIZED

c. CCW pumps - ANY RUNNING

d. Charging pump - ANY RUNNING

a. Continue with Step 25. WHEN IA restored, THEN do Steps 21 through 24.

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. 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. Continue with Step 26. WHEN any charging pump running, THEN do Steps 22 through 26.

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
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CAUTION
 IF RCS PRESSURE LESS THAN 250 PSIG. THEN PCV-135 SHOULD BE ADJUSTED TO ESTABLISH DESIRED LETDOWN FLOW, NOT TO INCREASE PRESSURE.

22 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)
 - AOV-371, letdown isolation valve
 - AOV-427, loop B cold leg to REGEN Hx
- 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 PCV-135 in AUTO at 250 psig
- h. Place TCV-130 in AUTO at the normal setpoint
- 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

24 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 25. WHEN VCT level greater than 40%. THEN do Step 24b.

b. Verify charging pumps aligned to VCT

b. Manually align valves as necessary.

o LCV-112C - OPEN

o LCV-112B - CLOSED

25 Check PRZR Level - LESS THAN
75% [65% adverse CNMT]

Control charging and letdown as necessary to reduce PRZR level to less than 75% [65% adverse CNMT]. If necessary establish excess letdown.

IF no letdown available AND CCW to RCPs established, THEN cycle charging pumps as necessary to control PRZR level.

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STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
<p><u>NOTE:</u> For optimum long term pressure control, saturated conditions should be restored in the PRZR.</p>		
26	Verify PRZR Liquid Temperature (TI-424) - AT SATURATION FOR DESIRED PRESSURE	<u>IF</u> PRZR liquid temperature low, <u>THEN</u> energize PRZR heaters as necessary to establish desired temperature.
27	Check RCS Subcooling Based On Core Exit T/Cs - LESS THAN 10°F USING FIG-1.0, FIGURE MIN SUBCOOLING	<p><u>IF</u> RCS pressure less than 160 psig [200 psig adverse CNMT], <u>THEN</u> go to Step 28. <u>IF NOT</u>, <u>THEN</u> depressurize using normal spray. Return to step 17b.</p> <p><u>IF</u> normal spray <u>NOT</u> available and letdown is in service, <u>THEN</u> use auxiliary spray for any further depressurization. Return to Step 17b.</p> <p><u>IF</u> auxiliary spray <u>NOT</u> available, <u>THEN</u> return to Step 17a.</p>
28	Check Cool Down Rate In RCS Cold Legs - GREATER THAN 100°F IN ANY 60 MINUTES PERIOD	Return to procedure and step in effect.
29	Maintain RCS Pressure And Temperature Stable For At Least 1 Hour	
	<p>a. Control steam dump and feed flow as necessary</p> <p>b. Perform actions of other procedures in effect which do not cool down the RCS or increase RCS pressure until the RCS temperature soak has been completed</p>	

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STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
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NOTE: The following pressure, temperature and cooldown rate limits remain applicable in subsequent procedures.

30 WHEN 1 HOUR Soak Is Complete,
THEN Continue RCS Cooldown
And Depressurization As
Necessary

- a. Maintain RCS pressure and cold leg temperature within the limits of FIG-11.0. FIGURE SOAK LIMITS
- b. Establish and maintain cooldown rate in RCS cold legs - LESS THAN 50°F IN ANY 60 MINUTES PERIOD

31 Verify SI Flow Not Required:

- o RCS subcooling based on core exit T/Cs - GREATER THAN FIG-1.0. FIGURE MIN SUBCOOLING
- o RVLIS indication:
 - o Level - GREATER THAN 77% [82% adverse CNMT]
- o Fluid fraction (any RCP running) - GREATER THAN 84%

-OR-

Manually start SI pumps as necessary.

IF RCS subcooling based on core exit T/Cs greater than FIG-1.0. FIGURE MIN SUBCOOLING and no RCP running. THEN perform the following:

- a. Establish conditions for starting an RCP:
 - o Bus 11A or 11B energized
 - o Refer to ATT-15.0. ATTACHMENT RCP START
- b. IF conditions established. THEN start one RCP.

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
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32 Return To Procedure And Step
In Effect

-END-

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FR-P.1 APPENDIX LIST

TITLE

- 1) FIGURE MIN SUBCOOLING (FIG-1.0)
- 2) FIGURE SOAK LIMITS (FIG-11.0)
- 3) FIGURE RCP SEAL LEAKOFF (FIG-4.0)
- 4) ATTACHMENT RCP START (ATT-15.0)
- 5) ATTACHMENT SD-1 (ATT-17.0)
- 6) ATTACHMENT CNMT RECIRC FANS (ATT-4.0)
- 7) ATTACHMENT N2 PORVS (ATT-12.0)
- 8) ATTACHMENT NO SW PUMPS (ATT-2.4)
- 9) ATTACHMENT LOSS OF OFFSITE POWER (ATT-8.5)
- 10) ATTACHMENT DIESEL AIR COMPRESSOR (ATT-11.2)
- 10) FOLDOUT

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FOLDOUT PAGE

NOTE: This Foldout Page applies to all FR-P series procedures.

1. LOSS OF SW CRITERIA

IF no SW pumps are available, THEN perform the following:

- a. Pull stop any D/G that is NOT supplied by alternate cooling, AND immediately depress associated VOLTAGE SHUTDOWN pushbutton.
- b. Refer to ATT-2.4, ATTACHMENT NO SW PUMPS.