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JOSEPH A. WIDAY
VICE PRESIDENT & PLANT MANAGER
GINNA STATION

September 11, 2000

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

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

Dear Mr. Vissing:

As requested, enclosed are Ginna Station Emergency Operating Procedures.

Very truly yours,

Joseph A. Widay

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):

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A002

GINNA NUCLEAR POWER PLANT
PROCEDURES INDEX
ABNORMAL PROCEDURE

PARAMETERS: DOC TYPES - PRAP PRAR PRATT PRES STATUS: EF QU 5 YEARS ONLY:

PROCEDURE NUMBER	PROCEDURE TITLE	REV	EFFECT DATE	LAST REVIEW	NEXT REVIEW	ST
AP-CCW.1	LEAKAGE INTO THE COMPONENT COOLING LOOP	013	10/30/98	05/01/98	05/01/03	EF
AP-CCW.2	LOSS OF CCW DURING POWER OPERATION	014	05/18/00	08/17/99	08/17/04	EF
AP-CCW.3	LOSS OF CCW - PLANT SHUTDOWN	012	05/18/00	08/17/99	08/17/04	EF
AP-CR.1	CONTROL ROOM INACCESSIBILITY	016	01/11/00	01/11/00	01/11/05	EF
AP-CVCS.1	CVCS LEAK	012	05/01/98	05/01/98	05/01/03	EF
AP-CVCS.3	LOSS OF ALL CHARGING FLOW	002	02/11/00	02/26/99	02/26/04	EF
AP-CW.1	LOSS OF A CIRC WATER PUMP	010	07/16/98	05/01/98	05/01/03	EF
AP-ELEC.1	LOSS OF 12A AND/OR 12B BUSSES	020	09/08/00	05/01/98	05/01/03	EF
AP-ELEC.2	SAFEGUARD BUSSES LOW VOLTAGE OR SYSTEM LOW FREQUENCY	009	03/22/99	03/22/99	03/22/04	EF
AP-ELEC.3	LOSS OF 12A AND/OR 12B TRANSFORMER (BELOW 350 F)	008	09/08/00	05/01/98	05/01/03	EF
AP-ELEC.14/16	LOSS OF SAFEGUARDS BUS 14/16	001	09/08/00	06/09/97	06/09/02	EF
AP-ELEC.17/18	LOSS OF SAFEGUARDS BUS 17/18	002	10/18/99	06/09/97	06/09/02	EF
AP-FW.1	PARTIAL OR COMPLETE LOSS OF MAIN FEEDWATER	012	02/11/00	02/27/98	02/27/03	EF
AP-IA.1	LOSS OF INSTRUMENT AIR	017	12/02/99	05/01/98	05/01/03	EF
AP-PRZR.1	ABNORMAL PRESSURIZER PRESSURE	011	12/02/99	12/02/99	12/02/04	EF
AP-RCC.1	CONTINUOUS CONTROL ROD WITHDRAWAL/INSERTION	006	02/24/96	05/14/98	05/14/03	EF
AP-RCC.2	RCC/RPI MALFUNCTION	008	11/16/98	02/06/97	02/06/02	EF
AP-RCC.3	DROPPED ROD RECOVERY	004	11/16/98	02/27/98	02/27/03	EF
AP-RCP.1	RCP SEAL MALFUNCTION	013	06/09/00	05/01/98	05/01/03	EF
AP-RCS.1	REACTOR COOLANT LEAK	015	09/08/00	05/01/98	05/01/03	EF
AP-RCS.2	LOSS OF REACTOR COOLANT FLOW	010	12/14/98	05/01/98	05/01/03	EF
AP-RCS.3	HIGH REACTOR COOLANT ACTIVITY	007	08/05/97	08/05/97	08/05/02	EF
AP-RCS.4	SHUTDOWN LOCA	011	12/02/99	05/01/98	05/01/03	EF
AP-RHR.1	LOSS OF RHR	013	01/25/99	05/01/98	05/01/03	EF

PARAMETERS: DOC TYPES - PRAP PRAR PRATT PRES STATUS: EF QU 5 YEARS ONLY:

PROCEDURE NUMBER	PROCEDURE TITLE	REV	EFFECT DATE	LAST REVIEW	NEXT REVIEW	ST
AP-RHR.2	LOSS OF RHR WHILE OPERATING AT RCS REDUCED INVENTORY CONDITIONS	008	03/31/00	03/31/00	03/31/05	EF
AP-SG.1	STEAM GENERATOR TUBE LEAK	000	09/08/00	09/08/00	09/08/05	EF
AP-SW.1	SERVICE WATER LEAK	015	10/18/99	06/03/98	06/03/03	EF
AP-TURB.1	TURBINE TRIP WITHOUT RX TRIP REQUIRED	010	02/12/99	10/10/97	10/10/02	EF
AP-TURB.2	TURBINE LOAD REJECTION	017	02/11/00	05/13/98	05/13/03	EF
AP-TURB.3	TURBINE VIBRATION	010	02/11/00	02/10/98	02/10/03	EF
AP-TURB.4	LOSS OF CONDENSER VACUUM	014	05/01/98	05/01/98	05/01/03	EF
AP-TURB.5	RAPID LOAD REDUCTION	005	06/09/00	06/09/00	06/09/05	EF

TOTAL FOR PRAP 32

PARAMETERS: DOC TYPES - PRAP PRAR PRATT PRES STATUS: 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	001	07/26/94	02/10/98	02/10/03	EF
ATT-1.1	ATTACHMENT NORMAL CCW FLOW	000	05/18/00	05/18/00	05/18/05	EF
ATT-2.1	ATTACHMENT MIN SW	004	06/26/98	02/10/98	02/10/03	EF
ATT-2.2	ATTACHMENT SW ISOLATION	006	03/25/99	08/11/98	08/11/03	EF
ATT-2.3	ATTACHMENT SW LOADS IN CNMT	003	01/25/95	12/31/99	12/31/04	EF
ATT-3.0	ATTACHMENT CI/CVI	005	01/25/99	01/06/99	01/06/04	EF
ATT-3.1	ATTACHMENT CNMT CLOSURE	003	01/25/99	01/25/99	01/25/04	EF
ATT-4.0	ATTACHMENT CNMT RECIRC FANS	003	07/26/94	05/13/98	05/13/03	EF
ATT-5.0	ATTACHMENT COND TO S/G	004	01/25/95	12/31/99	12/31/04	EF
ATT-5.1	ATTACHMENT SAFW	006	07/07/98	12/31/99	12/31/04	EF
ATT-5.2	ATTACHMENT FIRE WATER COOLING TO TDAFW PUMP	003	01/14/99	01/14/99	01/14/04	EF
ATT-6.0	ATTACHMENT COND VACUUM	003	12/18/96	02/10/98	02/10/03	EF
ATT-7.0	ATTACHMENT CR EVAC	005	02/11/00	02/10/98	02/10/03	EF
ATT-8.0	ATTACHMENT DC LOADS	006	03/22/99	01/14/99	01/14/04	EF
ATT-8.1	ATTACHMENT D/G STOP	004	11/03/95	02/10/98	02/10/03	EF
ATT-8.2	ATTACHMENT GEN DEGAS	006	08/17/99	08/17/99	08/17/04	EF
ATT-8.3	ATTACHMENT NONVITAL	003	07/26/94	02/10/98	02/10/03	EF
ATT-8.4	ATTACHMENT SI/UV	004	04/24/97	02/10/98	02/10/03	EF
ATT-9.0	ATTACHMENT LETDOWN	007	06/09/00	01/06/99	01/06/04	EF
ATT-9.1	ATTACHMENT EXCESS L/D	003	03/31/00	02/10/98	02/10/03	EF
ATT-10.0	ATTACHMENT FAULTED S/G	005	10/03/96	05/13/98	05/13/03	EF
ATT-11.0	ATTACHMENT IA CONCERNS	002	04/07/97	08/11/98	08/11/03	EF
ATT-11.1	ATTACHMENT IA SUPPLY	002	04/07/97	08/11/98	08/11/03	EF
ATT-11.2	ATTACHMENT DIESEL AIR COMPRESSOR	000	04/03/98	04/03/98	04/03/03	EF

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PARAMETERS: DOC TYPES - PRAP PRAR PRATT PRES STATUS: EF QU 5 YEARS ONLY:

PROCEDURE NUMBER	PROCEDURE TITLE	REV	EFFECT DATE	LAST REVIEW	NEXT REVIEW	ST
ATT-12.0	ATTACHMENT N2 PORVS	003	03/24/97	02/10/98	02/10/03	EF
ATT-13.0	ATTACHMENT NC	002	07/26/94	02/10/98	02/10/03	EF
ATT-14.0	ATTACHMENT NORMAL RHR COOLING	002	04/07/97	09/23/99	09/23/04	EF
ATT-14.1	ATTACHMENT RHR COOL	004	05/01/98	05/01/98	05/01/03	EF
ATT-14.2	ATTACHMENT RHR ISOL	001	07/26/94	02/10/98	02/10/03	EF
ATT-14.3	ATTACHMENT RHR NPSH	002	08/01/97	01/06/99	01/06/04	EF
ATT-14.4	ATTACHMENT RHR SAMPLE	001	07/26/94	01/06/99	01/06/04	EF
ATT-14.5	ATTACHMENT RHR SYSTEM	002	07/26/94	02/10/98	02/10/03	EF
ATT-14.6	ATTACHMENT RHR PRESS REDUCTION	001	01/14/99	01/14/99	01/14/04	EF
ATT-15.0	ATTACHMENT RCP START	005	05/22/97	03/17/00	03/17/05	EF
ATT-15.1	ATTACHMENT RCP DIAGNOSTICS	003	04/24/97	02/10/98	02/10/03	EF
ATT-15.2	ATTACHMENT SEAL COOLING	003	05/22/97	02/10/98	02/10/03	EF
ATT-16.0	ATTACHMENT RUPTURED S/G	009	01/11/00	01/11/00	01/11/05	EF
ATT-16.1	ATTACHMENT SGTL	000	09/08/00	09/08/00	09/08/05	EF
ATT-16.2	ATTACHMENT RCS BORON FOR SGTL	000	09/08/00	09/08/00	09/08/05	EF
ATT-17.0	ATTACHMENT SD-1	009	04/06/00	02/29/00	02/28/05	EF
ATT-17.1	ATTACHMENT SD-2	005	09/26/96	09/10/96	09/10/01	EF
ATT-18.0	ATTACHMENT SFP - RWST	004	10/08/97	02/10/98	02/10/03	EF
ATT-20.0	ATTACHMENT VENT TIME	003	07/26/94	02/10/98	02/10/03	EF
ATT-21.0	ATTACHMENT RCS ISOLATION	001	07/26/94	02/10/98	02/10/03	EF
ATT-22.0	ATTACHMENT RESTORING FEED FLOW	001	02/12/99	03/24/97	03/24/02	EF
ATT-23.0	ATTACHMENT TRANSFER 4160V LOADS	000	02/26/99	02/26/99	02/26/04	EF
ATT-24.0	ATTACHMENT TRANSFER BATTERY TO TSC	000	09/08/00	09/08/00	09/08/05	EF

TOTAL FOR PRATT 47

PARAMETERS: DOC TYPES - PRAP PRAR PRATT PRES STATUS: EF QU 5 YEARS ONLY:

PROCEDURE NUMBER	PROCEDURE TITLE	REV	EFFECT DATE	LAST REVIEW	NEXT REVIEW	ST
ES-0.0	REDIAGNOSIS	010	05/01/98	05/01/98	05/01/03	EF
ES-0.1	REACTOR TRIP RESPONSE	017	03/31/00	05/01/98	05/01/03	EF
ES-0.2	NATURAL CIRCULATION COOLDOWN	012	05/01/98	05/01/98	05/01/03	EF
ES-0.3	NATURAL CIRCULATION COOLDOWN WITH STEAM VOID IN VESSEL	008	05/01/98	05/01/98	05/01/03	EF
ES-1.1	SI TERMINATION	019	09/08/00	05/01/98	05/01/03	EF
ES-1.2	POST LOCA COOLDOWN AND DEPRESSURIZATION	021	03/31/00	05/01/98	05/01/03	EF
ES-1.3	TRANSFER TO COLD LEG RECIRCULATION	028	10/18/99	05/01/98	05/01/03	EF
ES-3.1	POST-SGTR COOLDOWN USING BACKFILL	013	05/01/98	05/01/98	05/01/03	EF
ES-3.2	POST-SGTR COOLDOWN USING BLOWDOWN	014	05/01/98	05/01/98	05/01/03	EF
ES-3.3	POST-SGTR COOLDOWN USING STEAM DUMP	014	05/01/98	05/01/98	05/01/03	EF

TOTAL FOR PRES 10

23

ROCHESTER GAS AND ELECTRIC CORPORATION

GINNA STATION

CONTROLLED COPY NUMBER 23

RESPONSIBLE MANAGER

9-8-2000

EFFECTIVE DATE

CATEGORY 1.0

REVIEWED BY: _____

A. PURPOSE - This procedure provides actions to respond to a loss of 12A and/or 12B Busses from HSD or at power conditions.

B. ENTRY CONDITIONS/SYMPTOMS

1. ENTRY CONDITIONS - This procedure may be entered from:

   a. AP-TURB.2, TURBINE LOAD REJECTION, when busses 12A and/or 12B are found to be deenergized.

2. SYMPTOMS - The symptoms of loss of #12A or 12B SS Transformer are:

   a. Annunciator L-20, 12A XFMR OR 12A BUS TROUBLE, lit, or

   b. Annunciator L-28, 12B XFMR OR 12B BUS TROUBLE, lit.

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED

* *

CAUTION

- o IF ANY RADIOACTIVE RELEASE IN PROGRESS, THEN IT SHOULD BE TERMINATED UNTIL SUPPORT CONDITIONS ARE EVALUATED.
- o OBSERVE D/G LOADING LIMITS OF 2300 KW FOR 1/2 HOUR, 2250 KW FOR 2 HOURS, AND 1950 KW FOR CONTINUOUS SERVICE.
- o DO NOT ATTEMPT TO ENERGIZE A BUS THAT IS POTENTIALLY FAULTED.

* *

NOTE: Conditions should be evaluated for site contingency reporting (Refer to EPIP-1.0, GINNA STATION EVENT EVALUATION AND CLASSIFICATION).

1 Check RCS Temperature - GREATER THAN 350°F	Go to AP-ELEC.3, LOSS OF 12A AND/OR 12B TRANSFORMER (BELOW 350°F), Step 1.
2 Establish Manual Rod Control	
a. Place Rod Control Bank Selector Switch to MANUAL	
b. Verify control rod motion stops	b. Manually trip the reactor and go to E-0, REACTOR TRIP OR SAFETY INJECTION.
c. Manually move control rods as necessary	

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
3	Verify Emergency D/G Associated With Dead Bus - RUNNING AND LOADED o Bus 12A - D/G A o Bus 12B - D/G B	Attempt to start and load emergency D/G(s) manually. (Refer to ER-D/G.1, RESTORATION OF A FAILED D/G.)

NOTE: AP-ELEC.14/16, LOSS OF SAFEGUARDS BUS 14/16 AND AP-ELEC.17/18, LOSS OF SAFEGUARDS BUS 17/18 provide additional guidance for the loss of safeguards busses.

4	Verify Both Trains Of AC Emergency Busses Energized To At Least 420 VOLTS: o Bus 14 and bus 18 o Bus 16 and bus 17	Try to restore power to all AC emergency busses. IF power can NOT be restored to at least one train, THEN go to ECA-0.0, LOSS OF ALL AC POWER, Step 1.
5	Verify Service Water System Operation:	
	a. SW pumps - AT LEAST ONE RUNNING IN EACH LOOP	a. Verify selected SW pumps start on a timer (40 sec) after D/G start. IF NOT, THEN manually start pumps as necessary (257 kw each).
	b. SW header pressure - GREATER THAN 40 PSIG IN EACH LOOP	b. Manually align valves as necessary.

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
6	Check CCW Pump Status:	
	a. At least one CCW pump - RUNNING	a. Start one CCW pump (124 kw). IF no CCW pump can be started, THEN perform the following: o IF Rx trip breakers closed, THEN: 1) Trip the reactor 2) Trip both RCPs 3) Go to E-0, REACTOR TRIP OR SAFETY INJECTION. -OR- o IF Rx trip breakers open, THEN: 1) Trip both RCPs 2) Go to step 7
	b. Annunciator A-22, CCW PUMP DISCHARGE LO PRESS 60 PSIG - EXTINGUISHED	b. Start second CCW pump (124 kw).
7	Verify Bus 11A And 11B Normal Feed Breakers - CLOSED	IF reactor power is greater than 8%, THEN trip the reactor and go to E-0, REACTOR TRIP OR SAFETY INJECTION. IF reactor power is less than 8%, THEN go to step 19.

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
8	Verify Annunciator H-16, INSTRUMENT AIR COMP - EXTINGUISHED	Dispatch AO to locally reset and start IA compressors as necessary.
9	Monitor S/G Level Control: o S/G level - TRENDING TO 52% o MFW regulating valves - CONTROLLING IN AUTO	Place MFW regulating valves in MANUAL and control feed flow as necessary.

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
	NOTE: IF VCTR level decreases to 5%, charging pump suction will swap to the RWST. This may require a load reduction.	
10	Check VCT Makeup System:	
	a. Verify the following: 1) RMW mode selector switch in AUTO 2) RMW control armed - RED LIGHT LIT	a. Adjust controls as necessary.
	b. Check VCT level: o Level GREATER THAN 20% -OR- o Level - STABLE OR INCREASING	b. Check letdown divert valve, LCV-112A, aligned to VCT. Manually increase VCT makeup flow as follows: 1) Ensure BA transfer pumps and RMW pumps running. 2) Adjust RMW flow control valve, HCV-111, to increase RMW flow. 3) Increase boric acid flow as necessary to maintain required concentration. IF VCT level can NOT be maintained, THEN refer to ER-CVCS.1, REACTOR MAKEUP CONTROL MALFUNCTION, if necessary.

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
11	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 12. <u>WHEN</u> VCT level greater than 20%, <u>THEN</u> do Step 11b.
	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

NOTE: When restarting equipment for recovery, it is preferable to start equipment on busses being supplied from offsite power, if possible.

12 Check CVCS Operation:

a. Charging pumps - AT LEAST ONE RUNNING

a. Perform the following:

1) Close loop B cold leg to REGEN Hx, AOV-427.

2) Start charging pumps as necessary.

3) Establish greater than 20 gpm charging line flow.

b. Check letdown indications:

- o Check PRZR level - GREATER THAN 13%
- o Letdown flow - APPROXIMATELY 40 GPM
- o Letdown flow - STABLE

b. Perform the following:

1) Close loop B cold leg to REGEN Hx, AOV-427.

2) Close letdown orifice valves (AOV-200A, AOV-200B, and AOV-202)

3) IF PRZR level greater than 13%, THEN go to Step 13. IF NOT, THEN continue with Step 15. WHEN PRZR level greater than 13%, THEN do Steps 13 and 14.

c. Adjust charging pump speed and HCV-142 as necessary to restore PRZR level and labyrinth seal D/P

d. Go to Step 14

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED

NOTE: Steps 13 and 14 may be performed concurrently.

13 Establish Normal Letdown:

a. Establish charging line flow to REGEN Hx - GREATER THAN 20 GPM

b. Verify the following switches in CLOSE:

- Letdown orifice valve (AOV-200A, AOV-200B, and AOV-202)
- Loop B cold leg to REGEN Hx AOV-427

c. Place letdown controllers in MANUAL at 40% open

- TCV-130
- PCV-135

d. Open AOV-427

e. Open letdown orifice valves as necessary

f. Place TCV-130 in AUTO at 105°F

g. Place PCV-135 in AUTO at 250 psig

h. Adjust charging pump speed and HCV-142 as necessary

Perform the following steps in sequence to establish excess letdown:

o Place excess letdown divert valve, AOV-312, to NORMAL

o Ensure CCW from excess letdown open, AOV-745

o Ensure RCP seal return isolation valve open, MOV-313

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
14	Verify PRZR Heaters Restored: o PRZR proportional heater breaker - CLOSED o PRZR backup heater breaker - RESET/IN AUTO	IF adequate D/G capacity available for PRZR heaters (400 kw each bank), THEN perform the following: a. Reset and close PRZR proportional heater breaker if necessary. b. Reset PRZR backup heater breaker and return to AUTO if necessary. IF adequate D/G capacity NOT available, THEN refer to ER-PRZR.1.
15	Verify Normal Rod Control Restored:	
	a. Annunciator C-5, PPCS ROD SEQUENCE OR ROD DEVIATION - EXTINGUISHED	a. IF alarm is due to a loss of power to MRPI, THEN maintain rods in manual AND minimize rod motion. IF alarm is due to actual rod misalignment, THEN refer to AP-RCC.2, RCC/RPI MALFUNCTION, while continuing with this procedure.
	b. Annunciator E-28, POWER RANGE ROD DROP ROD STOP - EXTINGUISHED	b. Perform the following: 1) Place rod control bank selector switch in MANUAL. 2) Reset NIS rod drop rod stop signals (at NIS racks) as necessary.
	c. Annunciator F-15, RCS TAVG DEV 4°F - EXTINGUISHED	c. Go to step 16.
	d. Place rod control bank selector switch in AUTO if desired	

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
16	Establish Stable Plant Conditions:	
	a. Check Tavg - TRENDING TO TREF	a. Insert control rods or, if necessary, decrease turbine load to match Tavg to Tref.
	b. Check PRZR pressure - TRENDING TO 2235 PSIG	b. Verify proper operation of PRZR heaters and spray or take manual control of PRZR pressure controller 431K.
	c. Check PRZR level - TRENDING TO PROGRAM	c. Verify proper operation of charging pump speed controllers or take manual control of speed controllers to control PRZR level.

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED

* *

CAUTION

ANYTIME EMERGENCY D/GS ARE THE ONLY SOURCE OF AC POWER TO THE PLANT, PERSONNEL SHOULD BE ASSIGNED TO MAINTAIN SURVEILLANCE OF THE D/GS.

* *

NOTE: Power operation may continue if conditions required by ITS section 3.8 are met.

17 Restore Normal Electric System Alignment:

a. Verify circuit 767 and/or 751 - AVAILABLE

Response not obtained: a. Continue with Step 18. WHEN offsite power available, THEN do Steps 17b, c and d.

b. Restore power to 12A and/or 12B bus (Refer to ER-ELEC.1, RESTORATION OF OFFSITE POWER)

c. Verify all emergency AC bus normal feed breakers - CLOSED

- Bus 14
- Bus 16
- Bus 17
- Bus 18

Response not obtained: c. Restore emergency AC busses to normal power supply (Refer to ER-ELEC.1, RESTORATION OF OFFSITE POWER)

d. Stop any unloaded emergency D/G and place in standby (Refer to Attachment D/G STOP)

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
18	Establish Normal Plant Conditions:	
	a. Ensure EH control as desired	
	b. Ensure steam dump controller, HC-484, in AUTO at 1005 psig	
	c. Verify annunciator G-15, STEAM DUMP ARMED - EXTINGUISHED	c. <u>IF</u> Tavg within 5°F of Tref, <u>THEN</u> perform the following: 1) Ensure steam dump valves closed. 2) Reset steam dump.
	d. Verify 2 charging pumps - RUNNING	d. Perform the following: 1) Manually start charging pumps as necessary. 2) Place selected charging pump speed controller in AUTO if desired.
	e. Verify Rod Control Selector Switch in AUTO	e. Place Rod Control Selector Switch in AUTO if desired.
	f. Go to Step 34	

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED

NOTE: o Temperatures in the loop with the stopped RCP will not be indicative of true Tavg and ΔT values.

o Attempts to restore offsite power should continue (Refer to ER-ELEC.1, RESTORATION OF OFFSITE POWER.)

19 Check Secondary Heat Sink Status:	
a. Any main feed pump - RUNNING	a. Perform the following: 1) Verify MDAFW pumps running as necessary. 2) Verify TDAFW pump running if necessary. 3) Ensure Rx power less than 2%.
b. Verify S/G levels - TRENDING TO 52%	b. Control feed flow as necessary to restore S/G level.
20 Check TDAFW Pump Status:	
a. TDAFW pump - RUNNING	a. Go to Step 21.
b. Check S/G status o At least one S/G level - GREATER THAN 17% -OR- o Both MDAFW pumps - OPERABLE	b. Go to Step 21.
c. Pull stop TDAFW pump steam supply valves • MOV-3504A • MOV-3505A	

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
21	Check RCS flows:	
	a. Verify at least one loop operating: o One RCP running o Flow greater than 91% in one loop	a. IF reactor trip breakers closed, THEN trip the reactor and go to E-0, REACTOR TRIP OR SAFETY INJECTION. IF reactor trip breakers open, verify natural circulation per Attachment NC AND go to Step 22.
	b. Verify two loops operating: o Both RCPs running o Flow greater than 91% in both loops	b. IF power greater than 8%, THEN trip the reactor and go to E-0, REACTOR TRIP OR SAFETY INJECTION. IF power less than 8%, THEN go to Step 22.
22	Establish RCS Temperature Control:	
	a. Verify condenser available: o Any MSIV - OPEN o Annunciator G-15, STEAM DUMP ARMED - LIT	a. Perform the following: 1) Adjust S/G ARV controllers to stabilize RCS temperature. 2) Go to Step 23.
	b. Adjust condenser steam dump controller HC-484 to stabilize RCS temperature	
	c. Place steam dump mode selector switch to MANUAL	

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
23	Restore Non-Safeguards Busses As Follows:	
	a. Verify Bus 13 and 15 - ENERGIZED	a. IF offsite power available, THEN attempt to restore offsite power and normal feed to Bus 13/15 (Refer to ER-ELEC.1, RESTORATION OF OFFSITE POWER). 1) IF offsite power is NOT available, THEN perform the following: o Close Bus 13 to Bus 14 tie breaker o Close Bus 15 to Bus 16 tie breaker
	b. Verify MCC A - ENERGIZED	b. Perform the following: 1) Ensure the following pumps in PULL STOP: • EH pump A • Turning gear oil pump • HP seal oil backup pump 2) Close MCC A supply breaker from bus 13. 3) Start HP seal oil backup pump.
	c. Verify MCC B - ENERGIZED	c. Perform the following: 1) Ensure EH pump B in PULL STOP. 2) Close MCC B supply breaker from bus 15.
	d. Verify annunciator J-8, 480V MCC SUPPLY BREAKER TRIP - EXTINGUISHED	d. Restore power to other MCCs as D/G loading permits.
	e. Reset control room lighting if necessary	
	f. Reset MAIN XFMR AUX PWR SUPPLY breakers as necessary • Bus 13 • Bus 15	

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED

NOTE: When restarting equipment for recovery, it is preferable to start equipment on busses being supplied from offsite power, if possible.

24 Check IA System:

a. Verify adequate air compressor(s) - RUNNING

b. Check IA supply

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

a. Manually start air compressors as necessary (75 kw each).

b. Dispatch an AO to locally reset and start IA compressors (75 kw each).

IF IA can NOT be established, THEN refer to AP-IA.1, LOSS OF INSTRUMENT AIR.

25 Verify Instrument Bus D - ENERGIZED

Energize MCC B. IF MCC B NOT available, THEN perform the following:

a. Verify MCC A energized.

b. Place instrument bus D on maintenance supply.

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED

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

26 Check VCT Makeup System:

a. Verify the following:

1) RMW mode selector switch in AUTO

2) RMW control armed - RED LIGHT LIT

a. Adjust controls as necessary.

b. Check VCT level:

o Level GREATER THAN 20%

-OR-

o Level - STABLE OR INCREASING

b. Check letdown divert valve, LCV-112A, aligned to VCT.

Manually increase VCT makeup flow as follows:

1) Ensure BA transfer pumps and RMW pumps running.

2) Adjust RMW flow control valve, HCV-111, to increase RMW flow.

3) Increase boric acid flow as necessary to maintain required concentration.

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

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
27	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 28. <u>WHEN</u> VCT level greater than 20%, <u>THEN</u> do Step 27b.
	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
28	Check CVCS Operation:	
	a. Charging pumps - AT LEAST ONE RUNNING	a. Perform the following: 1) Close loop B cold leg to REGEN Hx, AOV-427. 2) Start charging pumps as necessary. 3) Establish greater than 20 gpm charging line flow.
	b. Check letdown indications: o Check PRZR level - GREATER THAN 13% o Letdown flow - APPROXIMATELY 40 GPM o Letdown flow - STABLE	b. Perform the following: 1) Close loop B cold leg to REGEN Hx, AOV-427. 2) Close letdown orifice valves (AOV-200A, AOV-200B, and AOV-202) 3) <u>IF</u> PRZR level greater than 13%, <u>THEN</u> go to Step 29. <u>IF NOT</u>, <u>THEN</u> continue with Step 31. <u>WHEN</u> PRZR level greater than 13%, <u>THEN</u> do Steps 29 and 30.
	c. Adjust charging pump speed and HCV-142 as necessary to restore PRZR level and labyrinth seal D/P	
	d. Go to Step 30	

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED

NOTE: Steps 29 and 30 may be performed concurrently.

29 Establish Normal Letdown:

a. Establish charging line flow to REGEN Hx - GREATER THAN 20 GPM.

b. Verify the following switches in CLOSE:

- Letdown orifice valve (AOV-200A, AOV-200B, and AOV-202)
- Loop B cold leg to REGEN Hx AOV-427

c. Place letdown controllers in MANUAL at 40% open

- TCV-130
- PCV-135

d. Open AOV-427.

e. Open letdown orifice valves as necessary.

f. Place TCV-130 in AUTO at 105°F.

g. Place PCV-135 in AUTO at 250 psig.

h. Adjust charging pump speed and HCV-142 as necessary.

Perform the following steps in sequence to establish excess letdown:

o Place excess letdown divert valve, AOV-312, to NORMAL

o Ensure CCW from excess letdown open, AOV-745

o Ensure RCP seal return isolation valve open, MOV-313

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
30	Verify PRZR Heaters Restored: o PRZR proportional heater breaker - CLOSED o PRZR backup heater breaker - RESET/IN AUTO	IF adequate D/G capacity available for PRZR heaters (400 kw each bank), THEN perform the following: a. Reset and close PRZR proportional heater breaker if necessary. b. Reset PRZR backup heater breaker and return to AUTO if necessary. IF adequate D/G capacity NOT available, THEN refer to ER-PRZR.1.
31	Establish Stable Plant Conditions:	
	a. Check Rx power - LESS THAN 2%	a. Ensure rod control bank selector in MANUAL and insert rods to reduce Rx power as necessary.
	b. Check PRZR pressure - TRENDING TO 2235 PSIG	b. Verify proper operation of PRZR heaters and spray or take manual control of PRZR pressure controller 431K.
	c. Verify 2 charging pumps - RUNNING	c. Perform the following: 1) Manually start charging pumps as necessary. 2) Place selected charging pump speed controller in AUTO if desired.
	d. Check PRZR level - between 35% and 40%	d. Control charging as necessary.
	e. Check S/G levels - TRENDING TO 52%	e. Control feed flow as necessary to restore both S/G levels to 52%.
	f. Check RCS Tavg - GREATER THAN 540°F	f. Control dumping steam as necessary. IF cooldown continues, THEN close both MSIVs.

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED

* *

CAUTION

ANYTIME EMERGENCY D/GS ARE THE ONLY SOURCE OF AC POWER TO THE PLANT, PERSONNEL SHOULD BE ASSIGNED TO MAINTAIN SURVEILLANCE OF THE D/GS.

* *

32 Restore Normal Electric System Alignment:

a. Verify circuit 767 and/or 751 - AVAILABLE

a. Continue with Step 33. WHEN offsite power available, THEN do Steps 32b, c and d.

b. Restore power to 12A and/or 12B bus if necessary (Refer to ER-ELEC.1, RESTORATION OF OFFSITE POWER)

c. Verify all emergency AC bus normal feed breakers - CLOSED

- Bus 14
- Bus 16
- Bus 17
- Bus 18

c. Restore emergency AC busses to normal power supply (Refer to ER-ELEC.1, RESTORATION OF OFFSITE POWER)

d. Stop any unloaded emergency D/G and place in standby (Refer to Attachment D/G STOP)

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED

NOTE: Evaluate conditions to determine if turbine should be placed on turning gear.

33	Verify Turning Gear Oil Pump - RUNNING	Perform the following: a. Manually start turning gear oil pump (42 kw). b. Break vacuum to accelerate turbine coastdown. c. Continue with Step 34. WHEN shaft stops, THEN dispatch AO to place turbine on turning gear.
34	Check Status Of DC System Loads:	
	a. Verify turb emergency DC lube oil pump - OFF	a. Manually stop emergency DC lube oil pump.
	b. Verify TDAFW pump DC oil pump - OFF IN AUTO	b. Perform the following: 1) Direct AO to locally check TDAFW AC oil pump running. IF not running, THEN start pump from MCB. 2) Stop TDAFW pump DC oil pump.
	c. Verify both MFW pump DC oil pumps - OFF	c. Perform the following: 1) Ensure associated MFW pump AC oil pump running. 2) Stop MFW pump DC oil pump and place in AUTO

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
	NOTE: Inst Bus C provides power to all MCB manual controllers.	
35	Check Status of Battery Chargers:	
	a. Battery Chargers 1A OR 1A1 - ENERGIZED	a. IF BOTH battery chargers are deenergized, THEN direct the Electricians to crosstie TSC battery charger to main battery A (Refer to ATTACHMENT TRANSFER BATTERY TO TSC).
	b. Battery chargers 1B OR 1B1 - ENERGIZED	b. IF BOTH battery chargers are deenergized, THEN direct the Electricians to crosstie TSC battery charger to main battery B (Refer to ATTACHMENT TRANSFER BATTERY TO TSC)

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
36	Restore Equipment Alignment:	
	a. Verify at least 2 CNMT recirc fans - RUNNING	a. Start CNMT recirc fans as necessary (240 kw each).
	b. Check CCW pumps - ONLY ONE RUNNING	b. <u>IF</u> two CCW pumps running, <u>THEN</u> manually stop one pump.
	c. Check radiation monitoring systems: o CNMT vent sample pump - RUNNING o Plant vent sample pump - RUNNING o All area and process monitors operating as required	c. Restore sample pumps and radiation monitors as necessary.
	d. Dispatch AO to verify proper operation of seal oil system	
	e. Verify motor fire pump breaker - CLOSED	e. Close motor fire pump breaker.
	f. Verify annunciator L-1, AUX BLDG VENT SYSTEM CONTROL PANEL - EXTINGUISHED	f. <u>IF</u> bus 11A or 11B energized, <u>THEN</u> dispatch AO to restore AUX BLDG ventilation (Refer to T-35A, AUX AND INTERMEDIATE BUILDING VENTILATION STARTUP AND SHUTDOWN)
	g. Verify service air compressor - RUNNING	g. Dispatch AO to locally start service air compressor.
	h. Verify MCC G - ENERGIZED	h. Manually close breaker.
	i. Check control board annunciator panels - ALARM STATUS VALID FOR PLANT CONDITIONS	i. Perform alarm response procedures for unexpected alarms.
	j. Verify control board valve alignment - NORMAL (Refer to O-6.13, DAILY SURVEILLANCE LOG)	j. Manually align valves as necessary.

This Step continued on the next page.

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED

(Step 36 continued from previous page)

k. 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) Manually start one fan as power supply permits (23 kw).

l. Dispatch AO to start waste gas compressor as necessary

m. Dispatch AO to restore SFP cooling as necessary

37 Reset UV Relay Targets On Undervoltage Cabinets

- Bus 14
- Bus 16
- Bus 17
- Bus 18

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

38 Notify Higher Supervision

39 Return To Procedure Or Guidance In Effect

-END-

AP-ELEC. 1 APPENDIX LIST

TITLE

1) FIGURE MIN SUBCOOLING (FIG-1.0)
2) ATTACHMENT NC (ATT-13.0)
3) ATTACHMENT D/G STOP (ATT-8.1)
4) ATTACHMENT TRANSFER BATTERY TO TSC (ATT-24.0)

ROCHESTER GAS AND ELECTRIC CORPORATION

GINNA STATION

CONTROLLED COPY NUMBER 23

RESPONSIBLE MANAGER

9-8-2000

EFFECTIVE DATE

CATEGORY 1.0

REVIEWED BY: _____

A. PURPOSE - This procedure provides actions to respond to a loss of 12A or 12B SS Transformer when RCS temperature is less than 350°F.

B. ENTRY CONDITIONS/SYMPTOMS

1. ENTRY CONDITIONS - This procedure may be entered from:

   a. AP-ELEC.1, LOSS OF 12A AND/OR 12B BUSSES, when busses 12A and/or 12B are found to be deenergized and RCS temperature is less than 350°F.

2. SYMPTOMS - The symptoms of loss of #12A or 12B SS Transformer are:

   a. Annunciator L-20, 12A XFMR OR 12A BUS TROUBLE, lit, or

   b. Annunciator L-28, 12B XFMR OR 12B BUS TROUBLE, lit.

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED

* *

CAUTION

- o 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.
- o OBSERVE D/G LOADING LIMITS OF 2300 KW FOR 1/2 HOUR, 2250 KW FOR 2 HOURS, AND 1950 KW FOR CONTINUOUS SERVICE.
- o ANYTIME EMERGENCY D/GS ARE THE ONLY SOURCE OF AC POWER TO THE PLANT, PERSONNEL SHOULD BE ASSIGNED TO MAINTAIN SURVEILLANCE OF THE D/GS.
- o IF ANY RADIOACTIVE RELEASE IN PROGRESS, THEN IT SHOULD BE TERMINATED UNTIL SUPPORT CONDITIONS ARE EVALUATED.

* *

NOTE: Conditions should be evaluated for site contingency reporting (Refer to EPIP-1.0, GINNA STATION EVENT EVALUATION AND CLASSIFICATION).

1 Verify Emergency D/G Associated With Dead Bus - RUNNING AND LOADED o Bus 12A - D/G A o Bus 12B - D/G B	Attempt to start and load emergency D/G(s) manually. (Refer to ER-D/G.1, RESTORATION OF A FAILED D/G.)
2 Verify Both Trains Of AC Emergency Busses Energized To At Least 420 VOLTS: o Bus 14 and bus 18 o Bus 16 and bus 17	Try to restore power to all AC emergency busses. IF power can NOT be restored to at least one train, THEN refer to ECA-0.0, LOSS OF ALL AC POWER.

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED

NOTE: When restarting equipment for recovery, it is preferable to start equipment on busses being supplied from offsite power, if possible.

3	Verify Service Water System Operation:	
	a. SW pumps - AT LEAST ONE RUNNING IN EACH LOOP	a. Verify selected SW pumps start on a timer (40 sec) after D/G start. IF NOT, THEN manually start pumps as conditions permit (257 kw each).
	b. SW header pressure - GREATER THAN 40 PSIG IN EACH LOOP	b. Manually align valves as necessary.
4	Check CCW Pump Status:	
	a. At least one CCW pump - RUNNING	a. Start one CCW pump (124 kw).
	b. Annunciator A-22, CCW PUMP DISCHARGE LO PRESS 60 PSIG - EXTINGUISHED	b. Start second CCW pump (124 kw).

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
5	Check RCS Temperature - STABLE	IF RCS temperature increasing, THEN stabilize temperature using available method. • RHR normal cooling • Dump steam and feed • Blowdown and feed IF RCS temperature decreasing, THEN perform the following: a. Stop dumping steam or control RHR normal cooling. b. IF cooldown continues, THEN perform the following: 1) IF either MDAFW pump operable, THEN ensure TDAFW pump steam supply valves in PULL STOP. 2) WHEN S/G level greater than 5% in one S/G, THEN limit feed flow to that required to maintain S/G level.

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED

* *

CAUTION

IF REFUELING IN PROGRESS, THEN STOP REFUELING OPERATIONS (NOTIFY REFUELING SRO).

* *

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
6	Restore Non-Safeguards Busses As Follows:	
	a. Verify non-safeguards busses - ENERGIZED • Bus 13 • Bus 15	a. Close non-safeguards bus tie breaker for affected bus(ses) if possible: • Bus 13 to bus 14 tie • Bus 15 to bus 16 tie
	b. Verify MCC A - ENERGIZED	b. Perform the following: 1) Ensure the following pumps in PULL STOP: • EH pump A • Turning gear oil pump • HP seal oil backup pump 2) Close MCC A supply breaker from bus 13.
	c. Verify MCC B - ENERGIZED	c. Perform the following: 1) Ensure EH pump B in PULL STOP. 2) Close MCC B supply breaker from bus 15.
	d. Check CNMT vent sample pump - RUNNING	d. <u>IF</u> CNMT purge or mini-purge in progress, <u>THEN</u> secure purging.
	e. Verify annunciator J-8, 480V MCC SUPPLY BREAKER TRIP - EXTINGUISHED	e. Restore power to other MCCs as D/G loading permits.
	f. Reset control room lighting if necessary	

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
7	Check IA System:	
	a. Verify adequate air compressor(s) - RUNNING	a. Manually start air compressors as necessary (75 kw each).
	b. Check IA supply o Pressure - GREATER THAN 60 PSIG o Pressure - STABLE OR INCREASING	b. Dispatch an AO to locally reset and start air compressors as necessary (75 kw each). <u>IF</u> IA can <u>NOT</u> be established, <u>THEN</u> refer to AP-IA.1, LOSS OF INSTRUMENT AIR.
8	Check RCS Cooling:	
	a. RHR system - PREVIOUSLY ALIGNED FOR RHR NORMAL COOLING	a. Go to Step 19.
	b. Check RHR pumps - ANY RUNNING	b. <u>IF</u> RHR normal cooling previously in service, <u>THEN</u> go to Step 9. <u>IF</u> RHR normal cooling <u>NOT</u> required, <u>THEN</u> go to Step 19.
	c. Go to Step 11	

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
9	Establish Conditions To Start RHR Pump:	
	a. Any RHR pump - AVAILABLE	a. IF RCS level greater than 64 inches, THEN go to AP-RHR.1, LOSS OF RHR. IF NOT, THEN go to AP-RHR.2, LOSS OF RHR WHILE OPERATING AT RCS REDUCED INVENTORY CONDITIONS.
	b. Verify CCW cooling to RHR system in service o CCW pumps - AT LEAST ONE RUNNING o CCW to RHR Hxs, MOV-738A AND MOV-738B - OPEN AS NECESSARY	b. Perform the following: 1) Ensure at least one CCW pump running. 2) Open MOV-738A and MOV-738B as necessary. IF CCW can NOT be restored, THEN continue attempts to restore CCW (Refer to AP-CCW.3, LOSS OF CCW - PLANT SHUTDOWN).
	c. Place RHR Hx bypass valve, HCV-626, to MANUAL and close valve	

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED

* *

CAUTION

- o STARTING AN RHR PUMP MAY RESULT IN AN RCS LEVEL OR PRESSURE DECREASE DUE TO SHRINK OR VOID COLLAPSE.
- o THE RHR HX OUTLET VALVES (HCV-624 AND HCV-625) WILL FAIL OPEN ON LOSS OF INSTRUMENT AIR PRESSURE.

* *

10 Restore RHR Flow:

a. Start one RHR pump

b. At least one RHR pump - RUNNING

b. Go to Step 10d.

c. Establish RHR flow - WITHIN LIMITS OF TABLE BELOW

c. Manually adjust RHR flow as necessary.

B LOOP LEVEL	RHR FLOW
100 - 70 inches	< 3000 gpm
< 70 - 30 inches	≤ 1400 gpm
< 30 - 16 inches	≤ 1000 gpm
< 16 - 10 inches	≤ 800 gpm
< 10 - 6 inches	≤ 500 gpm

d. RHR flow - RESTORED

d. IF RCS level greater than 64 inches, THEN go to AP-RHR.1, LOSS OF RHR. IF NOT, THEN go to AP-RHR.2, LOSS OF RHR WHILE OPERATING AT RCS REDUCED INVENTORY CONDITIONS.

e. Place RHR Hx bypass valve, HCV-626, controller in AUTO at desired flowrate

This Step continued on the next page.

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
	(Step 10 continued from previous page)	
	f. Open RHR pump flow control valves as necessary to stabilize RCS temperature • HCV-624 • HCV-625	
	g. Check core exit T/Cs - STABLE OR DECREASING	g. Start another RHR pump or increase RHR flow to establish required RCS cooling. DO <u>NOT</u> exceed RHR flow limits from table above.
11	Check AFW Pump Status:	
	a. AFW pumps - ANY RUNNING	a. Go to Step 12.
	b. Both S/G levels - AT DESIRED LEVEL	b. Continue with Step 12. <u>WHEN</u> desired S/G levels established, <u>THEN</u> do Step 11c.
	c. Stop running AFW pumps and place switches in PULL STOP	
12	Evaluate RCS Conditions:	
	a. Check RCS status: o RCS - CLOSED o RCS pressure - GREATER THAN ATMOSPHERIC	a. <u>IF</u> RCS is open to atmosphere, <u>THEN</u> go to Step 18.
	b. Verify RCP #1 seal D/Ps - GREATER THAN 220 PSID	b. <u>IF</u> any RCP running with #1 seal D/P less than 220 psid, <u>THEN</u> stop affected RCP.

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
13	Check VCT Makeup System:	
	a. Verify the following:	a. Adjust controls as necessary.
	1) RMW mode selector switch in AUTO	
	2) RMW control armed - RED LIGHT LIT	
	b. Check VCT level:	b. Check letdown divert valve, LCV-112A, aligned to VCT.
	o Level GREATER THAN 20%	Manually increase VCT makeup flow as follows:
	-OR-	
	o Level - STABLE OR INCREASING	1) Ensure BA transfer pumps and RMW pumps running.
		2) Adjust RMW flow control valve, HCV-111, to increase RMW flow.
		3) Increase boric acid flow as necessary to maintain required concentration.
		IF VCT level can NOT be maintained, THEN refer to ER-CVCS.1, REACTOR MAKEUP CONTROL MALFUNCTION, if necessary.

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
14	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 15. WHEN VCT level greater than 20%, THEN do Step 14b.
	b. Verify charging pumps aligned to VCT o LCV-112C open o LCV-112B closed	b. Manually align valves as necessary.
15	Check Charging Pumps - ANY CHARGING PUMP RUNNING	IF charging pumps required, THEN perform the following: a. Verify charging to loop B cold leg, AOV-294, open. b. Verify charging flow control valve, HCV-142, open as necessary. c. IF desired, THEN place letdown pressure controller, PCV-135, in MANUAL. d. Start one charging pump (75 kw each pump). e. Increase charging pump speed and control PCV-135 as necessary to control PRZR pressure or level.

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
16	Monitor RCS Pressure:	
	a. Pressure - LESS THAN 390 PSIG	a. IF RCS is solid, THEN control charging and letdown pressure control valve (PCV-135) as necessary to stabilize RCS pressure. IF PRZR bubble established, THEN operate normal or auxiliary spray to decrease pressure.
	b. Pressure - STABLE	b. Stabilize RCS pressure using appropriate means. • Charging • Letdown • PCV-135 (solid) • Normal spray • Auxiliary spray • PRZR heaters
17	Check PRZR Level:	
	a. Narrow range level - ON SCALE	a. IF RCS is solid, THEN go to Step 18.
	b. Level - TRENDING TO PROGRAM	b. Adjust charging pump speed as necessary to control PRZR level.
18	Monitor RCS Temperature	
	a. Core exit T/Cs - STABLE OR DECREASING	a. Adjust RCS cooling as necessary and return to Step 3. • S/G steaming • S/G feeding • RHR cooling
	b. Go to Step 29	

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
19	Check AFW System Status:	
	a. Verify TDAFW pump steam supply valves in PULL STOP	a. IF S/Gs providing heat sink, THEN perform the following: 1) Verify adequate MDAFW flow. 2) Pull stop TDAFW pump. 3) Adjust AFW flow as necessary to stabilize S/G level and RCS temperature.
	b. Verify MDAFW pump crosstie valves closed • MOV-4000A • MOV-4000B	b. Ensure at least one MDAFW pump off. IF two pumps required, THEN close both MDAFW pump crosstie valves.
20	Check Any S/G Level - GREATER THAN 17%	Start MDAFW pumps as necessary to restore S/G level.
21	Check RCS Pressure - GREATER THAN 300 PSIG	Increase RCS pressure to greater than 300 psig. IF RCP #1 seal D/P can NOT be maintained greater than 220 psid, THEN trip any running RCP.
22	Check RCP Status - ANY RCP RUNNING	Verify natural circulation (Refer to Attachment NC). IF natural circulation NOT verified, THEN increase dumping steam.

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
23	Monitor RCS Temperature - STABLE OR DECREASING	Control S/G ARVs to stabilize RCS temperature. IF S/G ARVs do NOT provide adequate cooling, THEN perform the following: a. Initiate S/G blowdown from both S/Gs. b. Maintain both S/G levels stable by controlling AFW flow.
24	Check VCT Makeup System:	
	a. Verify the following: 1) RMW mode selector switch in AUTO 2) RMW control armed - RED LIGHT LIT	a. Adjust controls as necessary.
	b. Check VCT level: o Level GREATER THAN 20% -OR- o Level - STABLE OR INCREASING	b. Check letdown divert valve, LCV-112A, aligned to VCT. Manually increase VCT makeup flow as follows: 1) Ensure BA transfer pumps and RMW pumps running. 2) Adjust RMW flow control valve, HCV-111, to increase RMW flow. 3) Increase boric acid flow as necessary to maintain required concentration. IF VCT level can NOT be maintained, THEN refer to ER-CVCS.1, REACTOR MAKEUP CONTROL MALFUNCTION, if necessary.

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
25	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 26. <u>WHEN</u> VCT level greater than 20%, <u>THEN</u> do Step 25b.
	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
26	Check CVCS Operation:	
	a. Charging pumps - AT LEAST ONE RUNNING	a. Perform the following: 1) Start charging pumps as necessary. 2) Establish greater than 20 gpm charging line flow.
	b. Check letdown indications: o Check PRZR level - GREATER THAN 13% o Letdown flow - APPROXIMATELY 40 GPM o Letdown flow - STABLE	b. Perform the following: 1) Close loop B cold leg to REGEN Hx, AOV-427. 2) Close letdown orifice valves (AOV-200A, AOV-200B, and AOV-202) 3) <u>IF</u> PRZR level greater than 13%, <u>THEN</u> go to Step 27. <u>IF NOT</u>, <u>THEN</u> continue with Step 29. <u>WHEN</u> PRZR level greater than 13%, <u>THEN</u> do Steps 27 and 28.
	c. Adjust charging pump speed and HCV-142 as necessary to restore PRZR level and labyrinth seal D/P	
	d. Go to Step 28	

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED

NOTE: Steps 27 and 28 may be performed concurrently.

27	Establish Normal Letdown: a. Establish charging line flow to REGEN Hx - GREATER THAN 20 GPM b. Verify the following switches in CLOSE: • Letdown orifice valve (AOV-200A, AOV-200B, and AOV-202) • Loop B cold leg to REGEN Hx AOV-427 c. Place letdown controllers in MANUAL at 40% open • TCV-130 • PCV-135 d. Open AOV-427 e. Open letdown orifice valves as necessary f. Place TCV-130 in AUTO at 105°F g. Place PCV-135 in AUTO at 250 psig h. Adjust charging pump speed and HCV-142 as necessary	Perform the following steps in sequence to establish excess letdown: o Place excess letdown divert valve, AOV-312, to NORMAL o Ensure CCW from excess letdown open, AOV-745 o Ensure RCP seal return isolation valve open, MOV-313 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
28	Verify PRZR Heaters Restored: o PRZR proportional heater breaker - CLOSED o PRZR backup heater breaker - RESET/IN AUTO	IF PRZR heaters required, THEN perform the following: a. Verify adequate D/G capacity available for PRZR heaters (400 kw each bank). b. Reset and close PRZR proportional heater breaker if necessary. c. Reset PRZR backup heater breaker and return to AUTO if necessary. IF at least 100 kw of PRZR heaters can NOT be restored, THEN refer to ITS 3.4.9.

NOTE: Check ITS section 3.8 for limiting conditions for operation.

29	Restore Normal Electric System Alignment:	
	a. Verify circuit 767 and/or 751 - AVAILABLE	a. Continue with Step 31. WHEN offsite power available, THEN do Steps 29b, c, d and 30.
	b. Restore power to 12A and/or 12B bus (Refer to ER-ELEC.1, RESTORATION OF OFFSITE POWER)	
	c. Verify all emergency AC bus normal feed breakers - CLOSED • Bus 14 • Bus 16 • Bus 17 • Bus 18	c. Restore emergency AC busses to normal power supply (Refer to ER-ELEC.1, RESTORATION OF OFFSITE POWER)
	d. Stop any unloaded emergency D/G and place in standby (Refer to Attachment D/G STOP)	

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
30	Check If An RCP Should Be Started:	
	a. Check the following: o Both RCPs - OFF o RCP operation - DESIRED	a. Go to Step 31.
	b. RCS pressure - APPROXIMATELY 325 PSIG	b. Control PRZR heaters and/or charging pump speed as necessary to restore RCS pressure.
	c. Check PRZR level - LESS THAN 38%	c. Verify S/G temperature (obtained locally in CNMT at S/G handhole) less than RCS cold leg temperature. <u>IF NOT</u>, <u>THEN</u> go to Step 31.
	d. Try to start an RCP 1) Establish conditions for starting an RCP a) Bus 11A or 11B energized b) Refer to Attachment RCP START 2) Start one RCP	d. <u>IF</u> an RCP can <u>NOT</u> be started, <u>THEN</u> continue to monitor natural circulation conditions (Refer to Attachment NC).
31	Check RCS Temperature - STABLE OR DECREASING	Adjust RCS cooling as necessary. • S/G steaming • S/G feeding • RHR cooling

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
32	Establish Normal Shutdown Alignment:	
	a. Verify turning gear oil pump - RUNNING	a. <u>IF</u> turbine oil system operation required, <u>THEN</u> perform the following: 1) Manually start turning gear oil pump (42 kw). 2) Dispatch AO to place turbine on turning gear if desired.
	b. Verify main generator - DEPRESSURIZED	b. Perform the following: 1) Manually start the HP seal oil backup pump 2) Dispatch AO to locally perform the following: o Verify proper operation of the seal oil system (Refer to T-34B, GENERATOR SEAL OIL SYSTEM NORMAL OPERATION). o Ensure bearing drain vapor extractor running. o Ensure main lube oil reservoir vapor extractor running.
	c. Check RCS temperature - LESS THAN 135°F	c. Perform the following: 1) Ensure one Rx compartment cooling fan running (23 kw). 2) Ensure one control rod shroud fan running (45 kw).
	d. Dispatch AO to start waste gas compressor as necessary	
	e. Dispatch AO to restore SFP cooling as necessary.	

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
33	Restore Equipment Alignment:	
	a. Verify at least 1 CNMT recirc fan - RUNNING	a. Start CNMT recirc fans as necessary (240 kw each).
	b. Verify annunciator L-1, AUX BLDG VENT SYSTEM CONTROL PANEL - EXTINGUISHED	b. IF bus 11A or 11B energized, THEN dispatch AO to restore AUX BLDG ventilation (Refer to T-35A, AUX AND INTERMEDIATE BUILDING VENTILATION STARTUP AND SHUTDOWN)
	c. Check radiation monitoring systems: o CNMT vent sample pump - RUNNING o Plant vent sample pump - RUNNING o All area and process monitors operating as required	c. Perform the following: 1) Restore sample pumps and radiation monitors as necessary. 2) Restart CNMT purge or mini-purge if desired.
	d. Verify service air compressor - RUNNING	d. Dispatch AO to locally start service air compressor if desired.
	e. Verify motor fire pump breaker - CLOSED	e. Close motor fire pump breaker.
	f. Check control board annunciator panels - ALARM STATUS VALID FOR PLANT CONDITIONS	f. Perform alarm response procedures for unexpected alarms.
	g. Verify control board valve alignment - NORMAL (Refer to O-6.13, DAILY SURVEILLANCE LOG)	g. Manually align valves as necessary.

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
34	Check Status Of DC System Loads:	
	a. Verify emergency DC lube oil pump - OFF	a. Manually stop emergency DC lube oil pump.
	b. Verify TDAFW pump DC oil pump - OFF	b. Perform the following: 1) Direct AO to locally check TDAFW AC oil pump running. <u>IF</u> not running, <u>THEN</u> start pump from MCB. 2) Stop TDAFW pump DC oil pump.
	c. Verify both MFW pump DC oil pumps - OFF	c. Stop MFW pump DC oil pumps.

<u>NOTE</u>: Inst Bus C provides power to all MCB manual controllers.

35	Check Status Of Battery Chargers:	
	a. Battery Chargers 1A <u>OR</u> 1A1 - ENERGIZED	a. <u>IF</u> <u>BOTH</u> battery chargers are deenergized, <u>THEN</u> direct the Electricians to crosstie TSC battery charger to main battery A (Refer to ATTACHMENT TRANSFER BATTERY TO TSC)
	b. Battery Chargers 1B <u>OR</u> 1B1 - ENERGIZED	b. <u>IF</u> <u>BOTH</u> battery chargers are deenergized, <u>THEN</u> direct the Electricians to crosstie TSC battery charger to main battery B (Refer to ATTACHMENT TRANSFER BATTERY TO TSC).

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
36	Verify Offsite Power - RESTORED	Continue attempts to restore offsite power (Refer to ER-ELEC.1, RESTORATION OF OFFSITE POWER).
37	Reset UV relay targets on undervoltage cabinets • Bus 14 • Bus 16 • Bus 17 • Bus 18	
38	Notify Higher Supervision	

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

39 Return To Procedure Or Guidance In Effect

-END-

AP-ELEC.3 APPENDIX LIST

	TITLE	
1)	FIGURE MIN SUBCOOLING	(FIG-1.0)
2)	ATTACHMENT RCP START	(ATT-15.0)
3)	ATTACHMENT NC	(ATT-13.0)
4)	ATTACHMENT D/G STOP	(ATT-8.1)
5)	ATTACHMENT TRANSFER BATTERY TO TSC	(ATT-24.0)

ROCHESTER GAS AND ELECTRIC CORPORATION

GINNA STATION

CONTROLLED COPY NUMBER 23

RESPONSIBLE MANAGER

9-8-2000

EFFECTIVE DATE

CATEGORY 1.0

REVIEWED BY: _____

A. PURPOSE - This procedure provides actions to respond to a loss of AC Emergency Bus 14 or Bus 16.

B. ENTRY CONDITIONS/SYMPTOMS

2. SYMPTOMS - The symptoms of a LOSS OF SAFEGUARDS BUS 14/16 are;

a. Annunciator J-7, 480V MAIN OR TIE BREAKER TRIP, lit, or

b. Annunciator J-29, 480V TRANSFORMER BREAKER TRIP, lit.

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED

* *

CAUTION

- o IF A LOSS OF BUS 12A OR 12B HAS OCCURRED, THEN NO OUTSIDE, SHOULD BE PERFORMED.
- o IF A TURBINE RUNBACK HAS OCCURRED, THEN AP-TURB.2, TURBINE LOAD REJECTION, SHOULD BE PERFORMED.
- o OBSERVE D/G LOADING LIMITS OF 2300 KW FOR 1/2 HOUR, 2250 KW FOR 2 HOURS, AND 1950 KW FOR CONTINUOUS SERVICE.
- o DO NOT ATTEMPT TO ENERGIZE A BUS THAT IS POTENTIALLY FAULTED.

* *

NOTE: Conditions should be evaluated for site contingency reporting (Refer to EPIP-1.0, GINNA STATION EVENT EVALUATION AND CLASSIFICATION).

1 Establish Manual Rod Control

a. Place Rod Control Bank Selector Switch to MANUAL

b. Verify control rod motion stops

b. Manually trip the reactor and go to E-0, REACTOR TRIP OR SAFETY INJECTION.

c. Manually move control rods as necessary

2 Verify Emergency D/G Associated With Affected Bus - RUNNING AND LOADED

Attempt to start and load emergency D/G(s) manually. (Refer to ER-D/G.1, RESTORING D/Gs)

- o Bus 14 - D/G A
- o Bus 16 - D/G B

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
3	Verify At Least One Train of AC Emergency Busses Energized to at Least 420 Volts: o Bus 14 and Bus 18 -OR- o Bus 16 and Bus 17	Go to ECA-0.0, LOSS OF ALL AC POWER step 1.

* *

CAUTION

IF CCW FLOW TO A RCP IS INTERRUPTED FOR GREATER THAN 2 MINUTES OR IF EITHER RCP MOTOR BEARING TEMPERATURE EXCEEDS 200°F, THEN TRIP THE AFFECTED RCP.

* *

4	Verify CCW Pump Status	
	a. At least one CCW Pump - RUNNING	a. Start one CCW pump (124 KW) 1) IF neither CCW pump can be started, THEN perform the following: a) Trip the reactor. b) Trip BOTH RCP's. c) Go to E-0, REACTOR TRIP OR SAFETY INJECTION.
	b. Annunciator A-22, CCW PUMP DISCHARGE LO PRESS 60 PSIG - EXTINGUISHED	b. Start second CCW pump (124 KW).

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
5	Verify Charging Pump Status- AT LEAST ONE RUNNING	Secure letdown flowpaths o Close loop B cold leg to REGEN Hx, AOV-427. o Ensure closed loop A cold leg to EXCESS LETDOWN Hx, AOV-310. o Ensure closed EXCESS LETDOWN HCV-123.
6	Monitor S/G Level Control: o S/G level - TRENDING TO 52% o MFW regulating valves - CONTROLLING IN AUTO	Place MFW regulating valves in MANUAL and control feed flow as necessary.

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
7	Verify Bus 14 - ENERGIZED TO AT LEAST 420 VOLTS	Perform the following: a. Close loop B cold leg to REGEN Hx, AOV-427. b. <u>IF</u> steam dump is armed, <u>THEN</u> place STEAM DUMP MODE SELECTOR Switch to MANUAL. c. Ensure only one charging pump operating. d. Transfer Inst Bus B to maintenance supply. e. Return steam dump to AUTO, if desired. f. Ensure the following equipment operating as necessary: • CCW Pump B • PRZR Backup Heaters • CNMT Recirc Fans B and C • Boric Acid Pump B • RMW Pump B • Reactor Compartment Cooling Fan B • Penetration Cooling Fan B g. <u>IF</u> Bus 14 can <u>NOT</u> be energized, <u>THEN</u>: o Provide alternate room cooling for D/G A. o Cross-connect D/G B fuel oil transfer pump to D/G A (Refer to T-27.4 Attachment A).

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
8	Verify Bus 16 - ENERGIZED TO AT LEAST 420 VOLTS	Perform the following: a. Ensure the following equipment operating as necessary: • CCW Pump A • Charging Pump A • PRZR Proportional Heaters • CNMT Recirc Fans A and D • Boric Acid Pump A • RMW Pump A • Reactor Compartment Cooling Fan A • Penetration Cooling Fan A b. <u>IF</u> Bus 16 can <u>NOT</u> be energized, <u>THEN</u>: o Provide alternate room cooling for D/G B. o Cross-connect D/G A fuel oil transfer pump to D/G B (Refer to T-27.4 Attachment B).

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
	NOTE: IF VCT level decreased to 5%, charging pump suction will swap to the RWST. This may required a load reduction.	
9	Check VCT Makeup System:	
	a. Verify the following: 1) RMW mode selector switch in AUTO 2) RMW control armed - RED LIGHT LIT	a. Adjust controls as necessary.
	b. Check VCT level: o Level GREATER THAN 20% -OR- o Level - STABLE OR INCREASING	b. Check letdown divert valve, LCV-112A, aligned to VCT. Manually increase VCT makeup flow as follows: 1) Ensure BA transfer pumps and RMW pumps running. 2) Adjust RMW flow control valve, HCV-111, to increase RMW flow. 3) Increase boric acid flow as necessary to maintain required concentration. IF VCT level can NOT be maintained, THEN refer to ER-CVCS.1, REACTOR MAKEUP CONTROL MALFUNCTION, if necessary.

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
10	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 11. <u>WHEN</u> VCT level greater than 20%, <u>THEN</u> do Step 10b.
	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
	NOTE: When restarting equipment for recovery, it is preferable to start equipment on busses being supplied from offsite power, if possible.	
11	Check CVCS Operation:	
	a. Charging pumps - AT LEAST ONE RUNNING	a. IF charging pump(s) available, THEN perform the following: 1) Start charging pumps as necessary. 2) Establish greater than 20 gpm charging line flow. IF NO charging pumps available, THEN go to step 13
	b. Charging line flow - GREATER THAN 20 GPM	b. Establish charging line flow to REGEN Hx - GREATER THAN 20 GPM
	c. Check letdown indications: o Check PRZR level - GREATER THAN 13% o Letdown flow - APPROXIMATELY 40 GPM o Letdown flow - STABLE	c. Perform the following: 1) Close loop B cold leg to REGEN Hx, AOV-427. 2) Close letdown orifice valves (AOV-200A, AOV-200B, and AOV-202) 3) IF PRZR level greater than 13%, THEN go to Step 12. IF NOT, THEN continue with Step 14. WHEN PRZR level greater than 13%, THEN do Steps 12 and 13.
	d. Adjust charging pump speed and HCV-142 as necessary to restore PRZR level and labyrinth seal D/P	
	e. Go to Step 13	

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED

NOTE: Steps 12 and 13 may be performed concurrently.

12 Establish Normal Letdown: a. Establish charging line flow to REGEN Hx - GREATER THAN 20 GPM b. Place letdown controllers in MANUAL at 40% open • TCV-130 • PCV-135 c. Open AOV-427 d. Open letdown orifice valves as necessary e. Place TCV-130 in AUTO at 105°F f. Place PCV-135 in AUTO at 250 psig g. Adjust charging pump speed and HCV-142 as necessary	Perform the following steps in sequence to establish excess letdown, if desired: o Place excess letdown divert valve, AOV-312, to NORMAL o Ensure CCW from excess letdown open, AOV-745 o Ensure RCP seal return isolation valve open, MOV-313 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
13 Verify PRZR Heaters Restored: o PRZR proportional heater breaker - CLOSED o PRZR backup heater breaker - RESET/IN AUTO	IF adequate D/G capacity available for PRZR heaters (400 kw each bank), THEN perform the following: a. Reset and close PRZR proportional heater breaker if necessary. b. Reset PRZR backup heater breaker and return to AUTO if necessary. IF adequate D/G capacity NOT available, THEN refer to ER-PRZR.1.

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
14	Verify Normal Rod Control Restored:	
	a. Annunciator C-5, PPCS ROD SEQUENCE OR ROD DEVIATION - EXTINGUISHED	a. IF alarm is due to a loss of power to MRPI, THEN maintain rods in manual AND minimize rod motion. IF alarm is due to actual rod misalignment, THEN refer to AP-RCC.2, RCC/RPI MALFUNCTION, while continuing with this procedure.
	b. Annunciator E-28, POWER RANGE ROD DROP ROD STOP - EXTINGUISHED	b. Perform the following: 1) Place rod control bank selector switch in MANUAL. 2) Reset NIS rod drop rod stop signals (at NIS racks) as necessary.
	c. Annunciator F-15, RCS TAVG DEV 4°F - EXTINGUISHED	c. Go to step 15
	d. Place rod control bank selector switch in AUTO if desired	

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
15	Establish Stable Plant Conditions:	
	a. Check Tavg - TRENDING TO TREF	a. Insert control rods or, if necessary, decrease turbine load to match Tavg to Tref.
	b. Check PRZR pressure - TRENDING TO 2235 PSIG	b. Verify proper operation of PRZR heaters and spray or take manual control of PRZR pressure controller 431K.
	c. Check PRZR level - TRENDING TO PROGRAM	c. Verify proper operation of charging pump speed controllers or take manual control of speed controllers to control PRZR level.
16	Restore Normal Electric System Alignment:	
	a. Verify circuit 767 and/or 751 - AVAILABLE	a. Continue with Step 17. <u>WHEN</u> offsite power available, <u>THEN</u> do Steps 16b and c.
	b. Verify all emergency AC bus normal feed breakers - CLOSED • Bus 14 • Bus 16 • Bus 17 • Bus 18	b. Perform the following: 1) Restore emergency AC busses to normal power supply (Refer to ER-ELEC.1, RESTORATION OF OFFSITE POWER) 2) <u>IF</u> normal power is restored to all AC emergency buses, <u>THEN</u> return to step 7. <u>IF NOT</u>, <u>THEN</u> go to step 17.
	c. Stop any unloaded emergency D/G and place in standby (Refer to T-27.4)	

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
17	Establish Normal Plant Conditions:	
	a. Verify 2 charging pumps - RUNNING	a. Perform the following: 1) Manually start charging pumps as necessary. 2) Place selected charging pump speed controller in AUTO if desired.
	b. Verify at least 2 CNMT recirc fans - RUNNING	b. Start CNMT recirc fans as necessary (240 kw each).
	c. Check CCW pumps - ONLY ONE RUNNING	c. Locally verify two CCW pumps running, <u>THEN</u> manually stop one pump.
	d. Check radiation monitoring systems: o CNMT vent sample pump - RUNNING o Plant vent sample pump - RUNNING o All area and process monitors operating as required	d. Restore sample pumps and radiation monitors as necessary. (Refer to CHA-RETS-ODCM).
18	Check Status Of DC System Loads:	
	a. Verify TDAFW pump DC oil pump - OFF IN AUTO	a. Perform the following: 1) Direct AO to locally check TDAFW AC oil pump running. <u>IF</u> not running, <u>THEN</u> start pump from MCB. 2) Stop TDAFW pump DC oil pump.

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
	NOTE: Inst Bus C provides power to all MCB manual controllers.	
19	Check Status of Battery Chargers:	
	a. Battery Chargers 1A OR 1A1 - ENERGIZED.	a. IF BOTH battery chargers are deenergized, THEN direct the Electricians to crosstie TSC battery charger to main battery A (Refer to ATTACHMENT TRANSFER BATTERY TO TSC).
	b. Battery Chargers 1B OR 1B1 - ENERGIZED	b. IF BOTH battery chargers are deenergized, THEN direct the Electricians to crosstie TSC battery charger to main battery B (Refer to ATTACHMENT TRANSFER BATTERY TO TSC).

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
20	Restore Equipment Alignment:	
	a. Verify annunciator L-1, AUX BLDG VENT SYSTEM CONTROL PANEL - EXTINGUISHED	a. Dispatch AO to restore AUX BLDG ventilation (Refer to T-35A, AUX AND INTERMEDIATE BUILDING VENTILATION STARTUP AND SHUTDOWN)
	b. Restore affected bus equipment as desired o SFP Cooling o Penetration cooling fans o Reactor compartment cooling fans o Hydrogen panel o PA system inverter (Battery Room A) o Auxiliary Bldg lighting (normal supply MCC D, manual throwover to MCC C)(located at MCC C) o Fire system (Refer to SC-3.16.2.3)	
	c. Check control board annunciator panels - ALARM STATUS VALID FOR PLANT CONDITIONS	c. Perform alarm response procedures for unexpected alarms.
	d. Verify control board valve alignment - NORMAL (Refer to O-6.13, DAILY SURVEILLANCE LOG)	d. Manually align valves as necessary.

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
	NOTE: Refer to O-9.3, NRC IMMEDIATE NOTIFICATION, for reporting requirements.	
21	Verify emergency AC bus normal feed breakers closed o Bus 14 o Bus 16	Return to Step 7
22	Verify Inst Bus B on normal supply	Place Inst Bus B on normal supply (Refer to ER-INST.3,INSTRUMENT BUS POWER RESTORATION).
23	Reset UV relay targets on undervoltage cabinets o Bus 14 o Bus 16	
24	Notify Higher Supervision	
25	Return To Procedure Or Guidance In Effect	

-END-

AP-ELEC.14/16 APPENDIX LIST

TITLE

1) ATTACHMENT TRANSFER BATTERY TO TSC (ATT-24.0)

ROCHESTER GAS AND ELECTRIC CORPORATION

GINNA STATION

CONTROLLED COPY NUMBER 23

RESPONSIBLE MANAGER

9-8-2000

EFFECTIVE DATE

CATEGORY 1.0

REVIEWED BY: _____

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

B. ENTRY CONDITIONS/SYMPTOMS

1. ENTRY CONDITIONS - This procedure is entered from:

   a. S-12.2, OPERATOR ACTION IN THE EVENT OF INDICATION OF SIGNIFICANT INCREASE IN LEAKAGE, when a significant increase in RCS leakage is indicated.

   b. AP-CVCS.1, CVCS LEAK, when leak cannot be isolated.

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

   a. Annunciator F-14, CHARGING PUMP SPEED, lit, or

   b. Annunciator A-2, VCT LEVEL 14% 86, lit, or

   c. Annunciator E-16, RMS PROCESS MONITOR HIGH ACTIVITY, lit, or

   d. Annunciator E-24, RMS AREA MONITOR HIGH ACTIVITY, lit, or

   e. Annunciator F-4, PRESSURIZER LEVEL DEVIATION -5 NORMAL +5, lit, or

   f. Annunciator F-10, PRESSURIZER LO PRESS 2205 PSI, lit, or

   g. Annunciator F-11, PRESSURIZER LO LEVEL 13%, lit.

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED

NOTE: Conditions should be evaluated for site contingency reporting (Refer to EPIP-1.0, GINNA STATION EVENT EVALUATION AND CLASSIFICATION.

1	Check PRZR Level - STABLE AT PROGRAM LEVEL	IF PRZR level decreasing, THEN start additional charging pumps and increase speed as necessary to stabilize PRZR level. IF PRZR level continues to decrease, THEN close loop B cold leg to REGEN Hx isolation valve, AOV-427. IF available charging pumps are running at maximum speed with letdown isolated, AND PRZR level is decreasing, THEN trip the reactor and go to E-0, REACTOR TRIP or SAFETY INJECTION.

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED

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

2 Check VCT Makeup System:

a. Verify VCT level - GREATER THAN 5%

a. Ensure charging pump suction aligned to RWST.

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

b. Verify the following:

1) RMW mode selector switch in AUTO

2) RMW control armed - RED LIGHT LIT

b. Adjust controls as necessary.

c. Check VCT level:

o Level GREATER THAN 20%

-OR-

o Level - STABLE OR INCREASING

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

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

1) Ensure BA transfer pumps and RMW pumps running.

2) Adjust RMW flow control valve, HCV-111, to increase RMW flow.

3) Increase boric acid flow as necessary to maintain required concentration.

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

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
3	Check If RCS Leakage In CNMT: o Check CNMT radiation monitors - NORMAL • R-2 • R-7 • R-10A • R-11 • R-12 o CNMT sump A pump run frequency - NORMAL (Refer to RCS Daily Leakage Log)	IF leakage is indicated in CNMT, THEN perform the following: a. Direct RP to sample CNMT for entry. b. Continue with Step 4. WHEN CNMT cleared for entry, THEN dispatch personnel to investigate CNMT for RCS leakage.

* *

CAUTION

RADIATION PROTECTION TECHNICIAN SHOULD BE CONSULTED PRIOR TO ENTERING A HIGH AIRBORNE AREA.

* *

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
4	Dispatch AO To AUX BLDG To Investigate For CVCS Leak (locked area keys required)	
5	Check For Leak To CCW System: o CCW surge tank level - APPROXIMATELY 50% AND STABLE o CCW radiation monitor, R-17 - NORMAL	Go to AP-CCW.1, LEAKAGE INTO THE COMPONENT COOLING LOOP.

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
6	Check CVCS Conditions:	
	a. Letdown indication: o Letdown flow - APPROXIMATELY 40 GPM o Low pressure LTDN pressure - APPROXIMATELY 250 PSIG o Letdown pressure control valve, PCV-135, demand - APPROXIMATELY 35% OPEN	a. <u>IF</u> letdown isolated, <u>THEN</u> continue with Step 6b. <u>IF NOT</u> isolated, <u>THEN</u> go to AP-CVCS.1, CVCS LEAK, Step 6.
	b. Charging indication: o Seal injection flows - GREATER THAN 6 GPM AND STABLE o RCP Labyrinth seal D/Ps - GREATER THAN 15 INCHES AND APPROXIMATELY EQUAL o Charging pump discharge pressure - GREATER THAN RCS PRESSURE	b. Go to AP-CVCS.1, CVCS LEAK, Step 6.
	c. AUX BLDG radiation levels - NORMAL • R-4 • R-9 • R-10B • R-13 • R-14	c. Go to AP-CVCS.1, CVCS LEAK, Step 6 and refer to CVCS piping diagrams for further guidance.

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
7	Check PRT Indications: a. Level - BETWEEN 61% AND 84% b. Pressure - APPROXIMATELY 1.5 PSIG AND STABLE c. Temperature - AT CNMT AMBIENT TEMPERATURE AND STABLE	Check tailpipe and valve leakoff temperatures for the PRZR safety valves and PORVs for indication of leakage. IF no PORV or safety valve leakage is indicated, THEN check other leak paths from the RCS to the PRT. • Letdown relief valve, RV-203 • Seal return relief valve, RV-314

* *

CAUTION

STEAM GENERATOR TUBE LEAKAGE IN ONE S/G SHALL NOT EXCEED 0.1 GPM WHEN AVERAGED OVER 24 HOURS.

* *

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
8	Check S/Gs For Leakage: o Air ejector radiation monitors - NORMAL • R-15 • R-15A o S/G blowdown radiation monitor (R-19) - NORMAL o Steamline radiation monitors - NORMAL • R-31 • R-32 o S/G sample activity - NORMAL (Check with RP Department for normal)	IF S/G tube leak indicated, THEN refer to AP-SG.1, STEAM GENERATOR TUBE LEAK.

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
9	Check SI Accumulator Levels - STABLE	Calculate inleakage to SI accumulators (Refer to S-16.11, MONITORING INLEAKAGE TO SI ACCUMULATORS).
10	Check RCP Seal Leakoff Flows: o Leakoff flows - WITHIN THE NORMAL OPERATING RANGE OF FIGURE RCP SEAL LEAKOFF o Leakoff flows - STABLE	Go to AP-RCP.1, RCP SEAL MALFUNCTION.
11	Check RCDT Leak Rate - NORMAL (Refer to RCS Daily Leakage Log and PPCS point ID L1003)	Check other sources of in leakage to RCDT: a. IF Rx vessel flange leakoff temperature has increased, THEN close Rx VESS FLANGE SEAL LEAKOFF VLV, AOV-521. b. Verify excess letdown isolated. IF NOT, THEN ensure RCDT divert valve, AOV-312, in the VCT position. c. IF source of leakage NOT determined, THEN suspect loop drains.

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

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED

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

15 Notify Higher Supervision

-END-

AP-RCS.1 APPENDIX LIST

TITLE

1) FIGURE RCP SEAL LEAKOFF (FIG-4.0)

ROCHESTER GAS AND ELECTRIC CORPORATION

GINNA STATION

CONTROLLED COPY NUMBER 23

RESPONSIBLE MANAGER

9-8-2000

EFFECTIVE DATE

CATEGORY 1.0

REVIEWED BY: _____

A. PURPOSE - This procedure provides the necessary instructions to be taken in the event of a Steam Generator tube leak within the capacity of the charging pumps.

B. ENTRY CONDITIONS/SYMPTOMS

1. ENTRY CONDITION - This procedure is entered from:

   a. AP-RCS.1, REACTOR COOLANT LEAK, if S/G tube leak is indicated.

   b. AR-RMS-15, R15 AIR EJECTOR, and AR-RMS-19, R-19 STEAM GEN BLOWDOWN when SG sample indicates a tube leakrate of greater than 13 cc/min.

   c. AR-RMS-31, R31 STEAM LINE A and AR-RMS-32, R32 STEAM LINE B when other indications of SG tube leakage exist.

   d. Shift Supervisor discretion.

2. SYMPTOMS - Symptoms of STEAM GENERATOR TUBE LEAK are:

   a. Primary to secondary tube leak rate in one S/G has been verified by sampling to be greater than 13 cc/min (5 GPD)

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
1	Check PRZR Level - STABLE AT PROGRAM LEVEL	IF PRZR level decreasing, THEN start additional charging pumps and increase speed as necessary to stabilize PRZR level. IF PRZR level continues to decrease, THEN close loop B cold leg to REGEN Hx isolation valve, AOV-427. IF available charging pumps are running at maximum speed with letdown isolated, AND PRZR level is decreasing, THEN trip the reactor and go to E-0, REACTOR TRIP OR SAFETY INJECTION.
2	Check If Rapid Shutdown Required:	
	a. SG tube leakage has increased by greater than 60 GPD (157 cc/min) in 60 min	a. Go to step 3
	b. Go to step 4	

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
3	Monitor S/G Tube leakage	
	a. S/G tube leakage - GREATER THAN 13cc/min (5 GPD)	a. Return to guidance in effect
	b. S/G tube leakage - GREATER THAN 79 cc/min (30 gpd)	b. Perform the following: 1) Perform Part A of Attachment SGTL 2) Return to Step 1
	c. Commence Plant Shutdown (Refer to O-2.1, NORMAL SHUTDOWN TO HOT SHUTDOWN)	
	d. Perform Parts A <u>AND</u> B of Attachment SGTL	
	e. Return to Step 1	
4	Maintain PRZR Level At 50% During The Load Reduction To Accommodate Expected Shrinkage Due To Cooldown By Controlling Charging Pumps in MANUAL.	
5	Initiate Load Reduction To Be Offline Within One Hour:	
	a. Reduce load at 3%/min (Refer to AP-TURB.5, RAPID LOAD REDUCTION)	
	b. Transfer 4160V Auxiliary load from #11 Transformer (Refer to Attachment TRANSFER 4160V LOADS)	

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
6	<u>While Continuing With This Procedure</u>, Perform The Following:	
	a. Dispatch an AO to perform T-35H, NUCLEAR HOUSE HEATING STEAM TO BOILER STEAM SUPPLY CHANGE OVER	
	b. Perform part B of Attachment SGTL	
7	Request RP to obtain the following samples: • RCS boron • RCS activity (ITS 3.4.16)	
8	Secure The Turbine:	
	a. <u>WHEN</u> turbine load is less than 15 MW, <u>THEN</u> trip the turbine	
	b. Verify annunciator G-15, STEAM DUMP ARMED - LIT	b. Place steam dump mode selector switch to MANUAL.
	c. Condenser steam dump operating in AUTO	c. <u>IF</u> steam dump <u>NOT</u> available, <u>THEN</u> perform the following: 1) Adjust intact S/G ARV setpoint to 1005 psig and verify proper operation. 2) <u>IF</u> power is greater than 8%, <u>THEN</u> ensure reactor trip and go to E-0, REACTOR TRIP OR SAFETY INJECTION.
	d. Tavg - TRENDING TO PROGRAM	d. <u>IF</u> Tavg can <u>NOT</u> be controlled, <u>THEN</u> manually trip the reactor and go to E-0, REACTOR TRIP OR SAFETY INJECTION.

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED

NOTE: o The actions of step 8 must be complete before continuing in this procedure.

o Steps 10 through 18 may be performed while shutting down the reactor.

9 Shutdown The Reactor

a. Place rod control in MANUAL

b. Drive control rods until Control Bank A is at 5 steps

c. Place rod control in SBA position

d. Drive shutdown bank A to 5 steps

e. Press Rx trip pushbutton

f. Verify Rx Trip breakers open

f. Dispatch AO to locally open reactor trip breakers

g. Verify all control and shutdown rods on bottom

10 Initiate RCS Boration At Maximum Rate Using FCV-110A

IF normal boration can NOT be performed, THEN align charging pump suction to RWST

o LCV-112B - OPEN

o LCV-112C - CLOSED

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED

* *

CAUTION

IF ANY S/G LEVEL ABOVE 52%, THEN AFW FLOW MAY BE THROTTLED IMMEDIATELY TO PREVENT S/G ISOLATION.

* *

11 Check S/G Feed Flow Status:

a. Manually start both MDAFW pumps

b. Verify AFW flow - ESTABLISHED

b. Perform the following:

1) Establish MFW flow using MFW regulating valve bypass valves.

<u>IF</u> MFW <u>NOT</u> available, <u>THEN</u> manually start TDAFW pump and establish flow as necessary.

2) Go to Step 12.

c. Verify MFW flow control valves - CLOSED

- MFW regulating valves
- MFW bypass valves

c. Place A and B MFW regulating and bypass valve controllers in manual at 0% demand.

d. Close MFW pump discharge valves

- MOV-3977, A MFW pump
- MOV-3976, B MFW pump

e. Stop any running MFW pump

f. WHEN 15 seconds have elapsed after stopping MFW pump(s), THEN place MFW pump(s) in PULL STOP

g. Close service water block valve to the secured MFW pump oil cooler

- MFW pump A, V-4701
- MFW Pump B, V-4702

h. Check S/G level - TRENDING TO 52%

h. Adjust MDAFW pump flow as necessary to restore S/G level.

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED

12 Establish Normal AFW Pump Shutdown Alignment:

a. Place AFW bypass switches to DEF

b. Close MDAFW pump discharge valves

- MOV-4007
- MOV-4008

c. Open AFW bypass valves as necessary to control S/G levels at 52%

- AOV-4480
- AOV-4481

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
13	Complete Leaking S/G Isolation:	
	a. Close leaking S/G MSIV - LEAKING 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 leaking S/G isolation (Refer to Attachment RUPTURED S/G, parts A and B).
	b. Dispatch AO to complete leaking S/G isolation (Refer to Attachment RUPTURED S/G part A)	

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
14	Check Leaking S/G Level:	
	a. Narrow range level - GREATER THAN 5%	a. Perform the following: 1) Maintain feed flow to leaking S/G until level greater than 5%. 2) Continue with Step 15. <u>WHEN</u> leaking S/G level greater than 5%, <u>THEN</u> do Steps 14b through f.
	b. Close MDAFW pump discharge valve to leaking S/G • S/G A, MOV-4007 • S/G B, MOV-4008	b. Dispatch AO to locally close valve.
	c. Close MDAFW pump bypass valve for leaking S/G • S/G A, AOV-4480 • S/G B, AOV-4481	
	d. Pull stop MDAFW pump for leaking S/G	
	e. Close TDAFW pump flow control valve to leaking S/G • S/G A, AOV-4297 • S/G B, AOV-4298	e. Dispatch AO with locked valve key to locally close TDAFW pump manual feedwater isolation valve to leaking S/G. • S/G A, V-4005 • S/G B, V-4006
	f. Verify MDAFW pump crosstie valves - CLOSED • MOV-4000A • MOV-4000B	f. Manually close valves.

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
15	Reduce RCS Pressure To Minimize Tube Leak: a. Maintain RCS pressure low in the desired operating range (Refer to O-2.2, PLANT SHUTDOWN FROM HOT SHUTDOWN TO COLD CONDITIONS) b. <u>WHEN</u> RCS pressure is less than 1950 psig, <u>THEN</u> place SI block switches to BLOCK • Train A • Train B c. Verify SAFETY INJECTION BLOCKED status light - LIT	

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED

* *

<u>CAUTION</u>

OPERATION OF BOTH RCPS IS PREFERRED TO MINIMIZE REQUIRED BORON ADDITION FOR SUBSEQUENT COOLDOWN.

* *

16 Increase RCS Boron

a. Determine desired RCS boron concentration for subsequent cooldown (Refer to Attachment RCS BORON FOR SGTL)

b. Borate RCS to desired concentration using FCV-110A

b. <u>IF</u> normal boration can <u>NOT</u> be performed, <u>THEN</u> align charging pump suction to RWST

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

c. If desired, request Reactor Engineer evaluate an alternate desired RCS boron concentration to maintain SDM during subsequent cooldown

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
17	Establish Normal Shutdown Alignment:	
	a. Check condenser - AVAILABLE	a. Dispatch AO to perform Attachment SD-2.
	b. Perform the following as necessary: 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 and place in PULL STOP	
	c. Verify Bus 11A and Bus 11B energized - BOTH BUSSES GREATER THAN 4 KV	c. <u>IF</u> either bus <u>NOT</u> energized, <u>THEN</u> refer to O-6.9.2, ESTABLISHING <u>AND</u>/OR TRANSFERRING OFFSITE POWER TO BUS 12A/BUS 12B.
	d. Dispatch AO to perform Attachment SD-1	

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
18	Check If Source Range Detectors Should Be Energized:	
	a. Source range channels - DEENERGIZED	a. Go to Step 18e.
	b. Check intermediate range flux - EITHER CHANNEL LESS THAN 10^{-10} AMPS	b. Continue with Step 19. <u>WHEN</u> flux is less than 10^{-10} amps on any operable channel, <u>THEN</u> do Steps 18c, d and e.
	c. Check the following: o Both intermediate range channels - LESS THAN 10^{-10} AMPS -OR- o Greater than 20 minutes since reactor trip	c. Continue with Step 19. <u>WHEN</u> either condition met, <u>THEN</u> do Steps 18d and e.
	d. Verify source range detectors - ENERGIZED	d. Manually energize source range detectors by depressing P-6 permissive defeat pushbuttons (2 of 2). <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 19.
	e. Transfer RK-45 recorder to one source range and one intermediate range channel	

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
19	Check Rx Trip Breakers - OPEN	Return to step 9.
20	Verify RCS Boron Concentration Equal To Or Greater Than Required For Cooldown To 500 Degrees Per Step 16	Continue boration. <u>WHEN</u> RCS boron equal to or greater than required value, <u>THEN</u> go to step 21.
21	Initiate RCS Cooldown To 500 degrees:	
	a. Check leaking S/G MSIV - CLOSED	a. Perform the following: 1) Manually or locally initiate steam dump from intact S/G using S/G ARV 2) Go to step 21d
	b. Place Steam Dump Mode Selector switch to MANUAL	
	c. Initiate dumping steam to condenser from intact S/G	c. <u>IF</u> condenser steam dumps not available, <u>THEN</u> manually or locally initiate steam dump from intact S/G using S/G ARV
	d. Establish and maintain cooldown rate in RCS cold legs - LESS THAN 50°F/HR	
	e. Maintain RCS pressure low in the desired operating range (Refer to O-2.2, PLANT SHUTDOWN FROM HOT SHUTDOWN TO COLD CONDITIONS)	

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
22	Check RCS Boron Concentration	
	a. RCS boron - equal to or greater than required for cooldown to 450 degrees per step 16	a. Perform the following: 1) Stop cooldown <u>AND</u> maintain stable RCS temperature above 500 degrees and stable. 2) Continue boration. <u>WHEN</u> RCS boron equal to or greater than required value, <u>THEN</u> go to step 22b.
	b. Borate to 2.45% CSD Curve per O-3.1, BORON CONCENTRATION FOR THE XENON FREE ALL RODS IN - MOST REACTIVE ROD STUCK OUT SHUTDOWN MARGIN	

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
23	Cooldown RCS To 450 Degrees	
	a. Initiate dumping steam	
	b. Establish and maintain cooldown rate in RCS cold legs - LESS THAN 50°F/HR	
	c. Maintain RCS pressure low in the desired operating range	
	d. <u>WHEN</u> RCS pressure is less than 1500 psig, <u>THEN</u> isolate SI ACCUMs as follows: 1) 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 2) Close SI ACCUM outlet valves • ACCUM A, MOV-841 • ACCUM B, MOV-865 3) Locally reopen breakers for MOV-841 and MOV-865	
	e. Check RCS temperature - LESS THAN 460 DEGREES	e. Continue RCS cooldown
	f. Stop the cooldown <u>AND</u> maintain RCS between 450 and 460 degrees	
	g. <u>WHEN</u> RCS pressure equals leaking S/G pressure, <u>THEN</u> maintain stable RCS pressure	

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
24	Check Normal Or Excess Letdown - IN SERVICE	<u>IF</u> normal letdown desired, <u>THEN</u> perform the following: a. Verify charging line flow to REGEN Hx - GREATER THAN 20 GPM b. Place letdown controllers in MANUAL at 40% open. • TCV-130 • PCV-135 c. Verify letdown isolation valve, AOV-371 - OPEN d. Open B loop cold to REGEN Hx, AOV-427 e. Open letdown orifice valves as necessary f. Place TCV-130 in auto at 105°F g. Place PCV-135 in AUTO at 250 psig h. Adjust charging pump and HCV-142 as necessary to control PRZR level and RCP labyrinth seal D/P <u>IF</u> normal letdown <u>NOT</u> available, <u>THEN</u> establish excess letdown if desired (Refer to Attachment EXCESS L/D).

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
25	Evaluate Long Term Plant Status:	
	a. Consult the following groups: • Operations Staff • Plant Engineering Staff • Chemistry	
	b. RCS boron - MEETS 2.45% CSD CURVE PER O-3.1, BORON CONCENTRATION FOR THE XENON FREE ALL RODS IN - MOST REACTIVE ROD STUCK OUT SHUTDOWN MARGIN	b. Perform the following: 1) Continue RCS boration to CSD concentration. (Refer to O-3.1, BORON CONCENTRATION FOR THE XENON FREE ALL RODS IN - MOST REACTIVE ROD STUCK OUT SHUTDOWN MARGIN) 2) Continue with Step 25e. <u>WHEN</u> RCS boron meets 2.45% CSD curve requirement, <u>THEN</u> do steps 25c and d.
	c. Stop RCS boration	
	d. Restore RCS makeup to desired alignment	
	e. Determine if condensate cleanup is desired	
	f. Determine appropriate cooldown method	

-END-

AP-SG.1 APPENDIX LIST

TITLE

1) ATTACHMENT TRANSFER 4160V LOADS (ATT-23.0)
2) ATTACHMENT SD-1 (ATT-17.0)
3) ATTACHMENT SD-2 (ATT-17.1)
4) ATTACHMENT RUPTURED S/G (ATT-16.0)
5) ATTACHMENT SGTL (ATT-16.1)
6) ATTACHMENT RCS BORON FOR SGTL (ATT-16.2)
7) ATTACHMENT EXCESS L/D (ATT-9.1)

Responsible Manager R Siddlington Date 9-8-2000

This Attachment describes the steps to be taken up to and including a normal plant shutdown in the event of a Steam Generator (S/G) tube leak.

NOTE: ITS LCO 3.4.13 limit on S/G leakage of .1 gpm is equivalent to 378 cc/min (144 GPD).

This Attachment is organized in the following subsections:

A. Primary to secondary leakage in at least one S/G > 13 cc/min (5 GPD) and < 79 cc/min (30 GPD)

B. Primary to secondary leakage in at least one S/G ≥ 79 cc/min (30 GPD)

A. Primary to secondary leakage in at least one S/G > 13 cc/min (5 GPD) and < 79 cc/min (30 GPD)

1. Request RP perform a second sample on the leaking S/G to confirm the leak rate.

2. Notify RP to refer to procedure CH-SAMP-SG-LEAKRATE.

3. Refer to ITS LCO 3.7.14 for secondary specific activity limit.

4. Check operability of the following monitors.

   - R-15
   - R-15A
   - R-19
   - R-31
   - R-32

5. IF any monitor in Step 4 is not operable, THEN elevate monitor repair efforts to the highest priority.

6. Dispatch an AO to perform T-35H, Nuclear House Heating Steam To Boiler Steam Supply Change Over.

B. **Primary to secondary leakage in at least one S/G ≥ 79 cc/min (30 GPD)**

NOTE: Refer to ITS LCO 3.4.13 for RCS leakage limits.

NOTE: Refer to ITS LCO 3.7.14 for secondary specific activity limit.

NOTE: Refer to EPIP-1.0, Ginna Station Event Evaluation and Classification.

NOTE: Refer to O-9.3, NRC IMMEDIATE NOTIFICATION.

NOTE: AFTER the Turbine is off line, IMMEDIATELY perform step B.13, THEN return to any section or steps NOT performed.

1. If desired, establish maximum letdown. Refer to S-3.2P, swapping CVCS Letdown orifice valves.

2. Place Hotwell level controller in Manual at 50% position to minimize reject.

3. Start the A and B CNMT Auxiliary Charcoal Filter Fans.

4. Verify VCT is being burped with N_2. Refer to S-3.3C, H2 OR O2 REMOVAL FROM PRIMARY SYSTEM BY BURPING VOLUME CONTROL TANK WITH N2.

5. Consult with RP/Chemistry section. If desired, perform the following:

   a. Bypass the AVT Condensate DIs. Refer to T-6.9C - Condensate Demineralizer Bypass Operation.

   b. Notify RP/Chemistry that the AVT Condensate DIs are bypassed AND isolated.

6. Shift Support Heating Steam Trap Outlet Valves from the trap header to Blowdown Tank by closing V-3684 AND opening V-3683.

   - V-3684 Closed
   - V-3683 Open

7. Close trap drain isolation valve upstream of MSIV on the leaking S/G.

   - S/G A, V-3521 Closed
   - S/G B, V-3520 Closed

8. Verify Blowdown Tank discharge valve V-5714 is closed.

9. Isolate Blowdown from the leaking S/G.

   - S/G A, AOV-5738 OR V-5701 Closed
   - S/G B, AOV-5737 OR V-5702 Closed

NOTE: Annunciator H-15 will light when this step is performed.

NOTE: Refer to ITS LCO 3.7.5 for TDAFW train flowpath operability.

NOTE: Refer to TRM 3.4.3 for ATWS mitigation operability.

10. PULL STOP the TDAFW Pump Steam Admission valve from the leaking S/G.

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

11. Notify RP to survey the following areas:

    - Steam Header
    - Blowdown Tank
    - Turbine Bldg Wall Fan

12. Notify RPs to verify that airborne contaminants that may be discharging from steam reliefs OR the Air Ejector are NOT being pulled into the supply air handling units. The most likely areas affected are:

    - Auxiliary Bldg
    - Intermediate Bldg
    - Service Bldg

13. WHEN the Turbine is off line, THEN perform the following:

    a. Place leaking S/G ARV controller to AUTO, set for 1050 psig,and verify ARV is closed.

       - Leaking S/G ARV in AUTO
       - Leaking S/G ARV Set for 1050 psig
       - Leaking S/G ARV Closed

    b. Close the MSIV on the leaking S/G.

       o S/G A, AOV-3517 Closed
       OR
       o S/G B, AOV-3516 Closed

NOTE: IF O-2.1, NORMAL SHUTDOWN TO HOT SHUTDOWN, was used to perform the shutdown, THEN do steps 14 and 15. IF NOT, THEN do step 16.

14. WHEN O-2.1 is completed, THEN continue cooldown to MODE 5 per O-2.2.

15. When directed by O-2.1 or O-2.2, remove the RCP associated with the leaking S/G from service.

16. Review O-2.1 and O-2.2 as necessary to secure equipment and establish shutdown alignments.

EOP:	TITLE:	REV: 0
ATT-16.2	ATTACHMENT RCS BORON FOR SGTL	PAGE 1 of 2

Responsible Manager [signature] Date 9-8-2000

NOTE: Boron calculations below assume most conservative values for temperature coefficient and boron worth.

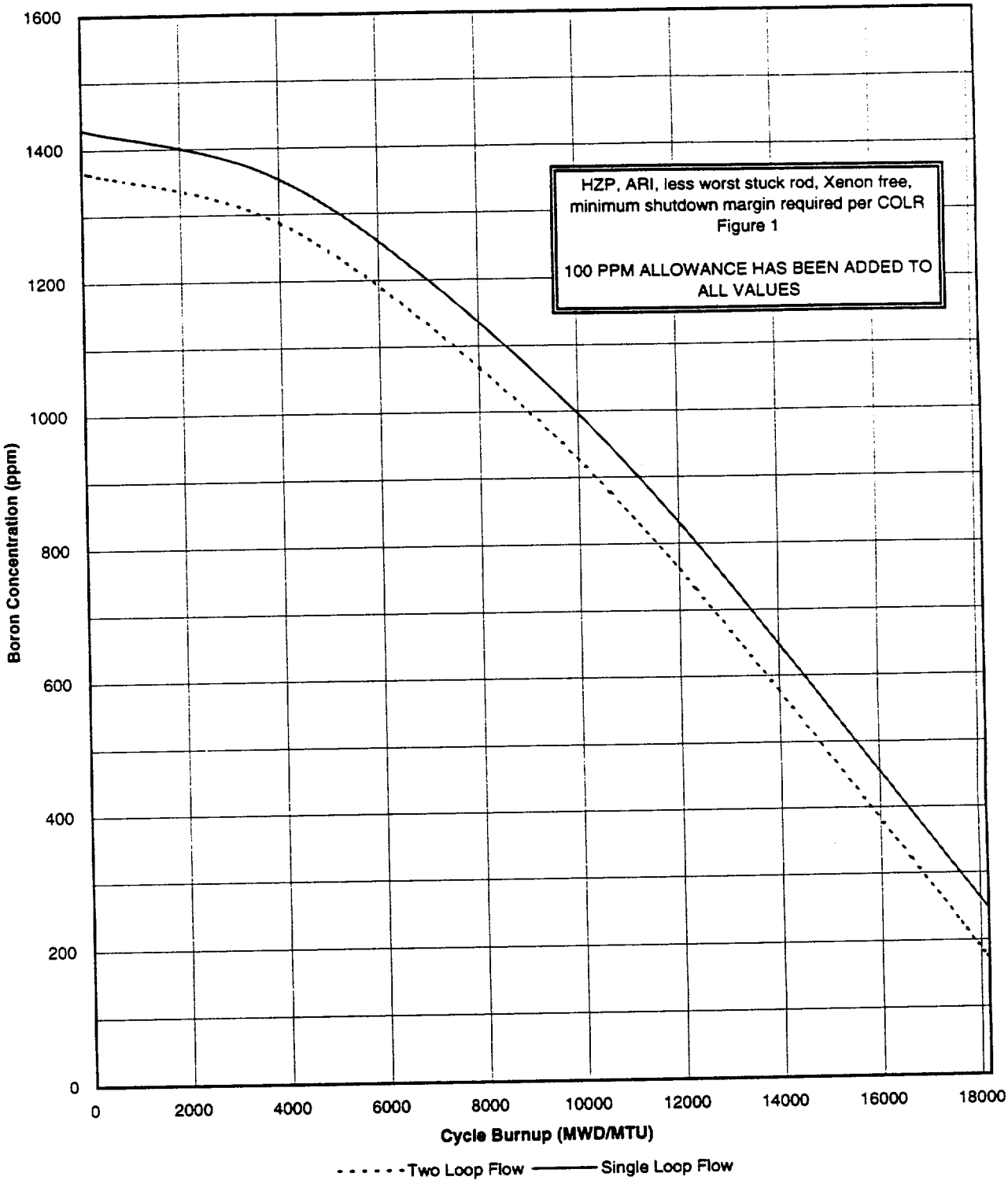
Determine desired RCS boron concentration using attached figure as follows:

1. Find boron concentration for current cycle burnup. _____ ppm
2. Add 125 ppm to the value of step 1. +125 ppm
3. Total is desired RCS boron concentration for cooldown from 547°F to 500°F.

   Total (500°F) _____
4. Add 133 ppm to the value of step 3. +133 ppm
5. Total is desired RCS boron concentration for cooldown from 500°F to 450°F.

   Total (450°F) _____

Ginna Cycle 28
Boron Concentration vs. Cycle Burnup at HZP, No Xenon Conditions



EOP:	TITLE:	REV: 0
ATT-24.0	ATTACHMENT TRANSFER BATTERY TO TSC	PAGE 1 of 3

Responsible Manager _____ Date 9-8-2000

A. BATTERY A

1. Notify Control Room to declare AMSAC inoperable.

2. Obtain key to TSC/BATTERY **A** FUSED DISCONNECT PANEL switch, DCPDPCB05A, from Shift Supervisor (Locked Valve Key).

3. Obtain key to **A** TSC/BATTERY A/B MANUAL THROWOVER PANEL switch, DCPDPTB02, from Shift Supervisor (Key #118 in SS key cabinet).

4. IF in service, THEN notify Control Room Loss of TSC Battery Charger alarm will be received on Plant Computer (BYCTSC).

5. IF TSC Battery is on equalizing charge, THEN remove TSC Battery from equalizing charge.

6. OPEN AC INPUT breaker on TSC BATTERY CHARGER.

7. Verify TSC Battery voltage is greater than 120 VDC.

8. IF TSC Battery voltage is less than 120 VDC, THEN evaluate condition of TSC Battery before proceeding.

9. CLOSE AC INPUT breaker on TSC BATTERY CHARGER.

10. Verify TSC Battery System is NORMAL.

    NOTE: ITS requirements state TSC Battery Charger voltage will be maintained below 140 VDC when tying to the **A** or **B** battery.

11. Check TSC Battery Charger voltage and adjust for less than 140 VDC before tying to **A** battery bank, IF required.

12. Unlock and CLOSE TSC/BATTERY **A** FUSED DISCONNECT PANEL switch, DCPDPCB05A, located in south west corner of Battery Room **A**.

13. Ensure CLOSED TSC BATT A/B FUSED DISCONNECT SWITCH, DCPDPCD01, located in TSC Battery Room.

14. Unlock and CLOSE **A** BATTERY switch on TSC/BATTERY A/B MANUAL THROWOVER PANEL switch, DCPDPTB02, located in Turbine Building Basement east wall.

15. Hold open Battery Chargers BYCA (MCC C Pos 4HH) AND BYCA1 (MCC C Pos 5D).

NOTE: Steps 16 - 19 isolate Battery **A** and PA Inverter from MCB alarm J-15 to allow monitoring Battery **B** alarm conditions.

16. Inside BYCA charger, disconnect red wire from terminal 9 (LR4 top), circuit E302 to isolate BYCA1 alarm J-15.

NOTE: PA Inverter alarm wire is also connected to terminal 9 (LR4 bottom).

17. Inside BYCA charger, disconnect gray wire from terminal 9 (LR4 bottom), to isolate BYCA alarm J-15.

18. Inside BYCA charger, disconnect white wire from terminal 9 (LR4 bottom), to isolate PA Inverter alarm J-15.

19. Disconnect alarm wire marked TB4-1, located in **A** Battery Load Flow Cabinet.

B. BATTERY B

1. Notify Control Room to declare AMSAC inoperable.

2. Obtain key to TSC/BATTERY **B** FUSED DISCONNECT PANEL switch, DCPDPCB05B, from Shift Supervisor (Locked Valve Key).

3. Obtain key to TSC/BATTERY A/B MANUAL THROWOVER PANEL switch, DCPDPTB02, from Shift Supervisor (Key #118 in SS key cabinet).

4. IF in service, THEN notify Control Room loss of TSC Battery Charger alarm will be received on Plant Computer (BYCTSC).

5. IF TSC Battery is on equalizing charge, THEN remove TSC Battery from equalizing charge.

6. OPEN AC INPUT breaker on TSC BATTERY CHARGER.

7. Verify TSC Battery voltage is greater than 120 VDC.

8. IF TSC Battery voltage is less than 120 VDC, THEN evaluate condition of TSC Battery before proceeding.

9. CLOSE AC INPUT breaker on TSC BATTERY CHARGER.

10. Verify TSC Battery System is NORMAL.

NOTE: ITS requirements state TSC Battery Charger voltage will be maintained below 140 VDC when tying to the **A** or **B** battery.

11. Check TSC Battery Charger voltage and adjust for less than 140 VDC before tying to **B** battery bank, IF required.

12. Unlock and CLOSE TSC/BATTERY **B** FUSED DISCONNECT PANEL switch, DCPDPCB05B, located in south east corner of Battery Room **B**.

13. Ensure CLOSED TSC BATT A/B FUSED DISCONNECT SWITCH, DCPDPCD01, located in TSC Battery Room.

14. Unlock and CLOSE **B** BATTERY switch on TSC/BATTERY A/B MANUAL THROWOVER PANEL switch, DCPDPTB02, located in Turbine Building Basement east wall.

15. Hold open Battery Charger BYCB (MCC D Pos 4MM) and BYCB1 (MCC D Pos 16F).

    NOTE: Steps 16 and 17 isolate Battery **B** from MCB alarm J-15 to allow monitoring Battery **A** and PA Inverter conditions.

16. Disconnect two alarm wires marked LR4 located on Terminal Block TB Terminal 9 Bottom in Battery Charger BYCB.

17. Disconnect alarm wire marked TB4-1 in **B** BATTERY LOAD FLOW MONITORING CABINET.

ROCHESTER GAS AND ELECTRIC CORPORATION

GINNA STATION

CONTROLLED COPY NUMBER 23

RESPONSIBLE MANAGER

9-8-2000
EFFECTIVE DATE

CATEGORY 1.0

REVIEWED BY:_____

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 SELECTED SW PUMPS AND ONE CCW PUMP WILL AUTO START ON EMERGENCY D/G. MANUAL ACTION WILL BE REQUIRED TO RESTART SAFEGUARDS EQUIPMENT.

* *

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) Dispatch AO to establish normal shutdown alignment (Refer to Attachment SD-1). 3) Go to Step 7.
	b. Dispatch AO to establish normal shutdown alignment (Refer to Attachment SD-1)	

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
5	Establish IA to CNMT:	
	a. Verify non-safeguards busses energized from offsite power o Bus 13 normal feed - CLOSED -OR- o Bus 15 normal feed - CLOSED	a. Perform the following: 1) Close non-safeguards bus tie breakers: • Bus 13 to Bus 14 tie • Bus 15 to Bus 16 tie 2) Verify adequate emergency D/G capacity to run air compressors (75 kw each). IF NOT, THEN evaluate if CNMT RECIRC fans should be stopped (Refer to Attachment CNMT RECIRC FANS). 3) WHEN bus 15 restored, THEN reset control room lighting.
	b. Verify SW isolation valves to turbine building - OPEN • MOV-4613 and MOV-4670 • MOV-4614 and MOV-4664	b. Manually align valves.
	c. Verify adequate air compressor(s) - RUNNING	c. Manually start air compressors as power supply permits (75 kw each). IF air compressors can NOT be started, THEN dispatch AO to locally reset compressors as necessary.
	d. Check IA supply: o Pressure - GREATER THAN 60 PSIG o Pressure - STABLE OR INCREASING	d. Perform the following: 1) Continue attempts to restore IA (Refer to AP-IA.1, LOSS OF INSTRUMENT AIR). 2) Continue with Step 6. WHEN IA restored, THEN do Steps 5e and f.
	e. Reset both trains of XY relays for IA to CNMT AOV-5392	
	f. Verify IA to CNMT AOV-5392 - OPEN	

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
6	Check If Charging Flow Has Been Established:	
	a. Charging pumps - ANY RUNNING	a. Perform the following: 1) <u>IF</u> CCW flow is lost to any RCP thermal barrier <u>OR</u> any RCP #1 seal outlet temperature offscale high, <u>THEN</u> dispatch AO with key to RWST gate to 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: o LCV-112B - OPEN o LCV-112C - CLOSED	b. Manually align valves as necessary. <u>IF</u> LCV-112B can <u>NOT</u> be opened, <u>THEN</u> dispatch AO to locally open manual charging pump suction from RWST (V-358 located in charging pump room). <u>IF</u> LCV-112C can <u>NOT</u> be closed, <u>THEN</u> perform the following: 1) Verify charging pump A <u>NOT</u> running and place in PULL STOP. 2) Direct AO to close V-268 to isolate charging pumps B and C from VCT (V-268 located in charging pump room).
	c. Start charging pumps as necessary and adjust charging flow to restore PRZR level	

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

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
* 9	Monitor If CNMT Spray Should Be Stopped:	
	a. CNMT spray pumps - RUNNING	a. Go to Step 10.
	b. Check CNMT pressure - LESS THAN 4 PSIG	b. Continue with Step 10. <u>WHEN</u> CNMT pressure less than 4 psig, <u>THEN</u> do Steps 9c through f.
	c. Reset CNMT spray	
	d. Check NaOH tank outlet valves - CLOSED • AOV-836A • AOV-836B	d. Place NaOH tank outlet valve controllers to MANUAL and close valves.
	e. Stop CNMT spray pumps and place in AUTO	
	f. Close CNMT spray pump discharge valves • MOV-860A • MOV-860B • MOV-860C • MOV-860D	

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
10	Verify MRPI Indicates - ALL CONTROL AND SHUTDOWN RODS ON BOTTOM	IF one or more control rods NOT fully inserted, THEN perform the following: a. Place RMW mode selector switch to BORATE. b. Adjust boric acid flow control valve, FCV-110A, for desired flowrate. c. Set boric acid integrator to desired amount (650 gallons for each control rod not fully inserted). d. Place RMW control to start and verify flow. IF flow can NOT be established, THEN refer to ER-CVCS.1, REACTOR MAKEUP CONTROL MALFUNCTION.
11	Establish Condenser Steam Dump Pressure Control: a. Verify condenser available: o Any MSIV - OPEN o Annunciator G-15, STEAM DUMP ARMED - LIT b. Adjust condenser steam dump controller HC-484 to desired pressure and verify in AUTO. c. Place steam dump mode selector switch to MANUAL.	a. Place S/G ARV controllers in AUTO at desired pressure and go to Step 12.

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
12	Verify Adequate SW Flow To CCW Hx:	
	a. Verify at least two SW pumps - RUNNING	a. Manually start pumps as power supply permits (257 kw each). <u>IF</u> less than two SW pumps can be operated, <u>THEN</u> go to Step 18.
	b. Verify AUX BLDG SW isolation valves - OPEN • MOV-4615 and MOV-4734 • MOV-4616 and MOV-4735	b. Manually align valves.
	c. Verify CNMT RECIRC fan annunciator C-2, HIGH TEMPERATURE ALARM - EXTINGUISHED	c. Manually start an additional SW pump as power supply permits (257 kw each).

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

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
14	Verify PRZR Level - GREATER THAN 13% [40% adverse CNMT]	Continue with Step 16. WHEN PRZR level increases to greater than 13% [40% adverse CNMT], THEN do Step 15.
15	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 TCV-130 in AUTO at 105°F h. Place PCV-135 in AUTO at 250 psig i. Adjust charging pump speed and HCV-142 as necessary to control PRZR level	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 Plant Staff to determine if excess letdown should be placed in service.

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
16	Check VCT Makeup System:	
	a. Adjust boric acid flow control valve in AUTO to 9.5 gpm	
	b. Adjust RMW flow control valve in AUTO to 40 gpm	
	c. Verify the following: 1) RMW mode selector switch in AUTO 2) RMW control armed - RED LIGHT LIT	c. Adjust controls as necessary.
	d. Check VCT level: o Level - GREATER THAN 20% -OR- o Level - STABLE OR INCREASING	d. Manually increase VCT makeup flow as follows: 1) Ensure BA transfer pumps and RMW pumps running. <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
17	Check Charging Pump Suction Aligned To VCT:	
	a. VCT level - GREATER THAN 20%	a. IF VCT level can NOT be maintained greater than 5%, THEN perform the following: 1) Ensure charging pump suction aligned to RWST o LCV-112B open o LCV-112C closed 2) Continue with Step 18. WHEN VCT level greater than 40%, THEN do Step 17b.
	b. Verify charging pumps aligned to VCT o LCV-112C - OPEN o LCV-112B - CLOSED	b. Manually align valves as necessary.
18	Check 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

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 valves fail open on loss of IA.

***20** Monitor Intact S/G Levels:	
a. Narrow range level - GREATER THAN 5% [25% adverse CNMT]	a. Maintain total feed flow greater than 200 gpm until narrow range level greater than 5% [25% adverse CNMT] in at least one S/G.
b. Control feed flow to maintain narrow range level between 17% [25% adverse CNMT] and 50%	b. IF narrow range level in any S/G continues to increase, THEN stop feed flow to that S/G.

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED

NOTE: SW should be aligned to CCW Hxs before restoring RCP seal cooling.

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

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 • AOV-270A • AOV-270B	b. Manually open valves as necessary.
	c. Reset both trains of XY relays for RCP seal return isolation valve MOV-313	
	d. Open RCP seal return isolation valve MOV-313	d. Perform the following: 1) Place MOV-313 switch to OPEN. 2) Dispatch AO with key to RWST gate to locally open MOV-313.
	e. Verify RCP #1 seal leakoff flow - LESS THAN 6.0 GPM	e. Perform the following: 1) Trip the affected RCP 2) Allow 4 minutes for pump coast down, <u>THEN</u> close the affected RCP seal discharge valve. • RCP A, AOV-270A • RCP B, AOV-270B <u>IF</u> both RCP seal discharge valves are shut, <u>THEN</u> go to Step 23.
	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 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).

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED

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

24 Check If Source Range Channels Should Be Energized:

a. Source range channels - DEENERGIZED

a. Go to Step 24e.

b. Check intermediate range flux - EITHER CHANNEL LESS THAN 10^{-10} AMPS

b. Perform the following:

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

2) Continue with Step 25. WHEN flux is LESS THAN 10^{-10} amps on any operable channel, THEN do Steps 24c, d and e.

c. Check the following:

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

-OR-

- Greater than 20 minutes since reactor trip

c. Continue with step 25. WHEN either condition met, THEN do Steps 24d and e.

d. Verify source range detectors - ENERGIZED

d. Manually energize source range detectors by depressing P-6 permissive defeat pushbuttons (2 of 2).

IF source ranges can NOT be restored, THEN refer to ER-NIS.1, SR MALFUNCTION, and go to Step 25.

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

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
25	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 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

* *

CAUTION

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

* *

26 Check RCP Status - AT LEAST ONE RUNNING	Perform the following: a. IF RVLIS level (no RCPs) less than 95%, THEN perform the following: o Increase PRZR level to greater than 65% (82% adverse CNMT). o Dump steam to establish RCS subcooling based on core exit T/Cs to greater than 20°F using Figure MIN SUBCOOLING. o Energize PRZR heaters as necessary to saturate PRZR water. b. Establish conditions for starting an RCP: o Verify bus 11A or 11B energized. o Refer to Attachment RCP START. c. Start one RCP. IF an RCP can NOT be started, THEN verify natural circulation (Refer to Attachment NC). IF natural circulation NOT verified, THEN increase dumping steam from intact S/Gs.

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

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

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

-END-

ES-1.1 APPENDIX LIST

TITLE

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

RED PATH SUMMARY

a. SUBCRITICALITY - Nuclear power greater than 5%

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

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

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

e. CONTAINMENT - CNMT pressure greater than 60 psig

FOLDOUT PAGE

1. SI REINITIATION CRITERIA

   IF EITHER condition listed below occurs, THEN manually start SI pumps as necessary and go to E-1, LOSS OF REACTOR OR SECONDARY COOLANT, Step 1:
   - o RCS subcooling based on core exit T/Cs - LESS THAN 0°F USING FIGURE MIN SUBCOOLING

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

2. SECONDARY INTEGRITY CRITERIA

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

3. AFW SUPPLY SWITCHOVER CRITERION

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