ROCHESTER GAS AND ELECTRIC CORPORATION

GINNA STATION

CONTROLLED COPY NUMBER 23

TECHNICAL REVIEW

PORC REVIEW DATE 5/1/91

Joseph A. Widay
PLANT SUPERINTENDENT

5/3/91
EFFECTIVE DATE

CATEGORY 1.0

REVIEWED BY: _____

A. PURPOSE - This procedure provides actions to respond to a loss of #12A or 12B SS Transformer from HSD or at power conditions.

B. ENTRY CONDITIONS/SYMPTOMS

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

   a. AP-TURB.1, 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 AT ANY TIME DURING THIS PROCEDURE A REACTOR TRIP OR SI IS REQUIRED, E-0, REACTOR TRIP OR SAFETY INJECTION, SHALL BE PERFORMED.
- o IF A TURBINE RUNBACK HAS OCCURRED, THEN AP-TURB.2, AUTOMATIC TURBINE RUNBACK, SHOULD BE PERFORMED.

* *

1 Verify Emergency D/G Associated With Dead Bus - RUNNING o Bus 12A - D/G A o Bus 12B - D/G B	IF appropriate emergency D/G(s) NOT running, THEN attempt to start 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 go to ECA-0.0, LOSS OF ALL AC POWER, Step 1.
3 Verify Service Water System Operation:	
a. SW pumps - AT LEAST ONE RUNNING IN EACH LOOP	a. Manually start pumps as necessary. (258 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
4	Verify CCW Pump Operation: a. At least one CCW pump - RUNNING b. Annunciator A-22, CCW PUMP DISCHARGE LO PRESS 60 PSIG - EXTINGUISHED	 a. Start one CCW pump (124 kw). b. Start second CCW pump (124 kw).
5	Verify Bus 11A And 11B Normal Feed Breakers - CLOSED	IF turbine trip has occurred from power less than 50%, THEN go to AP-TURB.1, TURBINE TRIP WITHOUT RX TRIP REQUIRED, Step 1. IF turbine stop valves open, THEN trip turbine and go to AP-TURB.1, TURBINE TRIP WITHOUT RX TRIP REQUIRED, Step 1. IF turbine NOT previously latched, THEN perform the following: a. Ensure reactor power less than 8%. b. Go to Step 16.
6	Check S/G Level Control o S/G level - TRENDING TO PROGRAM o MFW regulating valves - CONTROLLING IN AUTO	Place MFW regulating valves in MANUAL and control feed flow as required.

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.	
7	Establish Normal Charging Flow:	
	a. Verify 2 charging pumps - RUNNING	a. Start charging pumps as necessary (75 kw each).
	b. Adjust charging pump speed and HCV-142 as necessary to restore PRZR level and labyrinth seal D/P	
8	Check CVCS Letdown:	
	a. Normal letdown in service: o Letdown flow - APPROXIMATELY 40 GPM o Letdown flow - STABLE o Letdown pressure - APPROXIMATELY 250 PSIG	a. Perform the following: 1) Place AOV-427 switch to CLOSE 2) Place letdown orifice isolation valves to CLOSE. 3) Go to Step 9.
	b. Go to Step 11	
9	Check PRZR Level - GREATER THAN 13%	Continue with Step 12. WHEN PRZR level greater than 13%, THEN do Steps 10 and 11.

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
10	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 25% 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.	Establish Excess Letdown: a. Place excess letdown divert valve, AOV-312, to NORMAL b. Ensure CCW from excess letdown open, AOV-745 c. Ensure RCP seal return isolation valve open, MOV-313 d. Open excess letdown isolation valve, AOV-310 e. 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

* *

CAUTION

- 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.

* *

11	Verify PRZR Heaters Restored: o PRZR proportional heater breaker - CLOSED o PRZR backup heater breaker - RESET/IN AUTO	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 on natural circulation and at least 100 kw of PRZR heaters can NOT be restored within 6 hours, THEN be on RHR within an additional 6 hours. (Refer to Technical Specification 3.1.1.5)

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
12	Establish Stable Plant Conditions:	
	a. Reset NIS rod drop rod stop signals (at NIS racks)	
	b. Tavg - TRENDING TO TREF	b. Insert control rods or, if necessary, decrease turbine load to match Tavg to Tref.
	c. PRZR pressure - TRENDING TO 2235 PSIG	c. Verify proper operation of PRZR heaters and spray or take manual control of PC-431K.
	d. PRZR level - TRENDING TO PROGRAM	d. Verify proper operation of charging pump speed controllers or take manual control of speed controllers to control PRZR level.
13	Restore Normal Alignment:	
	a. Verify at least 2 CNMT recirc fans - RUNNING	a. Start CNMT recirc fans as necessary (240 kw each).
	b. Verify IA available: o Annunciator H-8, INSTRUMENT AIR LO PRESS - EXTINGUISHED o Annunciator H-16, INSTRUMENT AIR COMPRESSOR - EXTINGUISHED	b. Dispatch AO to restore IA compressors as necessary (75 kw each).

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
	NOTE: Power operation may continue if conditions required by Tech Spec section 3.7 are met.	
14	Establish Normal Operation:	
	a. Verify circuit 76702 or 75112 - AVAILABLE	a. Continue to monitor plant conditions and go to Step 15.
	b. Restore power to 12A and/or 12B bus (refer to ER-ELEC.1, RESTORATION OF OFFSITE POWER)	
15	Establish Normal Plant Conditions:	
	a. Verify EH control in OPER PAN and IMP IN	a. IF conditions requiring runback have cleared, THEN place EH in OPER PAN and IMP IN.
	b. Verify steam dump controller, HC-484, in AUTO at 1005 psig	
	c. Verify annunciator G-15, STEAM DUMP ARMED - EXTINGUISHED	c. IF Tavg within 6°F of Tref, THEN perform the following: 1) Ensure steam dump valves closed. 2) Reset steam dump.
	d. Verify charging pump speed control in AUTO	d. Place charging pump speed control 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 30	

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
	NOTE: o Following RCP trip, a decrease in idle S/G level may occur. Also, swell may be anticipated in the operating S/G due to load pickup from the idle loop. 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.)	
16	Check S/G Feed 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 39%	b. Control feed flow as necessary to restore S/G level.
17	Check TDAFW Pump Status:	
	a. TDAFW pump - RUNNING	a. Go to Step 18.
	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 18.
	c. Pull stop TDAFW pump steam supply valves • MOV-3504A • MOV-3505A	

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
18	Check Any RCP - RUNNING	Verify natural circulation. (Refer to Attachment NC.). IF natural circulation can NOT be verified, THEN increase dumping steam.

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED

* *

CAUTION

- 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.

* *

19 Restore Non-Safeguards Busses As Follows:	
a. Close non-safeguards bus tie breakers for affected bus(ses): • Bus 13 to bus 14 tie • Bus 15 to bus 16 tie	a. IF breaker can NOT be closed, THEN notify electricians.
b. Before energizing affected MCC(s) place the associated pumps in PULL STOP: o MCC A • EH pump A • Turning gear oil pump • HP seal oil backup pump o MCCB • EH pump B	
c. Restore power to affected MCC(s): • A from bus 13 • B from bus 15 • E from bus 15 • F from bus 15	c. IF any breaker can NOT be closed, THEN notify electricians.
d. WHEN bus 15 restored, THEN reset control room lighting if necessary	

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
20	Establish IA:	
	a. Verify 2 IA compressors - RUNNING	a. Dispatch an AO to reset and start IA compressors as D/G loading permits (75 kw each).
	b. Check IA supply o Pressure - GREATER THAN 60 PSIG o Pressure - STABLE OR INCREASING	b. IF IA can NOT be established, THEN refer to AP-IA.1, LOSS OF INSTRUMENT AIR.
21	Verify Instrument Bus 1D - 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.
22	Establish Normal Charging Flow:	
	a. Verify 2 charging pumps - RUNNING	a. Start charging pumps as necessary (75 kw each).
	b. Adjust charging pump speed and HCV-142 as necessary to restore PRZR level and labyrinth seal D/P	

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
23	Check CVCS Letdown: a. Normal letdown in service: o Letdown flow - APPROXIMATELY 40 GPM o Letdown flow - STABLE o Letdown pressure - APPROXIMATELY 250 PSIG b. Go to Step 26	a. Perform the following: 1) Place AOV-427 switch to CLOSE 2) Place letdown orifice isolation valves to CLOSE. 3) Go to Step 24.
24	Check PRZR Level - GREATER THAN 13%	Continue with Step 27. <u>WHEN</u> PRZR level greater than 13%, <u>THEN</u> do Steps 25 and 26.

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
25	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 25% 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.	Establish Excess Letdown: a. Place excess letdown divert valve, AOV-312, to NORMAL b. Ensure CCW from excess letdown open, AOV-745 c. Ensure RCP seal return isolation valve open, MOV-313 d. Open excess letdown isolation valve, AOV-310 e. 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

* *

CAUTION

- 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.

* *

26	Verify PRZR Heaters Restored: o PRZR proportional heater breaker - CLOSED o PRZR backup heater breaker - RESET/IN AUTO	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 on natural circulation and at least 100 kw of PRZR heaters can NOT be restored within 6 hours, THEN be on RHR within an additional 6 hours. (Refer to Technical Specification 3.1.1.5)

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
27	Establish Stable Plant Conditions:	
	a. Tavg - TRENDING TO TREF	a. Insert control rods or, if necessary, decrease turbine load to match Tavg to Tref.
	b. PRZR pressure - TRENDING TO 2235 PSIG	b. Verify proper operation of PRZR heaters and spray or take manual control of PC-431K.
	c. 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.
28	Verify Both S/G Levels - GREATER THAN 25%	Control feed flow as necessary to restore both S/G levels greater than 25%.

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED

* *

CAUTION

OBSERVE D/G LOADING LIMITS OF 2300 KW FOR 1/2 HOUR, 2250 KW FOR 2 HOURS, AND 1950 KW FOR CONTINUOUS SERVICE.

* *

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

29 Establish Normal Shutdown Alignment:	
a. Start turning gear oil pump (42 kw) and verify pump - RUNNING	a. Verify DC emergency oil pump running and break vacuum to accelerate turbine coastdown. Continue with Step 29c. WHEN shaft stops, THEN stop DC emergency oil pump.
b. Stop DC emergency oil 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) Manually start one fan as power supply permits (23 kw).
d. Dispatch AO to start waste gas compressor as necessary	
e. Start main transformer cooling fans as necessary	
f. Start CNMT recirc fans as necessary (240 kw each)	
g. Verify radiation monitoring system operating as required	g. Reset radiation monitors and restart ventilation systems as necessary.
h. Verify motor fire pump breaker - CLOSED	h. Close motor fire pump breaker.

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
30	WHEN Conditions Permit, THEN Restore Offsite Power (Refer to ER-ELEC.1, RESTORATION OF OFFSITE POWER)	
31	Notify Higher Supervision	

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

32 Return To Procedure Or Guidance In Effect

-END-

AP-ELEC. 1 APPENDIX LIST

FIGURE MIN SUBCOOLING

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