EOP:	TITLE:	REV: 8
AP-CCW.1	LEAKAGE INTO THE COMPONENT COOLING LOOP	PAGE 1 of 14

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ROCHESTER GAS AND ELECTRIC CORPORATION

GINNA STATION

CONTROLLED COPY NUMBER 23

TECHNICAL REVIEW

PORC REVIEW DATE 6-3-93

Thomas A. Marlow
PLANT SUPERINTENDENT

6-4-93
EFFECTIVE DATE

CATEGORY 1.0

REVIEWED BY: _____

A. PURPOSE - This procedure provides the actions required to identify and isolate leakage into the CCW system and to control the plant during the course of the event.

B. ENTRY CONDITIONS/SYMPTOMS

1. ENTRY CONDITIONS - This procedure is entered from;

a. AP-CVCS.1, CVCS LEAK, or,

b. AP-RCS.1, RCS LEAK, or,

c. AP-RCP.1 RCP SEAL MALFUNCTION, when CCW surge tank level increasing.

2. SYMPTOMS - The symptoms of LEAKAGE INTO THE COMPONENT COOLING LOOP are;

a. Annunciator A-5, CCW SURGE TANK HI LEVEL 58.8%, lit or

b. CCW radiation monitor (R-17) alarm, or

c. Annunciator A-7 (15), RCP A (B) CCW RETURN HI TEMP OR LO FLOW 165 GPM 125°F, lit or

d. Erratic RCP labyrinth seal D/P.

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED

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CAUTION

- IF, AT ANY TIME DURING THIS PROCEDURE, A REACTOR TRIP OR SI OCCURS, THEN E-0, REACTOR TRIP OR SAFETY INJECTION, SHALL BE PERFORMED.
- IF CCW SYSTEM RADIATION MONITOR ALARMS, THEN VERIFY CCW SURGE TANK VENT, RCV-017, CLOSES.

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1	Check CCW Indications	
	a. Check CCW surge tank level - INCREASING	a. IF level decreasing, THEN go to AP-CCW.2, LOSS OF CCW DURING POWER OPERATION or AP-CCW.3, LOSS OF CCW - PLANT SHUTDOWN as necessary. IF level stable, THEN return to procedure or step in effect.
	b. Direct HP tech to perform PC-12.3, DETERMINATION OF CCW SYSTEM LEAKAGE	
	c. CCW radiation monitor, R-17, - INCREASING	c. Check RCS leakrate. IF RCS leakrate increasing, THEN go to Step 2 (Refer to RCS Leakage Surveillance Sheet) IF RCS leakage and R-17 indication normal, THEN go to Step 13.

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED

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CAUTION

IF EITHER RCP #1 SEAL OUTLET TEMPERATURE EXCEEDS 215°F, THEN THE AFFECTED RCP(S) SHOULD BE STOPPED.

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

2	Check RCP Thermal Barrier Indications: o Labyrinth seal D/Ps - GREATER THAN 15 INCHES OF WATER AND APPROXIMATELY EQUAL o RCP #1 seal leak off flows - BETWEEN 0.25 GPM AND 5.5 GPM o Annunciator A-7 (15), RCP A (B) CCW RETURN HI TEMP OR LO FLOW 165 GPM 125°F - EXTINGUISHED	IF either pump has indication of a thermal barrier leak, THEN perform the following: a. Verify seal injection flow to affected RCP. b. Close CCW return from affected RCP thermal barrier (labyrinth seal D/P should increase). • RCP A, AOV-754A • RCP B, AOV-754B c. Evaluate CCW surge tank level trend. IF leakage into the CCW system has stopped, THEN go to Step 17.
3	Check RCS temperature - GREATER THAN 350°F	Go to Step 7.

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED

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CAUTION

CLOSELY MONITOR PRZR LEVEL WHILE LETDOWN IS ISOLATED.

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4	**Check NRHX For Leakage:**	
	a. Normal letdown - IN SERVICE	a. IF excess letdown in service, THEN perform the following: 1) Close excess letdown flow control valve, HCV-123. 2) Close EXCESS LTDN LOOP A COLD TO Hx, AOV-310. 3) Go to Step 5.
	b. Check Letdown Indications: o Letdown line flow - APPROXIMATELY 40 GPM o Low press LTDN pressure - APPROXIMATELY 250 PSIG o Letdown pressure control valve, PCV-135, demand - APPROXIMATELY 35% OPEN	b. Isolate Normal Letdown: 1) Close loop B cold leg to REGEN Hx, AOV-427. 2) Close letdown orifice valves (AOV-200A, AOV-200B, and AOV-202). 3) Place letdown pressure controller, PCV-135, in MANUAL and close valve (demand at 100%). 4) Control charging pump speed as necessary to maintain RCP labyrinth seal D/P less than 80 inches. 5) Close charging flow control valve, HCV-142. 6) Go to Step 5.
	c. Go to Step 6	

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
5	Check If CCW Inleakage Has Stopped:	
	a. CCW surge tank level - STABLE	a. IF CCW surge tank level still increasing, THEN perform the following: 1) Restore letdown flowpath previously isolated (Refer to Attachment LETDOWN). 2) Adjust charging as necessary to restore PRZR level. 3) Go to Step 13.
	b. Restore an intact letdown flowpath if available (Refer to Attachment LETDOWN)	
	c. Check any letdown flowpath - RESTORED	c. IF no letdown flowpath available, THEN consult Plant Staff.
	d. Adjust charging as necessary to restore PRZR level	

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
6	Establish Stable Plant Conditions:	
	a. Check Tavg - TRENDING TO TREF	a. Insert/withdraw control rods or, if necessary, adjust 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.
	d. Go to Step 17	

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED

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CAUTION

o CLOSELY MONITOR PRZR LEVEL AND RCS PRESSURE WHILE LETDOWN IS ISOLATED.

o UNFILTERED WATER MAY DAMAGE RCP SEAL SURFACES.

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7 **Check NRHX For Leakage:**

a. Narrow range PRZR level - ON SCALE

Response not obtained:

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

1) Stop any running RCP.

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

b. Isolate letdown flow to NRHX:

o Ensure the following valves - CLOSED

- Loop B cold leg to REGEN Hx, AOV-427
- Letdown orifice valves (AOV-200A, AOV-200B, and AOV-202)
- RHR letdown flow control valve, HCV-133

o Close letdown isolation valve, AOV-371

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

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED

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CAUTION

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

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STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
8	Check If CCW Inleakage Has Stopped:	
	a. CCW surge tank level - STABLE	a. IF CCW inleakage continues, THEN go to Step 9.
	b. Narrow range PRZR level - ON SCALE	b. IF RCS is solid, THEN perform the following: 1) Ensure both RCPs off. 2) Cycle charging pumps as necessary to control RCS pressure.
	c. Establish excess letdown (Refer to Attachment LETDOWN)	
	d. Start one charging pump	
	e. Adjust charging flow as necessary to restore PRZR level	
	f. Check RCS temperature - STABLE	f. Adjust RHR cooling as necessary.
	g. Go to Step 17	

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
9	Restore Letdown:	
	a. Check RHR - IN SERVICE	a. Perform the following: 1) Establish normal letdown (Refer to Attachment LETDOWN). 2) Go to Step 10.
	b. Open letdown isolation valve, AOV-371	
	c. Place letdown controllers in MANUAL at 35% open • TCV-130 • PCV-135	
	d. Manually open RHR LETDOWN TO CVCS, HCV-133	
	e. Place TCV-130 in AUTO at 105°F	
	f. Place PCV-135 in AUTO at desired pressure	
	g. Start one charging pump	
	h. Adjust charging flow as necessary to restore PRZR pressure/level	

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED

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CAUTION

o ONE TRAIN OF RHR SHALL BE OPERABLE AT ALL TIMES.

o IF AN RHR PUMP OR HX IS REMOVED FROM SERVICE, THEN OPERABILITY REQUIREMENTS SHOULD BE EVALUATED (REFER TO TECH SPEC SECTIONS 3.1.1.1 AND 3.3.1).

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STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
10	Check RHR System For Leakage:	
	a. Both RHR loops - ALIGNED AND OPERABLE	a. IF any loop isolated for this leak investigation, THEN perform the following: 1) Restore isolated loop to service (Refer to Attachment RHR ISOL and S-13A, RHR LINEUP FOR SAFETY INJECTION). 2) WHEN loop restored, THEN isolate other RHR loop (Refer to Attachment RHR ISOL). 3) Go to Step 11.
	b. Isolate selected RHR loop (Refer to Attachment RHR ISOL)	
11	Verify RCS temperature - STABLE OR DECEASING	Increase cooling from available RHR loop. Attempt to establish S/G cooling if necessary.

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
12	Check If CCW Inleakage Has Stopped: a. CCW surge tank level - STABLE b. Go to Step 17	a. IF any RHR loop has NOT been checked for leakage, THEN return to Step 10. IF both RHR loops have been checked, THEN restore RHR loops to operable and go to Step 13.
13	Check RMW to CCW Surge Tank: o Verify CCW surge tank fill valve, MOV-823 - CLOSED o Verify RMW pump(s) - OFF	IF RMW to CCW surge tank, MOV-823, open OR RMW pump running, THEN perform the following: a. Close CCW surge tank fill valve, MOV-823. b. Shut off running RMW pumps. c. IF CCW inleakage stops, THEN go to Step 17.

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
14	Check For Sample Hx Leaks:	
	a. Direct AO to locally check nuclear sample room Hxs o Sample Hx (TI-602) common CCW return temperature from sample Hxs - NORMAL (Refer to Aux Bldg log sheet, 3 of 3) o Sample Hx (FI-603) common CCW return flow from sample Hxs - NORMAL (Refer to Aux Bldg log sheet, 3 of 3)	a. Determine which sample Hx CCW outlet temperature is high, <u>THEN</u> perform the following: 1) Isolate the affected Hx. 2) <u>IF</u> CCW inleakage has stopped, <u>THEN</u> go to Step 17.
	b. Direct HP Tech to check PASS - SAMPLING IN PROGRESS	b. Go to Step 15.
	c. Direct HP Tech to terminate PASS sampling	
	d. Verify CCW inleakage - STOPPED	
15	Check SW Header Pressure - LESS THAN 60 PSIG	Dispatch AO to check CCW pump discharge pressure. <u>IF</u> SW pressure greater than CCW pressure, <u>THEN</u> investigate possible SW leak into CCW system.

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<u>CAUTION</u>

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

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16	Check Safeguards Pump Status - ALL SAFEGUARDS PUMPS OFF • SI pumps • RHR pumps • CS pumps	<u>IF</u> any event in progress requiring safeguards pump operation, <u>THEN</u> consult Plant Staff for guidance on checking safeguards pumps for CCW leakage.

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
17	Evaluate Plant Conditions:	
	a. CCW inleakage - IDENTIFIED AND ISOLATED	a. Return to Step 2.
	b. Determine if operation can continue (Consult Plant staff if necessary) - OPERATION CAN CONTINUE	b. IF plant shutdown is required, THEN refer to 0-2.1, NORMAL SHUTDOWN TO HOT SHUTDOWN.
18	Check CCW Surge Tank Level - APPROXIMATELY 50%	Consult HP tech to determine method to drain and dispose of excess CCW.
	NOTE: Refer to 0-9.3, NRC IMMEDIATE NOTIFICATION, for reporting requirements.	
19	Notify Higher Supervision	
20	Return To Procedure Or Guidance In Effect	

-END-

AP-CCW.1 APPENDIX LIST