

EOP: AP-CVCS.1	TITLE: CVCS LEAK	REV: 6 PAGE 1 of 12
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ROCHESTER GAS AND ELECTRIC CORPORATION

GINNA STATION

CONTROLLED COPY NUMBER 23

TECHNICAL REVIEW

PORC REVIEW DATE 5/6/92

Thomas A. Marlow
PLANT SUPERINTENDENT

5/8/92
EFFECTIVE DATE

CATEGORY 1.0

REVIEWED BY: _____

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

B. ENTRY CONDITIONS/SYMPTOMS

1. ENTRY CONDITIONS - This procedure is entered from;

a. AP-RCS.1, REACTOR COOLANT LEAK, when conditions indicate a CVCS leak.

2. SYMPTOMS - The symptoms of CVCS leak are;

a. Annunciator B-9 (B-10), RCP A(B) LABYR SEAL LO DIFF PRESS 15" H2O, lit, or

b. Charging line pressure low, or

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

d. Annunciator A-4, REGEN HX LETDOWN OUT HI TEMP 395°F, lit, or

e. Letdown line low pressure and/or low flow, or

f. Charging Pump Room area monitor R-4 on alarm.

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STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
***** <u>CAUTION</u> IF, AT ANY TIME DURING THIS PROCEDURE, A REACTOR TRIP OR SI OCCURS, E-0, REACTOR TRIP OR SAFETY INJECTION, SHALL BE PERFORMED. *****		
<u>NOTE:</u> <ul style="list-style-type: none"> o Conditions should be evaluated for site contingency reporting (Refer to EPIP-1.0, GINNA STATION EVENT EVALUATION AND CLASSIFICATION. o A local radiation emergency should be declared for any unexplained area radiation monitor alarm. 		
1	Monitor PRZR Level - STABLE AT PROGRAM LEVEL	<p><u>IF</u> PRZR level decreasing, <u>THEN</u> start additional charging pumps and increase speed as necessary to stabilize PRZR level.</p> <p><u>IF</u> PRZR level continues to decrease, <u>THEN</u> close loop B cold leg to REGEN Hx isolation valve, AOV-427.</p> <p><u>IF</u> available charging pumps are running at maximum speed with letdown isolated, <u>AND</u> PRZR level is decreasing, <u>THEN</u> trip the reactor and go to E-0, REACTOR TRIP or SAFETY INJECTION.</p>

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STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
<p><u>NOTE:</u> IF VCT level decreases to 5%, charging pump suction will swap to the RWST. This may require a load reduction.</p>		
<p>2 Check VCT Makeup System:</p>		
	<p>a. Verify the following:</p> <ol style="list-style-type: none"> 1) RMW mode selector switch in AUTO 2) RMW control armed - RED LIGHT LIT 	<p>a. Adjust controls as necessary.</p>
	<p>b. Check VCT level:</p> <ul style="list-style-type: none"> o Level GREATER THAN 20% -OR- o Level - STABLE OR INCREASING 	<p>b. Check letdown divert valve, LCV-112A, aligned to VCT.</p> <p>Manually increase VCT makeup flow as follows:</p> <ol style="list-style-type: none"> 1) Ensure BA transfer pumps and RMW pumps running. 2) Place RMW flow control valve, HCV-111, in MANUAL and increase RMW flow. 3) Increase boric acid flow as necessary. <p>IF VCT level can <u>NOT</u> be maintained, <u>THEN</u> refer to ER-CVCS.2, REACTOR MAKEUP CONTROL MALFUNCTION, if necessary.</p>

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STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
3	Check Charging Pump Suction Aligned To VCT:	
	a. VCT level - GREATER THAN 20%	<p>a. <u>IF</u> VCT level can <u>NOT</u> be maintained greater than 5%, <u>THEN</u> perform the following:</p> <p>1) Ensure charging pump suction aligned to RWST</p> <ul style="list-style-type: none"> o LCV-112B open o LCV-112C closed <p>2) Continue with Step 4. <u>WHEN</u> VCT level greater than 20%, <u>THEN</u> do Step 3b.</p>
	b. Verify charging pumps aligned to VCT	b. Manually align valves as necessary.
	<ul style="list-style-type: none"> o LCV-112C open o LCV-112B closed 	
4	Check If RCS Leakage In CNMT:	<u>IF</u> leakage is indicated in CNMT, <u>THEN</u> perform the following:
	o Check CNMT radiation monitors - NORMAL	a. Direct HP to sample CNMT for entry.
	<ul style="list-style-type: none"> • R-2 • R-7 • R-10A • R-11 • R-12 	b. Continue with Step 5. <u>WHEN</u> CNMT cleared for entry, <u>THEN</u> dispatch personnel to investigate CNMT for RCS leakage.
	o CNMT sump A pump run frequency - NORMAL (Refer to leakage surveillance sheet)	

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STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
<p>*****</p> <p style="text-align: center;"><u>CAUTION</u></p> <p>HEALTH PHYSICS TECHNICIAN SHOULD BE CONSULTED PRIOR TO ENTERING A HIGH AIRBORNE AREA.</p> <p>*****</p>		
5	<p>Check If RCS Leakage In AUX BLDG:</p> <p>a. Check AUX BLDG radiation monitors - NORMAL</p> <ul style="list-style-type: none"> • R-4 • R-9 • R-10B • R-13 • R-14 <p>b. AUX BLDG sump pump run frequency - NORMAL (Refer to leakage surveillance sheet)</p> <p>c. AUX BLDG sump tank leak rate - NORMAL (Refer to leakage surveillance sheet)</p>	<p>Dispatch AO To AUX BLDG To Investigate For CVCS Leak (locked area keys required)</p>

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STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
6	<p>Check For Leak In Charging Line To REGEN Hx:</p> <ul style="list-style-type: none"> o Annunciator A-4, REGEN HX LETDOWN OUT HI TEMP 395°F - EXTINGUISHED o REGEN Hx letdown outlet temperature - LESS THAN 350°F AND STABLE (archive PPCS point ID T0127) 	<p>Perform the following:</p> <ul style="list-style-type: none"> a. Close or verify closed loop B cold leg to REGEN Hx, AOV-427. b. Close letdown orifice valves (AOV-200A, AOV-200B, and AOV-202). c. Control charging pump speed as necessary to maintain RCP labyrinth seal D/P less than 80 inches. d. Close charging flow control valve, HCV-142. e. Close charging to loop B cold leg, AOV-294. f. Go to Step 9.

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STEP

ACTION/EXPECTED RESPONSE

RESPONSE NOT OBTAINED

CAUTION

- o IF LEAK EXISTS IN THE LETDOWN LINE, H2 GASES FROM THE VCT MAY DIFFUSE OUT THE LEAK AND CAUSE A HAZARDOUS CONDITION.
- o WHILE ON EXCESS LETDOWN, VCT LEVEL MAY BE DECREASED BY MANUALLY DIVERTING EXCESS LETDOWN FLOW TO THE RCDT USING AOV-312.

7 Check Normal Letdown:

a. Normal letdown - IN SERVICE

- o Letdown flow - APPROXIMATELY 40 GPM
- o Low pressure LTDN pressure - APPROXIMATELY 250 PSIG
- o Pressure control valve, PCV-135, demand - APPROXIMATELY 35% OPEN

a. Perform the following:

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

2) Go to Step 8.

b. Check Letdown Indications:

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) Control charging pump speed as necessary to maintain RCP labyrinth seal D/P less than 80 inches.
- 4) Close charging flow control valve, HCV-142
- 5) Close charging to loop B cold leg, AOV-294.
- 6) Establish excess letdown (Refer to Attachment EXCESS LETDOWN).
- 7) Go to Step 12.

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STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
8	<p>Check For Leakage To CCW System:</p> <ul style="list-style-type: none"> CCW radiation monitor (R-17) - NORMAL CCW surge tank level - APPROXIMATELY 50% AND STABLE 	<p><u>IF</u> leakage to the CCW system is indicated, <u>THEN</u> go to AP-CCW.1, LEAKAGE INTO THE COMPONENT COOLING LOOP.</p>
<p>***** <u>CAUTION</u> RCP OPERATION WITHOUT SEAL INJECTION SHOULD BE MINIMIZED. *****</p>		
9	<p>Check RCP Seal Injection Indications:</p> <ul style="list-style-type: none"> Seal injection flows - GREATER THAN 6 GPM AND STABLE RCP labyrinth seal D/Ps - GREATER THAN 15 INCHES AND APPROXIMATELY EQUAL RCP seal inlet temperatures - STABLE 	<p><u>IF</u> RCP seal injection leak is suspected, <u>THEN</u> perform the following:</p> <ul style="list-style-type: none"> a. Verify charging flow control valve, HCV-142, open. <u>IF</u> no charging path through REGEN Hx available, <u>THEN</u> go to Step 15. b. Verify CCW cooling to operating RCP thermal barriers. <u>IF NOT</u>, <u>THEN</u> seal injection should be maintained. c. Attempt to locate and isolate leak. d. Go to Step 12.

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STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
10	<p>Check RCP Seal Leakoff Flows:</p> <ul style="list-style-type: none"> o RCP seal leakoff flows - GREATER THAN 0.25 GPM o RCP seal leakoff flows - STABLE 	<p>Dispatch AO with a key to the RWST gate to check seal return line for leakage.</p> <p><u>IF</u> a seal return line leak is indicated downstream of RCP seal return isolation valve, MOV-313, <u>THEN</u> perform the following:</p> <ul style="list-style-type: none"> a. Close RCP seal return isolation valve, MOV-313. b. Monitor RCP indications. c. Evaluate leak location. <u>IF</u> possible, <u>THEN</u> isolate the seal return line from the VCT. d. Go to Step 12. <p><u>IF</u> no seal return line leakage indicated in the AUX BLDG, <u>THEN</u> investigate for leakage in CNMT.</p>
11	Evaluate Local Leak Investigation - CVCS SYSTEM INTACT IN AUX BLDG	Determine if leak can be isolated (Refer to CVCS piping diagrams as necessary).
12	<p>Evaluate Plant Status:</p> <ul style="list-style-type: none"> a. Leak location identified b. Check RCS conditions: <ul style="list-style-type: none"> o Leakage within limits (Refer to leakage surveillance sheet and Tech Spec section 3.1.5) o At least one charging flowpath - AVAILABLE FOR INVENTORY CONTROL 	<ul style="list-style-type: none"> a. <u>IF</u> CVCS leak <u>NOT</u> indicated, <u>THEN</u> go to AP-RCS.1, REACTOR COOLANT LEAK. b. Perform the following: <ul style="list-style-type: none"> 1) Initiate plant shutdown (Refer to 0-2.1, NORMAL SHUTDOWN TO HOT SHUTDOWN). 2) Go to Step 15.

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STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
13	Check Normal Or Excess Letdown - IN SERVICE	<p><u>IF</u> normal letdown desired, <u>THEN</u> perform the following:</p> <ul style="list-style-type: none"> a. Verify charging line flow to REGEN Hx - GREATER THAN 20 GPM b. Place letdown controllers in MANUAL at 35% open. <ul style="list-style-type: none"> • 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 <p><u>IF</u> normal letdown <u>NOT</u> available, <u>THEN</u> establish excess letdown if desired (Refer to Attachment EXCESS LETDOWN).</p>

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STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
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14 Establish Stable Plant Conditions:

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| <p>a. PRZR level - TRENDING TO PROGRAM</p> <p>b. PRZR pressure - AT OR TRENDING TO 2235 PSIG</p> | <p>a. Control charging flow as necessary to restore PRZR level to program.</p> <p>b. Verify proper operation of PRZR heaters and spray or take manual control of PRZR pressure controller 431K. IF pressure can <u>NOT</u> be controlled, <u>THEN</u> refer to AP-PRZR.1, ABNORMAL PRESSURIZER PRESSURE.</p> |
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NOTE: Refer to 0-9.3, NRC STATE AND COUNTIES IMMEDIATE NOTIFICATION, for reporting requirements.

15 Notify Higher Supervision

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AP-CVCS.1 APPENDIX LIST

<u>TITLES</u>	<u>PAGES</u>
1) Attachment EXCESS LETDOWN	1

