

EOP: AP-RHR.2	TITLE: LOSS OF RHR WHILE OPERATING AT RCS REDUCED INVENTORY CONDITIONS	REV: 3 PAGE 1 of 11
------------------	--	------------------------

ROCHESTER GAS AND ELECTRIC CORPORATION

GINNA STATION

CONTROLLED COPY NUMBER 23

TECHNICAL REVIEW

PORC REVIEW DATE 4-19-90

Joseph A. Widan  
PLANT SUPERINTENDENT

4-20-90  
EFFECTIVE DATE

QA  NON-QA  CATEGORY 1.0

REVIEWED BY: \_\_\_\_\_

GINNA STATION	
START:	
DATE	_____
TIME	_____
COMPLETED:	
DATE	_____
TIME	_____

9005160337 900508  
PDR ADDCK 05000244  
F FDC

EOP: AP-RHR.2	TITLE: LOSS OF RHR WHILE OPERATING AT RCS REDUCED INVENTORY CONDITIONS	REV: 3 PAGE 2 of 11
------------------	--	------------------------

- A. PURPOSE - This procedure provides guidance necessary for maintaining core cooling and protecting the reactor core in the event that RHR cooling is lost during RCS reduced inventory operation, (i.e., at indicated "B" Loop Levels of less than 64 inches).
  
- B. ENTRY CONDITIONS/SYMPTOMS
  - 1. SYMPTOMS - The symptoms of (Loss of RHR At RCS Reduced Inventory Conditions) are:
    - a. Annunciator A-20, RESIDUAL HEAT REMOVAL LOOP LO FLOW 2900 GPM (Set at 400 GPM per 0-2.2 in RHR Cooling mode) alarm is lit, or
    - b. Unexpected increase in RCS temperature while on RHR cooling at low loop levels, or
    - c. Erratic or no flow on FI-626, or
    - d. Annunciator J-9, Safeguard Breaker Trip alarm lit.

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
1	Establish CNMT Closure O-2.3.1A, CONTAINMENT CLOSURE CAPABILITY DURING RCS REDUCED INVENTORY OPERATION, Step 5.8, while continuing with this procedure	
2	Check RHR Pumps - AT LEAST ONE RUNNING	Go to Step 7.
<p>*****  <u>CAUTION</u>            DO NOT START A SECOND RHR PUMP UNTIL THE CAUSE OF THE ERRATIC FLOW OR LOSS OF FLOW ON THE FIRST PUMP HAS BEEN DETERMINED AND CORRECTED.            *****</p>		
3	Check RHR Flow - GREATER THAN 200 GPM AND STABLE	Perform the following: a. Stop all running RHR pump(s). b. Go to Step 7.
4	Verify CCW Operation: o CCW pumps - AT LEAST ONE RUNNING o CCW To RHR Hxs, MOV-738A and MOV-738B - OPEN AS NECESSARY o CCW temperature and flow alarms - EXTINGUISHED	Perform the following: a. Restore CCW to RHR: o Start the standby CCW pump if it is not running. o Open MOV-738A and MOV-738B, as necessary. b. <u>IF</u> CCW can <u>NOT</u> be restored, <u>THEN</u> refer to AP-CCW.3, LOSS OF CCW - PLANT SHUTDOWN, Step 1.

EOP:

AP-RHR.2

TITLE:

LOSS OF RHR WHILE OPERATING AT RCS REDUCED  
INVENTORY CONDITIONS

REV: 3

PAGE 4 of 11

STEP

ACTION/EXPECTED RESPONSE

RESPONSE NOT OBTAINED

5 Verify RHR Alignment - NORMAL  
(Refer to Attachment A)

Align valves as required.

6 Check RCS Temperature:

a. RCS temperature - STABLE OR  
DECREASING

a. Return to Step 2.

b. Go to Step 12

7 Check If RCS Loop Level Must  
Be Raised:

a. RCS loop level - LESS THAN 30"  
ON B LOOP LEVEL INDICATOR

a. IF RCS loop level is greater  
than 30", THEN start an  
available RHR pump and go to  
Step 9 immediately.

EOP:

AP-RHR.2

TITLE:

LOSS OF RHR WHILE OPERATING AT RCS REDUCED INVENTORY CONDITIONS

REV: 3

PAGE 5 of 11

STEP

ACTION/EXPECTED RESPONSE

RESPONSE NOT OBTAINED

\*\*\*\*\*

CAUTION

BEFORE RAISING LOOP LEVEL, THE S/G OFFICE SHOULD BE NOTIFIED.

\*\*\*\*\*

8 Increase RCS Loop Level By The Following Methods, Listed in Preferential Order of Use:

a. Gravity feed method:

1) Close RHR pump discharge valve to loop B cold leg, MOV-720

2) Dispatch AO to locally open RHR pump suction from RWST, MOV-856

3) Check RCS loop level - INCREASING AS EXPECTED

3) IF RCS loop level NOT increasing, THEN perform the following:

a) Close MOV-856.

b) Open MOV-720.

c) Go to Step 8b.

4) WHEN B loop level indicator greater than 30 in., THEN close MOV-856

5) Open RHR pump discharge valve to B loop cold leg, MOV-720

5) IF MOV-720 does NOT open, THEN open core deluge valves MOV-852A and MOV-852B.

6) Start one RHR pump

7) Go to Step 9 immediately

This Step continued on the next page.

EOP:

AP-RHR.2

TITLE:

LOSS OF RHR WHILE OPERATING AT RCS REDUCED  
INVENTORY CONDITIONS

REV: 3

PAGE 6 of 11

STEP

ACTION/EXPECTED RESPONSE

RESPONSE NOT OBTAINED

(Step 8 continued from previous page)

b. Charging to intact loop cold leg  
method:1) Check B loop cold leg -  
INTACT1) IF A loop cold leg intact,  
THEN go to Step 8c.IF A loop cold leg NOT  
intact, THEN go to Step 8d.2) Open charging line valve to  
loop B cold leg, AOV-294

3) Verify HCV-142 demand at 0%

4) Start operable charging pump  
and increase flow to maximum4) IF charging pump will NOT  
start, THEN:

a) Close AOV-294.

b) Go to Step 8d.

5) Check RCS loop level -  
INCREASING AS EXPECTED5) IF RCS loop level NOT  
increasing as expected, THEN:a) Stop operating charging  
pump.

b) Close AOV-294.

c) IF A loop cold leg intact,  
go to Step 8c.d) IF A loop cold leg NOT  
intact, go to Step 8d.6) WHEN B loop level indicator  
greater than 30 in., THEN  
stop operating charging pump7) Close charging line valve to  
loop B cold leg, AOV-294

8) Start one RHR pump

This Step continued on the next page.

EOP:

AP-RHR.2

TITLE:

LOSS OF RHR WHILE OPERATING AT RCS REDUCED  
INVENTORY CONDITIONS

REV: 3

PAGE 7 of 11

STEP

ACTION/EXPECTED RESPONSE

RESPONSE NOT OBTAINED

(Step 8 continued from previous page)

- 9) Go to Step 9 immediately
- c. Charging to A loop cold leg method:
- 1) Open alternate charging line to loop A cold leg, AOV-392B
  - 2) Start operable charging pump and increase flow to maximum
  - 3) Check RCS loop level - INCREASING AS EXPECTED
  - 4) WHEN B loop level indicator greater than 30 in., THEN stop operating charging pump
  - 5) Close alternate charging line to loop A cold leg, AOV-392B
  - 6) Start one RHR pump
  - 7) Go to Step 9 immediately
- 2) IF charging pump will NOT start, THEN:
    - a) Close AOV-392B.
    - b) Go to Step 8d.
  - 3) IF RCS loop level NOT increasing as expected, THEN:
    - a) Stop operating charging pump.
    - b) Close AOV-392B.
    - c) Go to Step 8d.

This Step continued on the next page.

EOP:

AR-RHR.2

TITLE:

LOSS OF RHR WHILE OPERATING AT RCS REDUCED  
INVENTORY CONDITIONS

REV: 3

PAGE 8 of 11

STEP

ACTION/EXPECTED RESPONSE

RESPONSE NOT OBTAINED

(Step 8 continued from previous page)

d. Safety injection to loop hot legs method:

- 1) Open loop hot leg SI inlet, valves MOV-878A and/or MOV-878C
- 2) Open SI pumps suction valves MOV-825A and/or MOV-825B
- 3) Start operable safety injection pump
- 4) Check RCS loop level - INCREASING AS EXPECTED
  - 4) IF RCS loop level NOT increasing as expected, THEN:
    - a) Stop operating SI pump.
    - b) Close loop hot leg inlet valves.
      - MOV-878A
      - MOV-878C
    - c) Close SI pump suction valves.
      - MOV-825A
      - MOV-825B
    - d) Return to Step 1.
- 5) WHEN B loop level indicator greater than 30 in., THEN stop operating safety injection pump
- 6) Close SI pumps suction valves
  - MOV-825A
  - MOV-825B
- 7) Close loop hot leg SI inlet valves
  - MOV-878A
  - MOV-878C
- 8) Start one RHR pump
- 9) Go to Step 9 immediately



EOP:

AP-RHR.2

TITLE:

LOSS OF RHR WHILE OPERATING AT RCS REDUCED  
INVENTORY CONDITIONS

REV: 3

PAGE 9 of 11

STEP

ACTION/EXPECTED RESPONSE

RESPONSE NOT OBTAINED

## 9 Verify RHR Flow:

a. RHR flow - GREATER THAN 200 GPM  
AND STABLEa. IF an RHR pump is running with  
less than 200 gpm flow or  
erratic flow is indicated, THEN  
perform the following:

- 1) Stop running RHR pump.
- 2) Direct auxiliary operator to  
vent RHR suction line in CNMT  
by "A" loop, valve 2764.
- 3) Start one RHR pump.
- 4) Go to Step 10 immediately.

b. Go to Step 12

## 10 Verify RHR Flow:

a. RHR flow - GREATER THAN 200 GPM  
AND STABLEa. IF adequate RHR flow can NOT be  
established, THEN perform the  
following:

- 1) Stop running RHR pump(s).
- 2) Evacuate CNMT.
- 3) Check to assure that CNMT  
closure is completed or  
nearing completion.
- 4) Place RCDT pumps in service  
(Refer to ER-RHR.1, RCDT  
OPERATION FOR CORE COOLING).
- 5) Go to Step 11.

b. Go to Step 12

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
11	Verify Maintenance Notified And Continue Attempts To Restore Inoperable RHR Pumps Or RHR Flow: <ul style="list-style-type: none"><li data-bbox="256 627 660 659">o Maintenance - NOTIFIED</li><li data-bbox="256 691 776 755">o Attempts continued to restore inoperable RHR pumps OR flow</li><li data-bbox="256 787 520 819">o Go to Step 12</li></ul>	
12	Establish Monitoring of RCS Temperature: <ul style="list-style-type: none"><li data-bbox="256 978 759 1042">o RCS temperature - MONITORING ESTABLISHED</li></ul>	
13	Check With Higher Supervision: <ul style="list-style-type: none"><li data-bbox="256 1202 776 1234">o Higher supervision - NOTIFIED</li></ul>	
14	Check Alternatives For Long Term Cooling: <ul style="list-style-type: none"><li data-bbox="256 1393 817 1457">o Long term cooling alternatives - EVALUATED</li></ul>	
15	Check For Site Contingency Classification: <ul style="list-style-type: none"><li data-bbox="256 1627 809 1755">o Site contingency classification - REFER TO SC-100, GINNA STATION EVENT EVALUATION AND CLASSIFICATION</li></ul>	

EOP:

AP-RHR.2

TITLE:

LOSS OF RHR WHILE OPERATING AT RCS REDUCED  
INVENTORY CONDITIONS

REV: 3

PAGE 11 of 11

STEP

ACTION/EXPECTED RESPONSE

RESPONSE NOT OBTAINED

16 Check For NRC Reporting  
Requirements:

- o NRC reporting requirements -  
REFER TO 0-9.3, NRC IMMEDIATE  
NOTIFICATION

17 Verify RHR Cooling:

a. RHR cooling normal

- o RHR cooling - RESTORED
- o RCS temperature - STABLE OR  
DECREASING

b. Return - REQUIRED PLANT  
OPERATION

a. Return to Step 1.

-END-

ATTACHMENT A

NORMAL RHR COOLING VALVE ALIGNMENT

RHR from Loop A Hot Leg .....	MOV-700	Open
	MOV-701	Open
RHR to Loop B Cold Leg .....	MOV-720	Open
	MOV-721	Open
RHR Letdown to CVCS .....	HCV-133	Open
RHR Pump Discharge Cross-Connect .....	V-709C	Open
	V-709D	Open
RHR Hx Bypass .....	V-712A	Open
	V-712B	Open
	FCV-626	as desired
RHR From 1A RHR Hx .....	HCV-625	as desired
RHR From 1B RHR Hx .....	HCV-624	as desired
RHR Supply Valve From RWST .....	MOV-856	Closed
RHR Pump Suction Valves		
A RHR Pump .....	MOV-704A	Open
B RHR Pump .....	MOV-704B	Open