

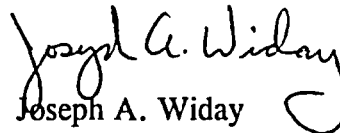
November 6, 2003

U.S. Nuclear Regulatory Commission  
Document Control Desk  
Washington, D.C. 20555

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

As requested, enclosed are Ginna Station Emergency Operating Procedures.

Very truly yours,

  
Joseph A. Widay

JAW/jdw

xc: U.S. Nuclear Regulatory Commission  
Region I  
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Ginna USNRC Senior Resident Inspector

Enclosure(s):

FR Index  
FR-P.1, Rev 27

A002

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Ginna Nuclear Power Plant  
PROCEDURE INDEX

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INPUT PARAMETERS: TYPE: PRFR

STATUS VALUE(S): EF, QU

5 YEARS ONLY:

PRFR FUNCTIONAL RESTORATION GUIDELINE PROC

PROCEDURE NUMBER	PROCEDURE TITLE	REV	EFFECT DATE	LAST REVIEW	NEXT REVIEW	ST
FR-C.1	RESPONSE TO INADEQUATE CORE COOLING	020	05/30/2003	03/24/2003	03/24/2008	EF
FR-C.2	RESPONSE TO DEGRADED CORE COOLING	017	05/30/2003	03/24/2003	03/24/2008	EF
FR-C.3	RESPONSE TO SATURATED CORE COOLING	009	05/30/2003	03/24/2003	03/24/2008	EF
FR-H.1	RESPONSE TO LOSS OF SECONDARY HEAT SINK	030	10/10/2003	03/24/2003	03/24/2008	EF
FR-H.2	RESPONSE TO STEAM GENERATOR OVERPRESSURE	006	10/10/2003	03/24/2003	03/24/2008	EF
FR-H.3	RESPONSE TO STEAM GENERATOR HIGH LEVEL	007	10/10/2003	03/24/2003	03/24/2008	EF
FR-H.4	RESPONSE TO LOSS OF NORMAL STEAM RELEASE CAPABILITIES	005	05/30/2003	03/24/2003	03/24/2008	EF
FR-H.5	RESPONSE TO STEAM GENERATOR LOW LEVEL	009	05/30/2003	03/24/2003	03/24/2008	EF
FR-I.1	RESPONSE TO HIGH PRESSURIZER LEVEL	016	05/30/2003	03/24/2003	03/24/2008	EF
FR-I.2	RESPONSE TO LOW PRESSURIZER LEVEL	011	05/30/2003	03/24/2003	03/24/2008	EF
FR-I.3	RESPONSE TO VOIDS IN REACTOR VESSEL	018	05/30/2003	03/24/2003	03/24/2008	EF
FR-P.1	RESPONSE TO IMMINENT PRESSURIZED THERMAL SHOCK CONDITION	027	11/06/2003	03/24/2003	03/24/2008	EF
FR-P.2	RESPONSE TO ANTICIPATED PRESSURIZED THERMAL SHOCK CONDITION	008	05/30/2003	03/24/2003	03/24/2008	EF
FR-S.1	RESPONSE TO REACTOR RESTART/ATWS	016	10/10/2003	03/24/2003	03/24/2008	EF
FR-S.2	RESPONSE TO LOSS OF CORE SHUTDOWN	009	05/30/2003	03/24/2003	03/24/2008	EF
FR-Z.1	RESPONSE TO HIGH CONTAINMENT PRESSURE	008	10/10/2003	03/24/2003	03/24/2008	EF
FR-Z.2	RESPONSE TO CONTAINMENT FLOODING	005	05/30/2003	03/24/2003	03/24/2008	EF
FR-Z.3	RESPONSE TO HIGH CONTAINMENT RADIATION LEVEL	005	05/30/2003	03/24/2003	03/24/2008	EF
PRFR	TOTAL: 18					

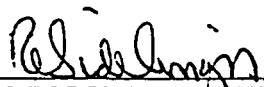
GRAND TOTAL: 18

EOP: FR-P.1	TITLE: RESPONSE TO IMMINENT PRESSURIZED THERMAL SHOCK CONDITION	REV: 27 PAGE 1 of 23
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ROCHESTER GAS AND ELECTRIC CORPORATION

GINNA STATION

CONTROLLED COPY NUMBER 23

  
RESPONSIBLE MANAGER

11-6-2003  
EFFECTIVE DATE

CATEGORY 1.0

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

EOP: FR-P.1	TITLE: RESPONSE TO IMMINENT PRESSURIZED THERMAL SHOCK CONDITION	REV: 27 PAGE 2 of 23
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A. PURPOSE - This procedure provides actions to avoid, or limit, thermal shock or pressurized thermal shock to the reactor pressure vessel, or overpressure conditions at low temperature.

B. ENTRY CONDITIONS/SYMPTOMS

1. ENTRY CONDITIONS - This procedure is entered from:

- a. F-0.4, INTEGRITY Critical Safety Function Status Tree, on either a RED or ORANGE condition.

EOP: FR-P.1	TITLE: RESPONSE TO IMMINENT PRESSURIZED THERMAL SHOCK CONDITION	REV: 27 PAGE 3 of 23
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STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
<p>*****</p> <p style="text-align: center;"><u>CAUTION</u></p> <p>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 THE AFW PUMPS).</p> <p>*****</p> <p><u>NOTE:</u>   o   Adverse CNMT values should be used whenever CNMT pressure is                   greater than 4 psig or CNMT radiation is greater than 10<sup>+05</sup> R/hr.</p> <p>          o   Foldout Page should be open and monitored periodically.</p> <div style="display: flex; justify-content: space-between;"> <div style="width: 45%;"> <p>1 Check RCS Pressure - GREATER THAN 250 PSIG [465 PSIG adverse CNMT]</p> </div> <div style="width: 45%;"> <p><u>IF</u> RHR flow greater than 475 gpm, <u>THEN</u> return to procedure and step in effect.</p> </div> </div>		

EOP: FR-P.1	TITLE: RESPONSE TO IMMINENT PRESSURIZED THERMAL SHOCK CONDITION	REV: 27 PAGE 4 of 23
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STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
<p>*****</p> <p style="text-align: center;"><u>CAUTION</u></p> <p>IF THE TDAFW PUMP IS THE ONLY AVAILABLE SOURCE OF FEED FLOW, THEN STEAM SUPPLY TO THE TDAFW PUMP MUST BE MAINTAINED FROM ONE S/G.</p> <p>*****</p>		
2	Check RCS Cold Leg Temperatures - STABLE OR INCREASING	<p>Try to stop RCS cooldown:</p> <ol style="list-style-type: none"> <li>a. Ensure S/G ARVs closed.</li> <li>b. Close both S/G MSIVs.</li> <li>c. Ensure MFW flow control valves closed. <ul style="list-style-type: none"> <li>• MFW regulating valves</li> <li>• MFW bypass valves</li> </ul> </li> <li>d. Ensure MFW pumps tripped.</li> <li>e. Ensure reheater steam supply valves are closed.</li> <li>f. <u>IF</u> S/G pressure less than condensate pressure, <u>THEN</u> stop all condensate pumps.</li> <li>g. <u>IF</u> RHR system in service, <u>THEN</u> stop any cooldown from RHR system.</li> <li>h. Control total feed flow to non-faulted S/G(s) greater than 200 gpm until narrow range level greater than 5% [25% adverse CNMT] in at least one non-faulted S/G. <u>WHEN</u> S/G level greater than 5% [25% adverse CNMT] in one non-faulted S/G, <u>THEN</u> limit feed flow to stop RCS cooldown.</li> </ol>

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STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
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NOTE: A faulted S/G is any S/G that is depressurizing in an uncontrolled manner or is completely depressurized.

3 Check If S/G Secondary Side Is Intact:

- o Pressure in both S/Gs - STABLE OR INCREASING
- o Pressure in both S/Gs - GREATER THAN 110 PSIG

Minimize cooldown from faulted S/G(s):

- a. Close faulted S/G(s) TDAFW pump steam supply valve(s).
  - S/G A. MOV-3505A
  - S/G B. MOV-3504A
- b. IF both S/G(s) faulted, THEN control feed flow at 50 gpm to each S/G.
- c. IF any S/G NOT faulted, THEN isolate all feedwater to faulted S/G unless necessary for RCS temperature control. IF a faulted S/G is necessary for RCS temperature control, THEN control feed flow at 50 gpm to that S/G.

4 Check PRZR PORV Block Valves:

- a. Power to PORV block valves - AVAILABLE
- b. Block valves - AT LEAST ONE OPEN

- a. Restore power to block valves unless block valve was closed to isolate an open PORV:
  - MOV-515. MCC D position 6C
  - MOV-516. MCC C position 6C
- b. Open one block valve unless it was closed to isolate an open PORV.
 

IF at least one block valve can NOT be opened, THEN dispatch AO to locally check breaker.

  - MOV-515. MCC D position 6C
  - MOV-516. MCC C position 6C

EOP: FR-P.1	TITLE: RESPONSE TO IMMINENT PRESSURIZED THERMAL SHOCK CONDITION	REV: 27 PAGE 6 of 23
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STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
<p>*****</p> <p style="text-align: center;"><u>CAUTION</u></p> <p>IF ANY PRZR PORV OPENS BECAUSE OF HIGH PRZR PRESSURE, THEN STEP 5 SHOULD BE PERFORMED AFTER PRESSURE DECREASES TO LESS THAN THE APPLICABLE PORV SETPOINT.</p> <p>*****</p>		
5	Check PRZR PORV Status:	
	a. Check Reactor Vessel Overpressure Protection System - IN SERVICE	a. Go to Step 5d.
	b. Check RCS pressure - LESS THAN 410 PSIG	b. Perform the following: 1) Ensure at least one PRZR PORV open. 2) Continue with Step 6. <u>WHEN</u> pressure less than setpoint. <u>THEN</u> do Step 5e.
	c. Go to Step 5e	
	d. PRZR pressure - LESS THAN 2335 PSIG	d. Perform the following: 1) Ensure at least one PRZR PORV open. 2) Continue with Step 6. <u>WHEN</u> pressure less than setpoint. <u>THEN</u> do Step 5e.
	e. Verify PRZR PORVs - CLOSED	e. Manually close valve.  <u>IF</u> any valve can <u>NOT</u> be closed. <u>THEN</u> manually close its block valve.



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STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
6	Check SI Pumps - ANY RUNNING	Go to Step 14.
7	<p>Check If SI Can Be Terminated:</p> <ul style="list-style-type: none"> <li>o RCS subcooling based on core exit T/Cs - GREATER THAN 50°F USING FIG-1.0, FIGURE MIN SUBCOOLING</li> <li>o Check RVLIS indication: <ul style="list-style-type: none"> <li>o Level (no RCPs) - GREATER THAN 77% [82% adverse CNMT]</li> </ul> </li> </ul> <p>-OR-</p> <ul style="list-style-type: none"> <li>o Fluid fraction (any RCP running) - GREATER THAN 84%</li> </ul>	<p>Perform the following:</p> <ul style="list-style-type: none"> <li>a. <u>IF</u> RCS subcooling based on core exit T/Cs greater than 0°F using FIG-1.0, FIGURE MIN SUBCOOLING and no RCP running, <u>THEN</u> attempt to start an RCP: <ul style="list-style-type: none"> <li>1) Establish conditions for starting an RCP: <ul style="list-style-type: none"> <li>o Bus 11A or 11B energized</li> <li>o Refer to ATT-15.0. ATTACHMENT RCP START</li> </ul> </li> <li>2) <u>IF</u> conditions established, <u>THEN</u> start one RCP.</li> </ul> </li> <li>b. Go to Step 28.</li> </ul>
<p>*****</p> <p style="text-align: center;"><u>CAUTION</u></p> <p>IF OFFSITE POWER IS LOST AFTER SI RESET, THEN MANUAL ACTION MAY BE REQUIRED TO RESTART SAFEGUARDS EQUIPMENT. (REFER TO ATT-8.5, ATTACHMENT LOSS OF OFFSITE POWER)</p> <p>*****</p>		
8	Reset SI	

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STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
	9 Stop SI And RHR Pumps And Place In AUTO	
	10 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.
	11 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) <u>IF NO</u> SW pumps running. <u>THEN</u> perform the following:
		a) Pull stop any D/G that is <u>NOT</u> supplied by alternate cooling. <u>AND</u> immediately depress associated VOLTAGE SHUTDOWN pushbutton.
		b) Refer to ATT-2.4. ATTACHMENT NO SW PUMPS.
		3) <u>IF</u> only one SW pump running. <u>THEN</u> refer to AP-SW.2. LOSS OF SERVICE WATER.
	b. Dispatch A0 to establish normal shutdown alignment (Refer to ATT-17.0, ATTACHMENT SD-1)	

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STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
12	Establish IA to CNMT:	
a.	Verify non-safeguards busses energized from offsite power	a. Perform the following:
	o Bus 13 normal feed - CLOSED	1) Close non-safeguards bus tie breakers:
	-OR-	• Bus 13 to Bus 14 tie
	o Bus 15 normal feed - CLOSED	• Bus 15 to Bus 16 tie
		2) Verify adequate emergency D/G capacity to run air compressors (75 kw each).
		<u>IF NOT</u> , <u>THEN</u> perform the following:
		o Start diesel air compressor (Refer to ATT-11.2, ATTACHMENT DIESEL AIR COMPRESSOR)
		-OR-
		o Evaluate if CNMT RECIRC fans should be stopped (Refer to ATT-4.0, ATTACHMENT CNMT RECIRC FANS).
		3) <u>WHEN</u> bus 15 restored, <u>THEN</u> reset control room lighting.
b.	Check SW pumps - AT LEAST TWO PUMPS RUNNING	b. Perform the following:
		1) Restore IA using service air compressor <u>OR</u> diesel air compressor (Refer to ATT-11.2, ATTACHMENT DIESEL AIR COMPRESSOR).
		2) Go to Step 12d.
This Step continued on the next page.		

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STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
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(Step 12 continued from previous page)

c. Verify SW isolation valves to turbine building - OPEN

- MOV-4613 and MOV-4670
- MOV-4614 and MOV-4664

d. Verify adequate air compressor(s) - RUNNING

e. Check IA supply:

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

f. Reset both trains of XY relays for IA to CNMT AOV-5392

g. Verify IA to CNMT AOV-5392 - OPEN

c. Perform the following:

- 1) Manually align valves.
- 2) Dispatch AO to locally reset compressors as necessary.

d. Manually start electric air compressors as power supply permits (75 kw each). IF electric air compressors can NOT be started, THEN start diesel air compressor (Refer to ATT-11.2, ATTACHMENT DIESEL AIR COMPRESSOR).

e. Perform the following:

- 1) Continue attempts to restore IA (Refer to AP-IA.1, LOSS OF INSTRUMENT AIR).
- 2) Continue with Step 13. WHEN IA restored, THEN do Steps 12f and g.

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STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
13	<p>Check If Charging Flow Has Been Established:</p> <p>a. Charging pumps - ANY RUNNING</p> <p>b. Align charging pump suction to RWST:</p> <ul style="list-style-type: none"> <li>o LCV-112B - OPEN</li> <li>o LCV-112C - CLOSED</li> </ul> <p>c. Start charging pumps as necessary to establish charging line flow to REGEN HX - GREATER THAN 20 GPM</p>	<p>a. Perform the following:</p> <ol style="list-style-type: none"> <li>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 to locally close seal injection needle valve(s) to affected RCP: <ul style="list-style-type: none"> <li>• RCP A, V-300A</li> <li>• RCP B, V-300B</li> </ul> </li> <li>2) Ensure HCV-142 open, demand at 0%.</li> </ol> <p>b. <u>IF</u> LCV-112B can <u>NOT</u> be opened, <u>THEN</u> dispatch AO to locally open V-358, manual charging pump suction from RWST (charging pump room).</p> <p><u>IF</u> LCV-112C can <u>NOT</u> be closed, <u>THEN</u> perform the following:</p> <ol style="list-style-type: none"> <li>1) Direct AO to locally open V-358, manual charging pump suction from RWST (charging pump room).</li> <li>2) Verify charging pump A <u>NOT</u> running and place in PULL STOP.</li> <li>3) <u>WHEN</u> V-358 open, <u>THEN</u> direct AO to close V-268 to isolate charging pumps B and C from VCT (charging pump room).</li> </ol>

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STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
*14 Monitor SI Reinitiation Criteria:	<ul style="list-style-type: none"> <li>o RCS subcooling based on core exit T/Cs - GREATER THAN FIG-1.0. FIGURE MIN SUBCOOLING</li> <li>o RVLIS indication: <ul style="list-style-type: none"> <li>o Level - GREATER THAN 77% [82% adverse CNMT]</li> <li>-OR-</li> <li>o Fluid fraction (any RCP running) - GREATER THAN 84%</li> </ul> </li> </ul>	<p>Manually start SI pumps as necessary and perform the following:</p> <ul style="list-style-type: none"> <li>a. <u>IF</u> RCS subcooling based on core exit T/Cs greater than FIG-1.0. FIGURE MIN SUBCOOLING and no RCP running. <u>THEN</u> attempt to start a RCP: <ul style="list-style-type: none"> <li>1) Establish conditions for starting an RCP: <ul style="list-style-type: none"> <li>o Bus 11A or 11B energized</li> <li>o Refer to ATT-15.0. ATTACHMENT RCP START</li> </ul> </li> <li>2) <u>IF</u> conditions established. <u>THEN</u> start one RCP.</li> </ul> </li> <li>b. Go to Step 28.</li> </ul>
15 Check RCS Hot Leg Temperatures - STABLE		<p><u>IF</u> increasing. <u>THEN</u> control feed flow and dump steam to stabilize RCS hot leg temperatures.</p> <p><u>IF</u> decreasing. <u>THEN</u> verify that actions of Step 2 and 3 have been performed before continuing with procedure.</p>

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STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
16	<p>Check If SI ACCUMs Should Be Isolated:</p> <p>a. Check the following:</p> <ul style="list-style-type: none"> <li>o RCS subcooling based on core exit T/Cs - GREATER THAN 0°F USING FIG-1.0. FIGURE MIN SUBCOOLING</li> <li>o RVLIS indication: <ul style="list-style-type: none"> <li>o Level - GREATER THAN 77% [82% adverse CNMT]</li> </ul> </li> </ul> <p style="text-align: center;">-OR-</p> <ul style="list-style-type: none"> <li>o Fluid fraction (any RCP running) - GREATER THAN 84%</li> </ul> <p>b. Dispatch AO with locked valve key to locally close breakers for SI ACCUM discharge valves</p> <ul style="list-style-type: none"> <li>• MOV-841. MCC C position 12F</li> <li>• MOV-865. MCC D position 12C</li> </ul> <p>c. Close SI ACCUM discharge valves</p> <ul style="list-style-type: none"> <li>• MOV-841</li> <li>• MOV-865</li> </ul> <p>d. Locally reopen breakers for MOV-841 and MOV-865</p>	<p>a. Return to Step 14.</p> <p>c. Vent any unisolated ACCUMs:</p> <ol style="list-style-type: none"> <li>1) Open vent valves for unisolated SI ACCUMs. <ul style="list-style-type: none"> <li>• ACCUM A. AOV-834A</li> <li>• ACCUM B. AOV-834B</li> </ul> </li> <li>2) Open HCV-945.</li> <li>3) Continue with Step 17. Do <u>NOT</u> decrease RCS pressure to less than unisolated ACCUM pressure.</li> </ol> <p><u>IF</u> an accumulator can <u>NOT</u> be isolated or vented, <u>THEN</u> consult TSC to determine contingency actions.</p>

EOP: FR-P.1	TITLE: RESPONSE TO IMMINENT PRESSURIZED THERMAL SHOCK CONDITION	REV: 27 PAGE 14 of 23
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STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
<p>*****</p> <p style="text-align: center;"><u>CAUTION</u></p> <p>o THE RCS SHOULD NOT BE DEPRESSURIZED TO LESS THAN SI ACCUM PRESSURE UNTIL SI ACCUMS ISOLATED.</p> <p>o THE UPPER HEAD REGION MAY VOID DURING RCS DEPRESSURIZATION IF RCPS ARE NOT RUNNING. THIS WILL RESULT IN A RAPIDLY INCREASING PRZR LEVEL.</p> <p>*****</p> <p><u>NOTE:</u> o If auxiliary spray is in use, spray flow may be increased by closing normal charging valve AOV-294 and normal PRZR spray valves.</p> <p>o When using a PRZR PORV select one with an operable block valve.</p> <p>17 Depressurize RCS To Decrease RCS Subcooling:</p> <p>a. Depressurize using normal PRZR spray if available</p> <p>a. <u>IF</u> normal spray <u>NOT</u> available, <u>THEN</u> use one PRZR PORV. <u>IF</u> IA <u>NOT</u> available, <u>THEN</u> refer to ATT-12.0. ATTACHMENT N2 PORVS.</p> <p><u>IF</u> no PRZR PORV available, <u>THEN</u> use auxiliary spray valve (AOV-296).</p> <p>b. Depressurize RCS until one of the following conditions satisfied:</p> <p>o RCS subcooling based on core exit T/Cs - LESS THAN 10°F USING FIG-1.0. FIGURE MIN SUBCOOLING</p> <p style="text-align: center;">-OR-</p> <p>o PRZR level - GREATER THAN 75% [65% adverse CNMT]</p> <p style="text-align: center;">-OR-</p> <p>o RCS pressure - LESS THAN 160 psig [200 psig adverse CNMT]</p> <p>c. Stop RCS depressurization</p>		



EOP: FR-P.1	TITLE: RESPONSE TO IMMINENT PRESSURIZED THERMAL SHOCK CONDITION	REV: 27 PAGE 15 of 23
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STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
<b>*18 Monitor RCP Operation:</b>		
a. RCPs - ANY RUNNING		a. Go to Step 19.
b. Check the following:		b. Stop affected RCP(s).
o RCP #1 seal D/P - GREATER THAN 220 PSID		
o RCP #1 seal leakoff - WITHIN THE NORMAL OPERATING RANGE OF FIG-4.0, FIGURE RCP SEAL LEAKOFF		
*****		
<u>CAUTION</u>		
AN INCREASE IN RCS PRESSURE MAY RESULT IN EXCESSIVE REACTOR VESSEL STRESS. RCS PRESSURE AND TEMPERATURE SHOULD BE MAINTAINED STABLE WHILE PERFORMING SUBSEQUENT STEPS IN THIS PROCEDURE.		
*****		
19 Check PRZR Level - GREATER THAN 13% [40% adverse CNMT]		Try to restore level with charging while maintaining stable RCS pressure. <u>IF</u> level can <u>NOT</u> be restored. <u>THEN</u> go to Step 27.

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STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
20	Verify Adequate SW Flow To CCW Hx:	
a.	Verify at least two SW pumps - RUNNING	<p>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> perform the following:</p> <p>1) <u>IF NO</u> SW pumps running, <u>THEN</u> perform the following:</p> <p>a) Pull stop any D/G that is <u>NOT</u> supplied by alternate cooling, <u>AND</u> immediately depress associated VOLTAGE SHUTDOWN pushbutton.</p> <p>b) Refer to ATT-2.4. ATTACHMENT NO SW PUMPS.</p> <p>2) <u>IF</u> only one SW pump running, <u>THEN</u> refer to AP-SW.2. LOSS OF SERVICE WATER.</p> <p>3) Go to Step 25.</p> <p><u>WHEN</u> two SW pumps can be operated <u>THEN</u> do Steps 21 through 24.</p>
b.	Verify AUX BLDG SW isolation valves - OPEN	b. Manually align valves.
	<ul style="list-style-type: none"> <li>• MOV-4615 and MOV-4734</li> <li>• MOV-4616 and MOV-4735</li> </ul>	
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).

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STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
21	Check If Normal CVCS Operation Can Be Established	
a.	Verify IA restored: <ul style="list-style-type: none"> <li>o IA to CNMT (AOV-5392) - OPEN</li> <li>o IA pressure - GREATER THAN 60 PSIG</li> </ul>	a. Continue with Step 25. <u>WHEN</u> IA restored, <u>THEN</u> do Steps 21 through 24.
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: <ol style="list-style-type: none"> <li>1) Verify MCC A energized.</li> <li>2) Place instrument bus D on maintenance supply.</li> </ol>
c.	CCW pumps - ANY RUNNING	c. Perform the following: <ol style="list-style-type: none"> <li>1) <u>IF</u> any RCP #1 seal outlet temperature offscale high, <u>THEN</u> isolate CCW to thermal barrier of affected RCP(s). <ul style="list-style-type: none"> <li>• RCP A, MOV-749A and MOV-759A</li> <li>• RCP B, MOV-749B and MOV-759B</li> </ul> </li> <li>2) Manually start one CCW pump.</li> </ol>
d.	Charging pump - ANY RUNNING	d. Continue with Step 26. <u>WHEN</u> any charging pump running, <u>THEN</u> do Steps 22 through 26.

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STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
<p>*****</p> <p style="text-align: center;"><u>CAUTION</u></p> <p>IF RCS PRESSURE LESS THAN 250 PSIG. THEN PCV-135 SHOULD BE ADJUSTED TO ESTABLISH DESIRED LETDOWN FLOW, NOT TO INCREASE PRESSURE.</p> <p>*****</p>		
22	<p>Establish Normal Letdown:</p> <ol style="list-style-type: none"> <li>Establish charging line flow to REGEN Hx - GREATER THAN 20 GPM</li> <li>Place the following switches to CLOSE: <ul style="list-style-type: none"> <li>Letdown orifice valves (AOV-200A, AOV-200B, and AOV-202)</li> <li>AOV-371, letdown isolation valve</li> <li>AOV-427, loop B cold leg to REGEN Hx</li> </ul> </li> <li>Place letdown controllers in MANUAL at 40% open <ul style="list-style-type: none"> <li>TCV-130</li> <li>PCV-135</li> </ul> </li> <li>Reset both trains of XY relays for AOV-371 and AOV-427</li> <li>Open AOV-371 and AOV-427</li> <li>Open letdown orifice valves as necessary</li> <li>Place TCV-130 in AUTO at 105°F</li> <li>Place PCV-135 in AUTO at 250 psig</li> <li>Adjust charging pump speed and HCV-142 as necessary</li> </ol>	<p><u>IF</u> RCP seal return has been established, <u>THEN</u> establish excess letdown as follows:</p> <ul style="list-style-type: none"> <li>Place excess letdown divert valve, AOV-312, to NORMAL.</li> <li>Ensure CCW from excess letdown open. (AOV-745).</li> <li>Open excess letdown isolation valve AOV-310.</li> <li>Slowly open HCV-123 to maintain excess letdown temperature less than 195°F and pressure less than 100 psig.</li> <li>Adjust charging pump speed as necessary.</li> </ul> <p><u>IF</u> RCP seal return <u>NOT</u> established, <u>THEN</u> consult TSC to determine if excess letdown should be placed in service.</p>

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STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
23	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:	c. Adjust controls as necessary.
	1) RMW mode selector switch in AUTO	
	2) RMW control armed - RED LIGHT LIT	
	d. Check VCT level:	d. Manually increase VCT makeup flow as follows:
	o Level - GREATER THAN 20%	
	-OR-	
	o Level - STABLE OR INCREASING	1) Ensure BA transfer pumps and RMW pumps running. <u>IF NOT</u> , <u>THEN</u> 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.

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STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
24 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> <ol style="list-style-type: none"> <li>1) Ensure charging pump suction aligned to RWST <ul style="list-style-type: none"> <li>o LCV-112B open</li> <li>o LCV-112C closed</li> </ul> </li> <li>2) Continue with Step 25. <u>WHEN</u> VCT level greater than 40%. <u>THEN</u> do Step 24b.</li> </ol>
b. Verify charging pumps aligned to VCT		b. Manually align valves as necessary.
o LCV-112C - OPEN		
o LCV-112B - CLOSED		
25 Check PRZR Level - LESS THAN 75% [65% adverse CNMT]		<p>Control charging and letdown as necessary to reduce PRZR level to less than 75% [65% adverse CNMT]. If necessary establish excess letdown.</p> <p><u>IF</u> no letdown available <u>AND</u> CCW to RCPs established, <u>THEN</u> cycle charging pumps as necessary to control PRZR level.</p>

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STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
	<p><u>NOTE:</u> For optimum long term pressure control, saturated conditions should be restored in the PRZR.</p>	
26	Verify PRZR Liquid Temperature (TI-424) - AT SATURATION FOR DESIRED PRESSURE	<u>IF</u> PRZR liquid temperature low, <u>THEN</u> energize PRZR heaters as necessary to establish desired temperature.
27	Check RCS Subcooling Based On Core Exit T/Cs - LESS THAN 10°F USING FIG-1.0, FIGURE MIN SUBCOOLING	<p><u>IF</u> RCS pressure less than 160 psig [200 psig adverse CNMT], <u>THEN</u> go to Step 28. <u>IF NOT</u>, <u>THEN</u> depressurize using normal spray. Return to step 17b.</p> <p><u>IF</u> normal spray <u>NOT</u> available and letdown is in service, <u>THEN</u> use auxiliary spray for any further depressurization. Return to Step 17b.</p> <p><u>IF</u> auxiliary spray <u>NOT</u> available, <u>THEN</u> return to Step 17a.</p>
28	Check Cool Down Rate In RCS Cold Legs - GREATER THAN 100°F IN ANY 60 MINUTES PERIOD	Return to procedure and step in effect.
29	Maintain RCS Pressure And Temperature Stable For At Least 1 Hour	
	a. Control steam dump and feed flow as necessary	
	b. Perform actions of other procedures in effect which do not cool down the RCS or increase RCS pressure until the RCS temperature soak has been completed	

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STEP

ACTION/EXPECTED RESPONSE

RESPONSE NOT OBTAINED

NOTE: The following pressure, temperature and cooldown rate limits remain applicable in subsequent procedures.

30 WHEN 1 HOUR Soak Is Complete,  
THEN Continue RCS Cooldown  
And Depressurization As  
Necessary

- a. Maintain RCS pressure and cold leg temperature within the limits of FIG-11.0, FIGURE SOAK LIMITS
- b. Establish and maintain cooldown rate in RCS cold legs - LESS THAN 50°F IN ANY 60 MINUTES PERIOD

31 Verify SI Flow Not Required:

- o RCS subcooling based on core exit T/Cs - GREATER THAN FIG-1.0, FIGURE MIN SUBCOOLING
- o RVLIS indication:
  - o Level - GREATER THAN 77% [82% adverse CNMT]
  - OR-
  - o Fluid fraction (any RCP running) - GREATER THAN 84%

Manually start SI pumps as necessary.

IF RCS subcooling based on core exit T/Cs greater than FIG-1.0, FIGURE MIN SUBCOOLING and no RCP running, THEN perform the following:

- a. Establish conditions for starting an RCP:
  - o Bus 11A or 11B energized
  - o Refer to ATT-15.0, ATTACHMENT RCP START
- b. IF conditions established, THEN start one RCP.



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STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
32	Return To Procedure And Step In Effect	
		-END-

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FR-P.1 APPENDIX LIST

TITLE

- 1) FIGURE MIN SUBCOOLING (FIG-1.0)
- 2) FIGURE SOAK LIMITS (FIG-11.0)
- 3) FIGURE RCP SEAL LEAKOFF (FIG-4.0)
- 4) ATTACHMENT RCP START (ATT-15.0)
- 5) ATTACHMENT SD-1 (ATT-17.0)
- 6) ATTACHMENT CNMT RECIRC FANS (ATT-4.0)
- 7) ATTACHMENT N2 PORVS (ATT-12.0)
- 8) ATTACHMENT NO SW PUMPS (ATT-2.4)
- 9) ATTACHMENT LOSS OF OFFSITE POWER (ATT-8.5)
- 10) ATTACHMENT DIESEL AIR COMPRESSOR (ATT-11.2)
- 10) FOLDOUT

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FOLDOUT PAGE

NOTE: This Foldout Page applies to all FR-P series procedures.

1. LOSS OF SW CRITERIA

IF no SW pumps are available, THEN perform the following:

- a. Pull stop any D/G that is NOT supplied by alternate cooling, AND immediately depress associated VOLTAGE SHUTDOWN pushbutton.
- b. Refer to ATT-2.4, ATTACHMENT NO SW PUMPS.