

Constellation Energy

R.E. Ginna Nuclear Power Plant, LLC

December 12, 2005

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,

Dave A. Holm

DAH/jdw

xc: U.S. Nuclear Regulatory Commission
Region I
475 Allendale Road
King of Prussia, PA 19406-1415

Ginna USNRC Senior Resident Inspector

Enclosure(s):

ATT Index
E Index
ATT-8.4, Rev 6
ATT-26.0, Rev 1
E-0, Rev 38

A002

NPSP0200
E66429

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INPUT PARAMETERS: TYPE: PRATT

STATUS VALUE(S): EF, QU

5 YEARS ONLY:

PRATT EOP ATTACHMENTS

PROCEDURE NUMBER	PROCEDURE TITLE	REV	EFFECT DATE	LAST REVIEW	NEXT REVIEW	ST
ATT-1.0	ATTACHMENT AT POWER CCW ALIGNMENT	003	02/12/2003	02/12/2003	02/12/2008	EF
ATT-1.1	ATTACHMENT NORMAL CCW FLOW	000	05/18/2000	03/25/2005	03/25/2010	EF
ATT-2.1	ATTACHMENT MIN SW	005	02/01/2001	02/03/2003	02/03/2008	EF
ATT-2.2	ATTACHMENT SW ISOLATION	008	03/06/2002	03/27/2003	03/27/2008	EF
ATT-2.3	ATTACHMENT SW LOADS IN CNMT	004	03/06/2002	04/06/2004	04/06/2009	EF
ATT-2.4	ATTACHMENT NO SW PUMPS	002	05/30/2003	10/31/2001	10/31/2006	EF
ATT-2.5	ATTACHMENT SPLIT SW HEADERS	000	06/26/2002	06/26/2002	06/26/2007	EF
ATT-3.0	ATTACHMENT CI/CVI	008	12/01/2004	02/17/2004	02/17/2009	EF
ATT-3.1	ATTACHMENT CNMT CLOSURE	005	02/17/2004	02/17/2004	02/17/2009	EF
ATT-4.0	ATTACHMENT CNMT RECIRC FANS	003	07/26/1994	03/27/2003	03/27/2008	EF
ATT-5.0	ATTACHMENT COND TO S/G	006	10/10/2003	04/06/2004	04/06/2009	EF
ATT-5.1	ATTACHMENT SAFW	008	05/30/2002	04/06/2004	04/06/2009	EF
ATT-5.2	ATTACHMENT FIRE WATER COOLING TO TDAFW PUMP	004	10/07/2004	8/20/51/2	01/28/2009	EF
ATT-6.0	ATTACHMENT COND VACUUM	003	12/18/1996	02/03/2003	02/03/2008	EF
ATT-7.0	ATTACHMENT CR EVAC	006	03/06/2002	02/03/2003	02/03/2008	EF
ATT-8.0	ATTACHMENT DC LOADS	007	02/04/2004	02/04/2004	02/04/2009	EF
ATT-8.1	ATTACHMENT D/G STOP	005	03/06/2002	02/03/2003	02/03/2008	EF
ATT-8.2	ATTACHMENT GEN DEGAS	008	06/20/2002	05/28/2004	05/28/2009	EF
ATT-8.3	ATTACHMENT NONVITAL	004	03/06/2002	02/03/2003	02/03/2008	EF
ATT-8.4	ATTACHMENT SI/UV	006	12/12/2005	02/03/2003	02/03/2008	EF
ATT-8.5	ATTACHMENT LOSS OF OFFSITE POWER	001	08/26/2003	05/02/2002	05/02/2007	EF
ATT-9.0	ATTACHMENT LETDOWN	009	01/07/2004	03/06/2002	03/06/2007	EF
ATT-9.1	ATTACHMENT EXCESS L/D	006	07/28/2004	10/31/2001	10/31/2006	EF
ATT-10.0	ATTACHMENT FAULTED S/G	006	03/06/2002	03/27/2003	03/27/2008	EF
ATT-11.0	ATTACHMENT IA CONCERNS	004	09/01/2004	03/27/2003	03/27/2008	EF
ATT-11.1	ATTACHMENT IA SUPPLY	003	03/06/2002	03/27/2003	03/27/2008	EF
ATT-11.2	ATTACHMENT DIESEL AIR COMPRESSOR	004	11/18/2002	03/10/2003	03/10/2008	EF
ATT-12.0	ATTACHMENT N2 PORVS	005	02/12/2003	02/12/2003	02/12/2008	EF
ATT-13.0	ATTACHMENT NC	003	02/12/2003	02/12/2003	02/12/2008	EF
ATT-14.0	ATTACHMENT NORMAL RHR COOLING	003	03/06/2002	04/06/2004	04/06/2009	EF

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INPUT PARAMETERS: TYPE: PRATT

STATUS VALUE(S): EF, QU

5 YEARS ONLY:

PRATT EOP ATTACHMENTS

PROCEDURE NUMBER	PROCEDURE TITLE	REV	EFFECT DATE	LAST REVIEW	NEXT REVIEW	ST
ATT-14.1	ATTACHMENT RHR COOL	008	04/10/2005	01/08/2002	01/08/2007	EF
ATT-14.2	ATTACHMENT RHR ISOL	003	02/12/2003	02/12/2003	02/12/2008	EF
ATT-14.3	ATTACHMENT RHR NPSH	003	03/06/2002	01/28/2004	01/28/2009	EF
ATT-14.5	ATTACHMENT RHR SYSTEM	003	03/20/2003	02/03/2003	02/03/2008	EF
ATT-14.6	ATTACHMENT RHR PRESS REDUCTION	002	03/06/2002	01/28/2004	01/28/2009	EF
ATT-14.7	ATTACHMENT ADJUST RHR FLOW	001	02/17/2005	02/17/2004	02/17/2009	EF
ATT-15.0	ATTACHMENT RCP START	010	01/11/2005	01/11/2005	01/11/2010	EF
ATT-15.1	ATTACHMENT RCP DIAGNOSTICS	003	04/24/1997	02/03/2003	02/03/2008	EF
ATT-15.2	ATTACHMENT SEAL COOLING	005	03/06/2002	02/03/2003	02/03/2008	EF
ATT-16.0	ATTACHMENT RUPTURED S/G	013	01/11/2005	01/11/2005	01/11/2010	EF
ATT-16.1	ATTACHMENT SGTL	003	09/01/2004	06/27/2005	06/27/2010	EF
ATT-16.2	ATTACHMENT RCS BORON FOR SGTL	004	04/10/2005	06/27/2005	06/27/2010	EF
ATT-17.0	ATTACHMENT SD-1	020	04/10/2005	01/21/2005	01/21/2010	EF
ATT-17.1	ATTACHMENT SD-2	007	09/01/2004	01/30/2001	01/30/2006	EF
ATT-18.0	ATTACHMENT SFP - RWST	005	03/06/2002	02/03/2003	02/03/2008	EF
ATT-20.0	ATTACHMENT VENT TIME	004	09/01/2004	02/03/2003	02/03/2008	EF
ATT-21.0	ATTACHMENT RCS ISOLATION	002	03/06/2002	02/03/2003	02/03/2008	EF
ATT-22.0	ATTACHMENT RESTORING FEED FLOW	004	11/17/2004	01/22/2002	01/22/2007	EF
ATT-23.0	ATTACHMENT TRANSFER 4160V LOADS	000	02/26/1999	01/28/2004	01/28/2009	EF
ATT-24.0	ATTACHMENT TRANSFER BATTERY TO TSC	002	09/28/2005	09/28/2005	09/28/2010	EF
ATT-26.0	ATTACHMENT RETURN TO NORMAL OPERATIONS	001	12/12/2005	10/31/2001	10/31/2006	EF

PRATT TOTAL: 51

GRAND TOTAL: 51

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INPUT PARAMETERS: TYPE: PRE STATUS VALUE(S): EF, QU 5 YEARS ONLY:

PRE EMERGENCY PROCEDURE

PROCEDURE NUMBER	PROCEDURE TITLE	REV	EFFECT DATE	LAST REVIEW	NEXT REVIEW	ST
E-0	REACTOR TRIP OR SAFETY INJECTION	038	12/12/2005	03/24/2003	03/24/2008	EF
E-1	LOSS OF REACTOR OR SECONDARY COOLANT	032	08/03/2005	03/24/2003	03/24/2008	EF
E-2	FAULTED STEAM GENERATOR ISOLATION	012	11/17/2004	03/24/2003	03/24/2008	EF
E-3	STEAM GENERATOR TUBE RUPTURE	038	11/17/2004	03/24/2003	03/24/2008	EF

PRE TOTAL: 4

GRAND TOTAL: 4

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EOP: ATT-8.4	TITLE: ATTACHMENT SI/UV	REV: 6 PAGE 1 of 1
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Responsible Manager R. J. D. [Signature] Date 12-12-2005

NOTE: This attachment is used for information only. It lists the loads lost with SI only and with SI and either loss of offsite power or associated D/G output breaker closed. SI must be reset before attempting to restore any of these loads.

NOTE: The capacity of the power source should be considered before restoring any loads.

LOADS LOST ON AN SI SIGNAL ONLY

- Charging pumps
- Pressurizer heaters
- Motor fire pump
- Spent fuel pool pump B
- Bus ties 17-18, 15-16, 16-14, 13-14
- MCC-G
- Intake heaters
- Standby Aux Feed Pumps
- G Aux Bldg Exhaust Fan
- Main feed water pumps
- CREATS heating and cooling systems

LOADS LOST ON AN SI SIGNAL WITH EITHER OF THE FOLLOWING:

- o LOSS OF OFFSITE POWER
- o OR ASSOCIATED D/G OUTPUT BKR CLOSED

- All of the above
- CCW pumps
- Boric acid transfer pumps
- Reactor compartment cooling fans
- Penetration cooling fans
- RCDT pumps
- Reactor makeup water pump
- Spent fuel pool pump A
- RWST purification pump
- Aux Building exhaust fan C
- MCC C Breaker 1H (spare breaker used for STBY SFP pump)

EOP: ATT-26.0	TITLE: ATTACHMENT RETURN TO NORMAL OPERATIONS	REV: 1 PAGE 1 of 1
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Responsible Manager Richard M. Jones Date 12-12-2005

This attachment provides actions to be considered when returning to normal plant procedures following an event requiring entry to EOPs.

CAUTION

BEFORE PERFORMING ANY ITEM IN THIS ATTACHMENT, CAREFUL CONSIDERATION MUST BE GIVEN REGARDING THE INITIATING EVENT, CURRENT PLANT CONDITIONS, AND DESIRED PLANT OPERATING MODE. CONSULT PLANT STAFF AS NECESSARY.

- Restore offsite power to all AC busses (refer to ER-ELEC.1)
- Place DGs in auto standby (refer to ATT-8.1)
- Restore power to MCCs (reset UV load shed if necessary)
- Maintain desired SG level using AFW pumps
- Open SW isolation valves
- Restore Instrument/Service Air Systems (refer to T-2 series)
- Restore normal charging and letdown (refer to S-3.2E)
- Reset CVI
- Address existing YELLOW path FRs
- Refer to O-6.13 for normal MCB component alignment. Manually align components as necessary.
- Restore CNMT penetrations affected by CI
 1. Place valve switch in closed position
 2. Reset xy relays
 3. Place/verify valve in desired position
- Restart CNMT and Plant Vent radiation monitor pumps
- Stop any operating redundant equipment that is no longer required (CCW Pump, SW Pumps, CRFCs, etc.)
- Restore motor and diesel fire pumps
- Restore SFP cooling (refer to S-9 series)
- Realign CREATS per T-35I, FUNCTIONAL ALIGNMENT OF THE CONTROL ROOM AIR HANDLING UNIT.
- Review MCB annunciator panels - alarm status valid for plant conditions
- Restore Generator Seal Oil system (refer to T-34 series)
- Restore SG blowdown and sample system (refer to T-14 series)
- Restore CNMT recirculation fans to control CNMT temperature/pressure within ITS limits
- Verify SDM (refer to O-3 series)
- Restore PRT to normal conditions (refer to AR-F-1, AR-F-9, AR-F-17)
- "match flags" on MCB
- Restore Aux Bldg ventilation (refer to T-35A)
- Borate 650 gallons for each rod not fully inserted
- Block AMSAC
- Perform T-8A for any non-operating CW pump

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GINNA STATION

CONTROLLED COPY NUMBER 23



RESPONSIBLE MANAGER

12-12-2005

EFFECTIVE DATE

CATEGORY 1.0

REVIEWED BY: _____

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A. PURPOSE - This procedure provides actions to verify proper response of the automatic protection systems following manual or automatic actuation of a reactor trip or safety injection and to assess plant conditions, and identify the appropriate recovery procedure.

B. ENTRY CONDITIONS/SYMPTOMS

1. The following are symptoms that require a reactor trip, if one has not occurred:
 - o Any plant parameter reaches a reactor trip setpoint and logic as listed in procedure P-1, REACTOR CONTROL AND PROTECTION SYSTEM.
 - o Operator discretion.
2. The following are symptoms of a reactor trip:
 - o Any First Out reactor trip annunciator lit.
 - o A rapid decrease in core neutron level as indicated by nuclear instrumentation.
 - o MRPI indicates all control and shutdown rods on bottom.
 - o Reactor trip breakers indicate open.
3. The following are symptoms that require a reactor trip and safety injection, if one has not occurred:
 - o Any plant parameter reaches the Safety Injection setpoint and logic listed in procedure P-1, REACTOR CONTROL AND PROTECTION SYSTEM.
 - o Operator discretion.
4. The following are symptoms of a reactor trip and safety injection:
 - o Any SI annunciator lit.
 - o Safeguards sequencing started.

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STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
1	<p>Verify Reactor Trip:</p> <ul style="list-style-type: none"> o At least one train of reactor trip breakers - OPEN o Neutron flux - DECREASING o MRPI indicates - ALL CONTROL AND SHUTDOWN RODS ON BOTTOM 	<p>Manually trip reactor.</p> <p><u>IF</u> reactor trip breakers <u>NOT</u> open, <u>THEN</u> perform the following:</p> <ul style="list-style-type: none"> a. Open Bus 13 and Bus 15 normal feed breakers. b. Verify rod drive MG sets tripped. c. Close Bus 13 and Bus 15 normal feed breakers. d. Reset lighting breakers. <p><u>IF</u> the reactor will <u>NOT</u> trip <u>OR IF</u> power range NIS indicates greater than 5%, <u>THEN</u> go to FR-S.1, RESPONSE TO REACTOR RESTART/ATWS, Step 1</p>
2	<p>Verify Turbine Stop Valves - CLOSED</p>	<p>Manually trip turbine.</p> <p><u>IF</u> turbine trip can <u>NOT</u> be verified, <u>THEN</u> close both MSIVs.</p>
3	<p>Verify Both Trains Of AC Emergency Busses Energized To At Least 420 VOLTS:</p> <ul style="list-style-type: none"> • Bus 14 and Bus 18 • Bus 16 and Bus 17 	<p>Attempt to start any failed emergency D/G to restore power to all AC emergency busses.</p> <p><u>IF</u> Bus 14 <u>AND</u> Bus 16 are deenergized, <u>THEN</u> go to ECA-0.0, LOSS OF ALL AC POWER, Step 1.</p>

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STEP

ACTION/EXPECTED RESPONSE

RESPONSE NOT OBTAINED

4 Check if SI is Actuated:

a. Any SI Annunciator - LIT

a. IF any of the following conditions are met, THEN manually actuate SI and CI:

o PRZR pressure less than 1750 psig

-OR-

o Steamline pressure less than 514 psig

-OR-

o CNMT pressure greater than 4 psig

-OR-

o SI sequencing started

-OR-

o Operator determines SI required

IF SI is NOT required, THEN go to ES-0.1, REACTOR TRIP RESPONSE, Step 1.

b. SI sequencing - BOTH TRAINS STARTED.

b. Manually actuate SI and CI.

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STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
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NOTE: o FOLDOUT page should be open and monitored periodically.

- o Adverse CNMT values should be used whenever CNMT pressure is greater than 4 psig or CNMT radiation is greater than 10^{+05} R/hr.

5 Verify SI and RHR Pumps Running:

a. All SI pumps - RUNNING

a. Perform the following:

1) Ensure SI pump suction supply open from RWST.

2) Manually start pumps.

b. Both RHR pumps - RUNNING

b. Manually start pumps.

6 Verify CNMT RECIRC Fans Running:

a. All fans - RUNNING

a. Manually start fans.

b. Charcoal filter dampers green status lights - EXTINGUISHED

b. Dispatch personnel to relay room with relay rack key to locally open dampers by pushing in trip relay plungers.

- AUX RELAY RACK RA-2 for fan A
- AUX RELAY RACK RA-3 for fan C

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STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
* 7	<p>Verify CNMT Spray Not Required:</p> <ul style="list-style-type: none"> o Annunciator A-27, CNMT SPRAY - EXTINGUISHED o CNMT pressure - LESS THAN 28 PSIG 	<p>Verify CNMT spray initiated.</p> <p><u>IF</u> CNMT spray <u>NOT</u> initiated, <u>THEN</u> perform the following:</p> <ul style="list-style-type: none"> a. Depress manual CNMT spray pushbuttons (2 of 2). b. Ensure CNMT spray pumps running. <u>IF</u> no CNMT spray pump available, <u>THEN</u> go to Step 8. c. Ensure CNMT spray pump discharge valves open for operating pump(s). <ul style="list-style-type: none"> o CNMT spray pump A: <ul style="list-style-type: none"> • MOV-860A • MOV-860B o CNMT spray pump B: <ul style="list-style-type: none"> • MOV-860C • MOV-860D d. Verify NaOH flow (FI-930) <p><u>IF</u> NaOH flow <u>NOT</u> indicated, <u>THEN</u> place switches for NaOH tank outlet valves to OPEN.</p> <ul style="list-style-type: none"> • AOV-836A • AOV-836B

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STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
8	Check If Main Steamlines Should Be Isolated:	
	a. Any MSIV - OPEN	a. Go to Step 9.
	b. Check CNMT pressure - LESS THAN 18 PSIG	b. Ensure BOTH MSIVs closed and go to Step 9.
	c. Check if ANY main steamlines should be isolated:	c. Go to Step 9.
	o Low Tavg (545°F) AND high steam flow (0.4x10 ⁶ lb/hr) from either S/G	
	-OR-	
	o High-High steam flow (3.6x10 ⁶ lb/hr) from either S/G	
	d. Verify MSIV closed on the affected S/G(s)	d. Manually close valves.
9	Verify MFW Isolation:	
	a. MFW pumps - TRIPPED	a. Perform the following:.
		1) Manually close MFW pump discharge valves and trip MFW pumps.
		2) Continue with Step 9c. <u>WHEN</u> both MFPs are tripped, <u>THEN</u> perform Step 9b.
	b. Depress MANUAL pushbuttons for A and B S/G MFW regulating valve and bypass valve controllers <u>AND</u> adjust to 0% demand.	
	c. S/G blowdown and sample valves - CLOSED	c. Place S/G blowdown and sample valve isolation switch to CLOSE.

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STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
10 Verify Both MDAFW Pumps Running		<p>Manually start both MDAFW pumps.</p> <p><u>IF</u> less than 2 MDAFW pumps are running, <u>THEN</u> manually open TDAFW pump steam supply valves.</p> <ul style="list-style-type: none"> • MOV-3505A • MOV-3504A
11 Verify At Least Two SW Pumps - RUNNING		<p>Perform the following:</p> <ol style="list-style-type: none"> Ensure one SW pump running on each energized screenhouse AC emergency bus: <ul style="list-style-type: none"> • Bus 17 • Bus 18 <u>IF</u> offsite power <u>NOT</u> available, <u>THEN</u> ensure SW isolation. <u>IF NO</u> SW pumps running, <u>THEN</u> perform the following: <ol style="list-style-type: none"> Pull stop any D/G that is <u>NOT</u> supplied by alternate cooling <u>AND</u> immediately depress associated VOLTAGE SHUTDOWN pushbutton. Refer to ATT-2.4, ATTACHMENT NO SW PUMPS.

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STEP

ACTION/EXPECTED RESPONSE

RESPONSE NOT OBTAINED

12 Verify CI And CVI:

a. CI and CVI annunciators - LIT

- Annunciator A-26, CNMT ISOLATION
- Annunciator A-25, CNMT VENTILATION ISOLATION

b. Verify CI and CVI valve status lights - BRIGHT

c. CNMT RECIRC fan coolers SW outlet valve status lights - BRIGHT

- FCV-4561
- FCV-4562

d. Letdown orifice valves - CLOSED

- AOV-200A
- AOV-200B
- AOV-202

a. Depress manual CI pushbutton.

b. Manually close affected CI and CVI valve(s).

IF valve(s) can NOT be closed from the MCB, THEN dispatch AO to locally close affected valve(s)

IF valve(s) can NOT be locally closed, THEN close alternate isolation valve(s). (Refer to ATT-3.0, ATTACHMENT CI/CVI).

c. Dispatch AO to locally fail open valves.

d. Place affected valve switch to CLOSE. IF valves can NOT be verified closed by MCB indication, THEN close alternate isolations. (Refer to ATT-3.0, ATTACHMENT CI/CVI)

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STEP

ACTION/EXPECTED RESPONSE

RESPONSE NOT OBTAINED

CAUTION

RCP TRIP CRITERIA LISTED ON FOLDOUT PAGE SHOULD BE MONITORED PERIODICALLY.

13 Check CCW System Status:

- | | |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|
| <p>a. Verify CCW pump - AT LEAST ONE RUNNING</p> <p>b. Place switch for excess letdown AOV-310 to CLOSE</p> <p>c. Place switch for CCW from excess letdown, AOV-745 to CLOSE</p> | <p>a. <u>IF</u> offsite power available, <u>THEN</u> manually start one CCW pump.</p> |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|

14 Verify SI And RHR Pump Flow:

- | | |
|---------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p>a. SI flow indicators - CHECK FOR FLOW</p> <p>b. RHR flow indicator - CHECK FOR FLOW</p> | <p>a. <u>IF</u> RCS pressure less than 1400 psig. <u>THEN</u> manually start pumps and align valves. <u>IF NOT</u>, <u>THEN</u> go to Step 15.</p> <p>b. <u>IF</u> RCS pressure less than 140 psig. <u>THEN</u> manually start pumps and align valves. <u>IF NOT</u>, <u>THEN</u> go to Step 15.</p> |
|---------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

15 Verify AFW Valve Alignment:

Manually align valves as necessary.

- a. AFW flow - INDICATED TO BOTH S/G(s)
- b. AFW flow from each MDAFW pump - LESS THAN 230 GPM

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STEP

ACTION/EXPECTED RESPONSE

RESPONSE NOT OBTAINED

***16 Monitor Heat Sink:**

- a. Check S/G narrow range level -
GREATER THAN 7% [25% adverse
CNMT] in any S/G

- a. Perform the following:

- 1) Verify total AFW flow -
GREATER THAN 200 GPM

IF total AFW is less than
200 gpm, THEN manually start
pumps and align valves to
establish greater than
200 gpm AFW flow. IF AFW
flow greater than 200 gpm can
NOT be established, THEN go
to FR-H.1, RESPONSE TO LOSS
OF SECONDARY HEAT SINK,
Step 1.

- 2) Go to Step 17.

- b. Check S/G narrow range level -
BOTH S/G LESS THAN 50%
- c. Control feed flow to maintain
S/G narrow range level between
7% [25% adverse CNMT] and 50%.

- b. Secure AFW flow to any S/G with
level above 50%.

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STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
17	Verify SI Pump And RHR Pump Emergency Alignment:	
	a. RHR pump discharge to Rx vessel deluge - OPEN	a. Ensure at least one valve open.
	• MOV-852A • MOV-852B	
	b. Verify SI pump C - RUNNING	b. Manually start pump on available bus.
	c. Verify SI pump A - RUNNING	c. Perform the following:
		1) Ensure SI pumps B and C running. IF either pump NOT running, THEN go to Step 17e.
		2) Ensure SI pump C aligned to discharge line A:
		o MOV-871A open
		o MOV-871B closed
		3) Go to Step 18.
	d. Verify SI pump B - RUNNING	d. Perform the following:
		1) Ensure SI pumps A and C running. IF either pump NOT running, THEN go to Step 17e.
		2) Ensure SI pump C aligned to discharge line B:
		o MOV-871B open
		o MOV-871A closed
		3) Go to Step 18.
	e. Verify SI pump C discharge valves - OPEN	e. Manually open valves as necessary.
	• MOV-871A • MOV-871B	

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
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CAUTION

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)

18 Check CCW Flow to RCP Thermal Barriers:

- o Annunciator A-7, RCP 1A CCW RETURN HI TEMP OR LO FLOW - EXTINGUISHED
- o Annunciator A-15, RCP 1B CCW RETURN HI TEMP OR LO FLOW - EXTINGUISHED

IF CCW to a RCP is lost, THEN perform the following:

- a. Stop affected RCPs.
- b. Reset SI.
- c. Verify adequate power available to run one charging pump (75 kw).
- d. Start one charging pump at minimum speed for seal injection.
- e. Adjust HCV-142 to establish either of the following:
 - o Labyrinth seal D/P to each RCP greater than 15 inches of water.

-OR-

- o RCP seal injection flow to each RCP greater than 6 gpm.
- f. IF large imbalance in seal injection flow exists, THEN consider local adjustment of V-300A and V-300B.

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STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
19	Check If TDAFW Pump Can Be Stopped: a. Both MDAFW pumps - RUNNING b. PULL STOP TDAFW pump steam supply valves • MOV-3504A • MOV-3505A	a. Go to Step 20.
*20	Monitor RCS Tavg - STABLE AT OR TRENDING TO 547° F	<p><u>IF</u> temperature less than 547°F and decreasing. <u>THEN</u> perform the following:</p> <p>a. Stop dumping steam.</p> <p>b. Ensure reheater steam supply valves are closed.</p> <p>c. <u>IF</u> cooldown continues. <u>THEN</u> control total feed flow greater than 200 gpm until narrow range level greater than 7% [25% adverse CNMT] in at least one S/G.</p> <p>d. <u>WHEN</u> S/G level greater than 7% [25% adverse CNMT] in one S/G, <u>THEN</u> limit feed flow to that required to maintain level in at least one S/G.</p> <p>e. <u>IF</u> cooldown continues. <u>THEN</u> close both MSIVs.</p> <p><u>IF</u> temperature greater than 547°F and increasing. <u>THEN</u> dump steam to stabilize and slowly decrease temperature to 547°F.</p>

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STEP

ACTION/EXPECTED RESPONSE

RESPONSE NOT OBTAINED

21 Check PRZR PORVs And Spray Valves:

a. PORVs - CLOSED

a. IF PRZR pressure less than 2335 psig. THEN manually close PORVs.

IF any valve can NOT be closed, THEN manually close its block valve.

- MOV-516 for PCV-430
- MOV-515 for PCV-431C

IF block valve can NOT be closed, THEN go to E-1, LOSS OF REACTOR OR SECONDARY COOLANT, Step 1.

b. Auxiliary spray valve (AOV-296)
- CLOSED

b. Manually close auxiliary spray valve. IF valve can NOT be closed, THEN perform the following:

- 1) Decrease charging pump flow to minimum.
- 2) Ensure charging valve to loop B cold leg open (AOV-294).

c. Check PRZR pressure - LESS THAN 2260 PSIG

c. Continue with Step 22. WHEN pressure less than 2260 psig, THEN do Step 21d.

d. Normal PRZR spray valves - CLOSED

- PCV-431A
- PCV-431B

d. Place controllers in MANUAL at 0% demand. IF valves can NOT be closed, THEN stop associated RCP(s).

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STEP

ACTION/EXPECTED RESPONSE

RESPONSE NOT OBTAINED

22 Monitor RCP Trip Criteria:

- | | |
|-----------------------------------------------------------------------------------------|-------------------|
| a. RCP status - ANY RCP RUNNING | a. Go to Step 23. |
| b. SI pumps - AT LEAST TWO RUNNING | b. Go to Step 23. |
| c. RCS pressure minus maximum S/G pressure - LESS THAN 175 psig [400 psig adverse CNMT] | c. Go to Step 23. |
| d. Stop both RCPs | |

23 VERIFY CREATS ACTUATION:

- | | |
|------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------|
| a. At least one damper in each flowpath - CLOSED | a. Depress both CREATS actuation pushbuttons |
| <ul style="list-style-type: none"> • Normal Supply Air • Normal Return Air • Lavatory Exhaust Air | <ul style="list-style-type: none"> • CONTROL ROOM MANUAL ISOLATION A • CONTROL ROOM MANUAL ISOLATION B |
| b. CREATS fans - BOTH RUNNING | b. Start both CREATS fans |

24 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

IF any S/G pressure decreasing in an uncontrolled manner OR completely depressurized, THEN go to E-2, FAULTED STEAM GENERATOR ISOLATION, Step 1.

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STEP

ACTION/EXPECTED RESPONSE

RESPONSE NOT OBTAINED

25 Check If S/G Tubes Are Intact:

Go to E-3. STEAM GENERATOR TUBE RUPTURE, Step 1.

- o Air ejector radiation monitors (R-15 or R-15A) - NORMAL
- o S/G blowdown radiation monitor (R-19) - NORMAL
- o Steamline radiation monitors (R-31 and R-32) - NORMAL

26 Check If RCS Is Intact:

Go to E-1. LOSS OF REACTOR OR SECONDARY COOLANT, Step 1.

- a. CNMT area radiation monitors - NORMAL
 - R-2
 - R-7
 - R-29
 - R-30
- b. CNMT pressure - LESS THAN 0.5 PSIG
- c. CNMT sump B level - LESS THAN 8 INCHES
- d. CNMT sump A level
 - o Level - STABLE
 - o Annunciator C-19, CONTAINMENT SUMP A HI LEVEL - EXTINGUISHED

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STEP

ACTION/EXPECTED RESPONSE

RESPONSE NOT OBTAINED

27 Check If SI Should Be Terminated:

a. RCS pressure:

- o Pressure - GREATER THAN 1625 PSIG
- o Pressure - STABLE OR INCREASING

b. RCS subcooling based on core exit T/Cs - GREATER THAN 0°F USING FIG-1.0, FIGURE MIN SUBCOOLING

c. Secondary heat sink:

- o Total feed flow to S/Gs - GREATER THAN 200 GPM

-OR-

- o Narrow range level in at least one S/G - GREATER THAN 7%

d. PRZR level - GREATER THAN 10%

e. Go to ES-1.1, SI TERMINATION, Step 1.

a. Do NOT stop SI pumps. Go to Step 28.

b. Do NOT stop SI pumps. Go to Step 28.

c. IF neither condition met, THEN do NOT stop SI pumps. Go to Step 28.

d. Do NOT stop SI pumps. Perform the following:

1) IF normal PRZR spray available, THEN try to stabilize RCS pressure with PRZR spray.

2) Go to Step 28.

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STEP

ACTION/EXPECTED RESPONSE

RESPONSE NOT OBTAINED

- NOTE:
- o Conditions should be evaluated for Site Contingency Reporting (Refer to EPIP-1.0, GINNA STATION EVENT EVALUATION AND CLASSIFICATION).
 - o The Critical Safety Function Red Path Summary is available in APPENDIX 1.

28 Initiate Monitoring of
Critical Safety Function
Status Trees

*29 Monitor S/G Levels:

- a. Narrow range level - GREATER THAN 7%
- b. Control feed flow to maintain narrow range level between 17% and 50%

a. Maintain total feed flow greater than 200 gpm until narrow range level greater than 7% in at least one S/G.

b. IF narrow range level in any S/G continues to increase in an uncontrolled manner, THEN go to E-3, STEAM GENERATOR TUBE RUPTURE, Step 1.

30 Check Secondary Radiation
Levels - NORMAL

- o Steamline radiation monitor (R-31 and R-32)
- o Dispatch A0 to locally check steamline radiation
- o Request RP sample S/Gs for activity

Go to E-3, STEAM GENERATOR TUBE RUPTURE, Step 1.

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STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
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CAUTION

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)

31 Reset SI

32 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.

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STEP

ACTION/EXPECTED RESPONSE

RESPONSE NOT OBTAINED

33 Verify Adequate SW Flow:

- a. At least three SW pumps - RUNNING
 - a. Manually start SW pumps as power supply permits (257 kw each).

 IF less than three pumps running. THEN ensure SW isolation.

 IF NO SW pumps running. THEN perform the following:
 - 1) Pull stop any D/G that is NOT supplied by alternate cooling AND immediately depress associated VOLTAGE SHUTDOWN pushbutton.
 - 2) Refer to ATT-2.4, ATTACHMENT NO SW PUMPS.

 IF only one SW pump running. THEN refer to AP-SW.2, LOSS OF SERVICE WATER.
- b. Dispatch AO to establish normal shutdown alignment (Refer to ATT-17.0, ATTACHMENT SD-1)

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STEP

ACTION/EXPECTED RESPONSE

RESPONSE NOT OBTAINED

34 Establish IA to CNMT:

- a. Verify non-safeguards busses energized from offsite power

o Bus 13 normal feed - CLOSED

-OR-

o Bus 15 normal feed - CLOSED

- b. Check SW Pumps - AT LEAST TWO PUMPS RUNNING

- a. Perform the following:

- 1) Close non-safeguards bus tie breakers:

- Bus 13 to Bus 14 tie
- Bus 15 to Bus 16 tie

- 2) Verify adequate emergency D/G capacity to run air compressor(s) (75 kw each).

IF NOT, THEN 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) WHEN bus 15 is restored, THEN reset control room lighting.

- b. Perform the following:

- 1) Restore IA using service air compressor OR diesel air compressor (refer to ATT-11.2, ATTACHMENT DIESEL AIR COMPRESSOR)

- 2) Go to step 34d.

This Step continued on the next page.

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STEP

ACTION/EXPECTED RESPONSE

RESPONSE NOT OBTAINED

(Step 34 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 compressor(s) as power supply permits (75 kw each).

IF electric air compressor 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 35. WHEN IA restored, THEN do Steps 34f and g.

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STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
35	<p>Check Auxiliary Building Radiation - NORMAL</p> <ul style="list-style-type: none"> • Plant vent iodine (R-10B) • Plant vent particulate (R-13) • Plant vent gas (R-14) • CCW liquid monitor (R-17) • LTD line monitor (R-9) • CHG pump room (R-4) 	<p>Evaluate cause of abnormal conditions.</p> <p><u>IF</u> the cause is a loss of RCS inventory outside CNMT, <u>THEN</u> go to ECA-1.2, LOCA OUTSIDE CONTAINMENT, Step 1.</p>
36	<p>Check PRT Conditions</p> <ul style="list-style-type: none"> o PRT level (LI-442) - LESS THAN 84% o PRT temperature (TI-439) - LESS THAN 120°F o PRT pressure (PI-440A) - LESS THAN 3 PSIG 	<p>Evaluate the following flowpaths for cause of abnormal conditions:</p> <ul style="list-style-type: none"> • RCP seal return relief • PRZR PORVs • PRZR safeties • Letdown line relief <p><u>IF</u> excess letdown previously in service, <u>THEN</u> close AOV-310, excess letdown isolation valve from loop A cold.</p>

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
<p>*****</p> <p style="text-align: center;"><u>CAUTION</u></p> <p>RCS PRESSURE SHOULD BE MONITORED. IF RCS PRESSURE DECREASES IN AN UNCONTROLLED MANNER TO LESS THAN 250 PSIG, THEN THE RHR PUMPS MUST BE MANUALLY RESTARTED TO SUPPLY WATER TO THE RCS.</p> <p>*****</p>		
*37	<p>Monitor If RHR Pumps Should Be Stopped:</p> <p>a. Check RCS pressure:</p> <p>1) Pressure - GREATER THAN 250 PSIG</p> <p>2) Pressure - STABLE OR INCREASING</p> <p>b. Stop both RHR pumps and place in AUTO</p>	<p>1) Go to E-1, LOSS OF REACTOR OR SECONDARY COOLANT, Step 1.</p> <p>2) Go to Step 38.</p>
38	<p>Check Normal Power Available To Charging Pumps:</p> <p>o Bus 14 normal feed breaker - CLOSED</p> <p>o Bus 16 normal feed breaker - CLOSED</p>	<p>Verify adequate emergency D/G capacity to run charging pumps (75 kw each).</p> <p><u>IF NOT, THEN</u> evaluate if CNMT RECIRC fans can be stopped (Refer to ATT-4.0, ATTACHMENT CNMT RECIRC FANS).</p>

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STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
39	<p>Check If Charging Flow Has Been Established:</p> <p>a. Charging pumps - ANY RUNNING</p> <p>b. Charging pump suction aligned to RWST:</p> <ul style="list-style-type: none"> o LCV-112B - OPEN o LCV-112C - CLOSED <p>c. Start charging pumps as necessary and adjust charging flow to restore PRZR level</p>	<p>a. Perform the following:</p> <ol style="list-style-type: none"> 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 close seal injection needle valve(s) to affected RCP: <ul style="list-style-type: none"> • V-300A for RCP A • V-300B for RCP B 2) Ensure HCV-142 open, demand at 0%. <p>b. Manually align valves.</p> <p><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"> 1) Direct AO to locally open V-358, manual charging pump suction from RWST (Charging Pump Room). 2) Verify charging pump A <u>NOT</u> running and place in PULL STOP. 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).

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STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
40	Maintain PRZR Pressure Between 1800 PSIG And 2235 PSIG <ul style="list-style-type: none">o Reset PRZR heaterso Use normal PRZR spray	

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STEP

ACTION/EXPECTED RESPONSE

RESPONSE NOT OBTAINED

41 Check If Emergency D/Gs
Should Be Stopped:

a. Verify AC emergency busses
energized by offsite power:

- o Emergency D/G output breakers
- OPEN
- o AC emergency bus voltage -
GREATER THAN 420 VOLTS
- o AC emergency bus normal feed
breakers - CLOSED

a. Perform the following:

- 1) Verify non-safeguards bus tie
breakers closed:
 - Bus 13 to Bus 14 tie
 - Bus 15 to Bus 16 tie
- 2) Place the following pumps in
PULL STOP:
 - EH pumps
 - Turning gear oil pump
 - HP seal oil backup pump
- 3) Ensure condenser steam dump
mode control in MANUAL.
- 4) Restore power to MCCs:
 - A from Bus 13
 - B from Bus 15
 - E from Bus 15
 - F from Bus 15
- 5) Start HP seal oil backup pump.
- 6) Ensure D/G load within limits.
- 7) Refer to ATT-8.4, ATTACHMENT
SI/UV for other equipment
lost with loss of offsite
power.
- 8) Try to restore offsite power
(Refer to ER-ELEC.1,
RESTORATION OF OFFSITE POWER).

b. Stop any unloaded emergency D/G
and place in standby (Refer to
ATT-8.1, ATTACHMENT D/G STOP)

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STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
42	Return to Step 20	

-END-

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E-0 APPENDIX LIST

TITLE

- 1) RED PATH SUMMARY
- 2) FIGURE MIN SUBCOOLING (FIG-1.0)
- 3) ATTACHMENT CI/CVI (ATT-3.0)
- 4) ATTACHMENT SD-1 (ATT-17.0)
- 5) ATTACHMENT CNMT RECIRC FANS (ATT-4.0)
- 6) ATTACHMENT D/G STOP (ATT-8.1)
- 7) ATTACHMENT SI/UV (ATT-8.4)
- 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)
- 11) FOLDOUT

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FOLDOUT PAGE

1. RCP TRIP CRITERIA

IF BOTH conditions listed below occur, THEN trip both RCPs:

- a. SI pumps - AT LEAST TWO RUNNING
- b. RCS pressure minus maximum S/G pressure - LESS THAN 175 PSIG
[400 psig adverse CNMT]

2. LOSS OF SW CRITERIA

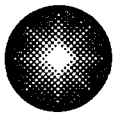
IF no SW pumps are available, THEN perform the following:

- 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.

3. AFW SUPPLY SWITCHOVER CRITERION

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 AFW PUMPS).

1503 Lake Road
Ontario, New York 14519-9364
585.771.3000



Constellation Energy

R.E. Ginna Nuclear Power Plant, LLC

December 15, 2005

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,

Dave A. Holm

DAH/jdw

xc: U.S. Nuclear Regulatory Commission
Region I
475 Allendale Road
King of Prussia, PA 19406-1415

Ginna USNRC Senior Resident Inspector

Enclosure(s):

ATT Index
E Index
ECA Index
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ATT-3.0, Rev 9

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NPSP0200
E66429

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PROCEDURE INDEX

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INPUT PARAMETERS: TYPE: PRATT

STATUS VALUE(S): EF, QU

5 YEARS ONLY:

PRATT EOP ATTACHMENTS

PROCEDURE NUMBER	PROCEDURE TITLE	REV	EFFECT DATE	LAST REVIEW	NEXT REVIEW	ST
ATT-1.0	ATTACHMENT AT POWER CCW ALIGNMENT	003	02/12/2003	02/12/2003	02/12/2008	EF
ATT-1.1	ATTACHMENT NORMAL CCW FLOW	000	05/18/2000	03/25/2005	03/25/2010	EF
ATT-2.1	ATTACHMENT MIN SW	005	02/01/2001	02/03/2003	02/03/2008	EF
ATT-2.2	ATTACHMENT SW ISOLATION	008	03/06/2002	03/27/2003	03/27/2008	EF
ATT-2.3	ATTACHMENT SW LOADS IN CNMT	004	03/06/2002	04/08/2004	04/06/2009	EF
ATT-2.4	ATTACHMENT NO SW PUMPS	002	05/30/2003	10/31/2001	10/31/2006	EF
ATT-2.5	ATTACHMENT SPLIT SW HEADERS	000	06/26/2002	06/26/2002	06/26/2007	EF
ATT-3.0	ATTACHMENT C/CVI	009	12/15/2005	02/17/2004	02/17/2009	EF
ATT-3.1	ATTACHMENT CNMT CLOSURE	005	02/17/2004	02/17/2004	02/17/2009	EF
ATT-4.0	ATTACHMENT CNMT RECIRC FANS	003	07/26/1994	03/27/2003	03/27/2008	EF
ATT-5.0	ATTACHMENT COND TO S/G	006	10/10/2003	04/06/2004	04/06/2009	EF
ATT-5.1	ATTACHMENT SAFW	008	05/30/2002	04/06/2004	04/06/2009	EF
ATT-5.2	ATTACHMENT FIRE WATER COOLING TO TDAFW PUMP	004	10/07/2004	8/20/51/2	01/28/2009	EF
ATT-6.0	ATTACHMENT COND VACUUM	003	12/18/1996	02/03/2003	02/03/2008	EF
ATT-7.0	ATTACHMENT CR EVAC	006	03/06/2002	02/03/2003	02/03/2008	EF
ATT-8.0	ATTACHMENT DC LOADS	007	02/04/2004	02/04/2004	02/04/2009	EF
ATT-8.1	ATTACHMENT D/G STOP	005	03/06/2002	02/03/2003	02/03/2008	EF
ATT-8.2	ATTACHMENT GEN DEGAS	008	06/20/2002	05/28/2004	05/28/2009	EF
ATT-8.3	ATTACHMENT NONVITAL	004	03/06/2002	02/03/2003	02/03/2008	EF
ATT-8.4	ATTACHMENT S/U/V	006	12/12/2005	02/03/2003	02/03/2008	EF
ATT-8.5	ATTACHMENT LOSS OF OFFSITE POWER	001	08/26/2003	05/02/2002	05/02/2007	EF
ATT-9.0	ATTACHMENT LETDOWN	009	01/07/2004	03/06/2002	03/06/2007	EF
ATT-9.1	ATTACHMENT EXCESS L/D	006	07/28/2004	10/31/2001	10/31/2006	EF
ATT-10.0	ATTACHMENT FAULTED S/G	006	03/06/2002	03/27/2003	03/27/2008	EF
ATT-11.0	ATTACHMENT IA CONCERNS	004	09/01/2004	03/27/2003	03/27/2008	EF
ATT-11.1	ATTACHMENT IA SUPPLY	003	03/06/2002	03/27/2003	03/27/2008	EF
ATT-11.2	ATTACHMENT DIESEL AIR COMPRESSOR	004	11/18/2002	03/10/2003	03/10/2008	EF
ATT-12.0	ATTACHMENT N2 PORVS	005	02/12/2003	02/12/2003	02/12/2008	EF
ATT-13.0	ATTACHMENT NC	003	02/12/2003	02/12/2003	02/12/2008	EF
ATT-14.0	ATTACHMENT NORMAL RHR COOLING	003	03/06/2002	04/06/2004	04/06/2009	EF

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E66429

Ginna Nuclear Power Plant
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INPUT PARAMETERS: TYPE: PRATT

STATUS VALUE(S): EF, QU

5 YEARS ONLY:

PRATT EOP ATTACHMENTS

PROCEDURE NUMBER	PROCEDURE TITLE	REV	EFFECT DATE	LAST REVIEW	NEXT REVIEW	ST
ATT-14.1	ATTACHMENT RHR COOL	008	04/10/2005	01/08/2002	01/08/2007	EF
ATT-14.2	ATTACHMENT RHR ISOL	003	02/12/2003	02/12/2003	02/12/2008	EF
ATT-14.3	ATTACHMENT RHR NPSH	003	03/06/2002	01/28/2004	01/28/2009	EF
ATT-14.5	ATTACHMENT RHR SYSTEM	003	03/20/2003	02/03/2003	02/03/2008	EF
ATT-14.6	ATTACHMENT RHR PRESS REDUCTION	002	03/06/2002	01/28/2004	01/28/2009	EF
ATT-14.7	ATTACHMENT ADJUST RHR FLOW	001	02/17/2005	02/17/2004	02/17/2009	EF
ATT-15.0	ATTACHMENT RCP START	010	01/11/2005	01/11/2005	01/11/2010	EF
ATT-15.1	ATTACHMENT RCP DIAGNOSTICS	003	04/24/1997	02/03/2003	02/03/2008	EF
ATT-15.2	ATTACHMENT SEAL COOLING	005	03/06/2002	02/03/2003	02/03/2008	EF
ATT-16.0	ATTACHMENT RUPTURED S/G	013	01/11/2005	01/11/2005	01/11/2010	EF
ATT-16.1	ATTACHMENT SGTL	003	09/01/2004	06/27/2005	06/27/2010	EF
ATT-16.2	ATTACHMENT RCS BORON FOR SGTL	004	04/10/2005	06/27/2005	06/27/2010	EF
ATT-17.0	ATTACHMENT SD-1	020	04/10/2005	01/21/2005	01/21/2010	EF
ATT-17.1	ATTACHMENT SD-2	007	09/01/2004	01/30/2001	01/30/2006	EF
ATT-18.0	ATTACHMENT SFP - RWST	005	03/06/2002	02/03/2003	02/03/2008	EF
ATT-20.0	ATTACHMENT VENT TIME	004	09/01/2004	02/03/2003	02/03/2008	EF
ATT-21.0	ATTACHMENT RCS ISOLATION	002	03/06/2002	02/03/2003	02/03/2008	EF
ATT-22.0	ATTACHMENT RESTORING FEED FLOW	004	11/17/2004	01/22/2002	01/22/2007	EF
ATT-23.0	ATTACHMENT TRANSFER 4160V LOADS	000	02/26/1999	01/28/2004	01/28/2009	EF
ATT-24.0	ATTACHMENT TRANSFER BATTERY TO TSC	002	09/28/2005	09/28/2005	09/28/2010	EF
ATT-26.0	ATTACHMENT RETURN TO NORMAL OPERATIONS	001	12/12/2005	10/31/2001	10/31/2006	EF

PRATT TOTAL: 51

GRAND TOTAL: 51

NPSP0200
E66429

GINNA Nuclear Power Plant
PROCEDURE INDEX

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INPUT PARAMETERS: TYPE: PRE

STATUS VALUE(S) : EF, QU

5 YEARS ONLY :

PRE EMERGENCY PROCEDURE

PROCEDURE NUMBER	PROCEDURE TITLE	REV	EFFECT DATE	LAST REVIEW	NEXT REVIEW	ST
E-0	REACTOR TRIP OR SAFETY INJECTION	039	12/15/2005	03/24/2003	03/24/2008	EF
E-1	LOSS OF REACTOR OR SECONDARY COOLANT	033	12/15/2005	03/24/2003	03/24/2008	EF
E-2	FAULTED STEAM GENERATOR ISOLATION	012	11/17/2004	03/24/2003	03/24/2008	EF
E-3	STEAM GENERATOR TUBE RUPTURE	038	11/17/2004	03/24/2003	03/24/2008	EF

PRE TOTAL: 4

GRAND TOTAL: 4

NPSP0200
E66429

Ginna Nuclear Power Plant
PROCEDURE INDEX

Thu 12/15/2005 8:16:53 am
Page 1 of 1

INPUT PARAMETERS: TYPE: PRECA

STATUS VALUE(S): EF, QU

5 YEARS ONLY:

PRECA EMERGENCY CONTINGENCY ACTIONS PROC

PROCEDURE NUMBER	PROCEDURE TITLE	REV	EFFECT DATE	LAST REVIEW	NEXT REVIEW	ST
ECA-0.0	LOSS OF ALL AC POWER	030	12/15/2005	03/24/2003	03/24/2008	EF
ECA-0.1	LOSS OF ALL AC POWER RECOVERY WITHOUT SI REQUIRED	024	11/17/2004	03/24/2003	03/24/2008	EF
ECA-0.2	LOSS OF ALL AC POWER RECOVERY WITH SI REQUIRED	017	12/15/2005	03/24/2003	03/24/2008	EF
ECA-1.1	LOSS OF EMERGENCY COOLANT RECIRCULATION	023	11/17/2004	03/24/2003	03/24/2008	EF
ECA-1.2	LOCA OUTSIDE CONTAINMENT	006	05/30/2003	03/24/2003	03/24/2008	EF
ECA-1.3	RESPONSE TO SUMP B BLOCKAGE	000	08/03/2005	08/03/2005	08/03/2010	EF
ECA-2.1	UNCONTROLLED DEPRESSURIZATION OF BOTH STEAM GENERATORS	028	11/17/2004	03/24/2003	03/24/2008	EF
ECA-3.1	SGTR WITH LOSS OF REACTOR COOLANT SUBCOOLED RECOVERY DESIRED	027	11/17/2004	03/24/2003	03/24/2008	EF
ECA-3.2	SGTR WITH LOSS OF REACTOR COOLANT SATURATED RECOVERY DESIRED	028	11/17/2004	03/24/2003	03/24/2008	EF
ECA-3.3	SGTR WITHOUT PRESSURIZER PRESSURE CONTROL	031	11/17/2004	03/24/2003	03/24/2008	EF

PRECA TOTAL: 10

GRAND TOTAL: 10

NPSP0200
E66429

GINNA Nuclear Power Plant
PROCEDURE INDEX

Thu 12/15/2005 8:17:07 am
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INPUT PARAMETERS: TYPE: PRES

STATUS VALUE(S): EF, QU

5 YEARS ONLY:

PRES EMERGENCY SUB-PROCEDURE

PROCEDURE NUMBER	PROCEDURE TITLE	REV	EFFECT DATE	LAST REVIEW	NEXT REVIEW	ST
ES-0.0	REDIAGNOSIS	010	05/01/1998	03/24/2003	03/24/2008	EF
ES-0.1	REACTOR TRIP RESPONSE	023	11/17/2004	03/24/2003	03/24/2008	EF
ES-0.2	NATURAL CIRCULATION COOLDOWN	013	05/30/2003	03/24/2003	03/24/2008	EF
ES-0.3	NATURAL CIRCULATION COOLDOWN WITH STEAM VOID IN VESSEL	010	11/17/2004	03/24/2003	03/24/2008	EF
ES-1.1	SI TERMINATION	027	11/17/2004	03/24/2003	03/24/2008	EF
ES-1.2	POST LOCA COOLDOWN AND DEPRESSURIZATION	027	11/17/2004	03/24/2003	03/24/2008	EF
ES-1.3	TRANSFER TO COLD LEG RECIRCULATION	039	12/15/2005	03/24/2003	03/24/2008	EF
ES-3.1	POST-SGTR COOLDOWN USING BACKFILL	016	11/17/2004	03/24/2003	03/24/2008	EF
ES-3.2	POST-SGTR COOLDOWN USING BLOWDOWN	017	11/17/2004	03/24/2003	03/24/2008	EF
ES-3.3	POST-SGTR COOLDOWN USING STEAM DUMP	017	11/17/2004	03/24/2003	03/24/2008	EF

PRES TOTAL: 10

GRAND TOTAL: 10

NPSP0200
E66429

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	023	12/15/2005	03/24/2003	03/24/2008	EF
FR-C.2	RESPONSE TO DEGRADED CORE COOLING	021	12/15/2005	03/24/2003	03/24/2008	EF
FR-C.3	RESPONSE TO SATURATED CORE COOLING	010	08/03/2005	03/24/2003	03/24/2008	EF
FR-H.1	RESPONSE TO LOSS OF SECONDARY HEAT SINK	033	08/03/2005	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	008	11/17/2004	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	010	11/17/2004	03/24/2003	03/24/2008	EF
FR-I.1	RESPONSE TO HIGH PRESSURIZER LEVEL	017	01/07/2004	03/24/2003	03/24/2008	EF
FR-I.2	RESPONSE TO LOW PRESSURIZER LEVEL	012	11/17/2004	03/24/2003	03/24/2008	EF
FR-I.3	RESPONSE TO VOIDS IN REACTOR VESSEL	020	11/17/2004	03/24/2003	03/24/2008	EF
FR-P.1	RESPONSE TO IMMINENT PRESSURIZED THERMAL SHOCK CONDITION	029	11/17/2004	03/24/2003	03/24/2008	EF
FR-P.2	RESPONSE TO ANTICIPATED PRESSURIZED THERMAL SHOCK CONDITION	009	11/17/2004	03/24/2003	03/24/2008	EF
FR-S.1	RESPONSE TO REACTOR RESTART/ATWS	018	12/15/2005	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	010	12/15/2005	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: ATT-3.0	TITLE: ATTACHMENT CI/CVI	REV: 9 PAGE 1 of 4
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Responsible Manager *Resulding* Date 12-15-2005

NOTE: Locked valve key may be required for local operations.

1. For each of the following AUTO ISOL VALVES that will not close, take the action directed in the ALTERNATE ISOLATION column.

AUTO ISOL VALVE

ALTERNATE ISOL

AOV-200A(L/D)	Close the following valves: (MCB) <ul style="list-style-type: none">• AOV-371• HCV-133
AOV-200B(L/D)	Close the following valves: (MCB) <ul style="list-style-type: none">• AOV-371• HCV-133
AOV-202(L/D)	Close the following valves: (MCB) <ul style="list-style-type: none">• AOV-371• HCV-133
AOV-5392(IA)	Close the following valves: (IB BASEMENT CLEAN SIDE) <ul style="list-style-type: none">• V-5397• V-5410
AOV-371(L/D)	Close the following valves: (NRHX ROOM) <ul style="list-style-type: none">• V-204A• V-820
MOV-313(RCP Seal)	Close the following valves: (SWRF ROOM [reach rods]) <ul style="list-style-type: none">• V-315A• V-315C
AOV-9227(Fire Sys)	(Normally closed, and does <u>NOT</u> receive CI signal) <ul style="list-style-type: none">• Close V-9225 (IB BASEMENT CLEAN SIDE)
AOV-508(RMW)	Close the following valves: (MCB) <ul style="list-style-type: none">• AOV-548• AOV-550A• AOV-550B

EOP:	TITLE:	REV: 9
ATT-3.0	ATTACHMENT CI/CVI	PAGE 2 of 4

AUTO ISOL VALVE

ALTERNATE ISOL

AOV-5738 (S/G B/D)	Close V-5701	(IB BASEMENT CLEAN SIDE)
AOV-5737 (S/G B/D)	Close V-5702	(IB BASEMENT CLEAN SIDE)
AOV-5735 (S/G Samp)	Close V-5733	(SAMPLE HOOD)
AOV-5736 (S/G Samp)	Close V-5734	(SAMPLE HOOD)
SOV-921 (H2 Mon)	Close V-928A	(INSIDE A H2 MON PNL, AFW PUMP AREA, key #38 required)
SOV-922 (H2 Mon)	Close V-928B	(INSIDE A H2 MON PNL, AFW PUMP AREA, key #38 required)
SOV-923 (H2 Mon)	Close V-929A	(INSIDE B H2 MON PNL, AFW PUMP AREA, key #38 required)
SOV-924 (H2 Mon)	Close V-929B	(INSIDE B H2 MON PNL, AFW PUMP AREA, key #38 required)
AOV-539 (PRT gas)	Close V-546	(BY SFP HX A)
AOV-1789 (RCDT to gas anal)	Close V-1655	(BY SFP HX A)
AOV-1786 (RCDT/VH)	Close AOV-1787	(MCB)
AOV-1787 (RCDT/VH)	Close AOV-1786	(MCB)
AOV-1721 (RCDT Pumps) Close the following valves:		
	• AOV-1003A	(WASTE PANEL)
	• AOV-1003B	(WASTE PANEL)
	• V-1722	(AB SUB-BASEMENT, NORMALLY LOCKED CLOSED)
AOV-1003A (RCDT Pump A)	Close AOV-1721	(WASTE PANEL)
AOV-1003B (RCDT Pump B)	Close AOV-1721	(WASTE PANEL)
AOV-1597 (CNMT rad)	Close V-1596	(IB BASEMENT CLEAN SIDE)
AOV-1598 (CNMT rad)	Close AOV-1599	(MCB)
AOV-1599 (CNMT rad)	Close AOV-1598	(MCB)

EOP:	TITLE:	REV: 9
ATT-3.0	ATTACHMENT CI/CVI	PAGE 3 of 4

AUTO ISOL VALVE

ALTERNATE ISOL

MOV-813 (CCW)

Locally close MOV-813 (AB Int Level). IF |
MOV-813 can not be closed, THEN perform |
the following:

- 1) Direct AO with locked valve key to unlock and close breaker for MOV-817 (MCC D POS 10C)
- 2) Stop both RCPs
- 3) Manually close MOV-817 (MCB). IF MOV-817 will not close, THEN direct AO to locally close MOV-817 (AB INT LEVEL).

MOV-814 (CCW)

Close V-815A (AB INT LEVEL)

AOV-1723 (CNMT sump)

Perform the following:

- 1) Place BOTH CNMT Sump Pumps in PULL-STOP (MCB REAR)
- 2) Close AOV-1728 (WASTE PANEL)

AOV-1728 (CNMT sump)

Perform the following:

- 1) Place BOTH CNMT Sump Pumps in PULL-STOP (MCB REAR)
- 2) Close AOV-1723 (WASTE PANEL)

AOV-951 (PRZR STM samp) Close AOV-966A (MCB)

AOV-953 (PRZR Liq samp) Close AOV-966B (MCB)

AOV-955 (Hot Leg samp) Close AOV-966C (MCB)

AOV-959 (RHR samp)
(fuses normally pulled)

Close V-957 (PRIMARY SAMPLE ROOM,
normally closed)

AOV-966A (PRZR STM samp) Close V-956F (SAMPLE HOOD)

AOV-966B (PRZR Liq samp) Close V-956E (SAMPLE HOOD)

AOV-966C (Hot Leg samp) Close V-956D (SAMPLE HOOD)

AOV-846 (Accum N2) Close the following valves:
(BY SFP HX A)

- V-8629
- V-944A

EOP:	TITLE:	REV: 9
ATT-3.0	ATTACHMENT CI/CVI	PAGE 4 of 4

AUTO ISOL VALVE

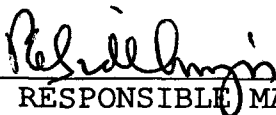
ALTERNATE ISOL

AOV-8418 (DI Water)	Close V-5021 (IB BASEMENT CLEAN SIDE)
AOV-7971 (Mini-purge)	Close AOV-7970 (MCB REAR)
AOV-7970 (Mini-purge)	Close AOV-7971 (MCB REAR)
AOV-7445 (Mini-purge)	Close AOV-7478 (MCB REAR)
AOV-7478 (Mini-purge)	Close AOV-7445 (MCB REAR)
AOV-5879 (CNMT purge)	N/A FLANGED
AOV-5869 (CNMT purge)	N/A FLANGED
SOV-1B (10214S1) (H2 recomb) (normally de-energized)	Close V-1080A (SAMPLE HOOD, NORMALLY LOCKED CLOSED)
SOV-2B (10214S) (H2 recomb) (normally de-energized)	Close V-1080A (SAMPLE HOOD, NORMALLY LOCKED CLOSED)
SOV-3B (10211S1) (H2 recomb) (normally de-energized)	Close V-1076B (SAMPLE HOOD, NORMALLY LOCKED CLOSED)
SOV-5B (10213S1) (H2 recomb) (normally de-energized)	Close V-1084B (SAMPLE HOOD, NORMALLY LOCKED CLOSED)
SOV-1A (10215S1) (H2 recomb) (normally de-energized)	Close V-1080A (SAMPLE HOOD, NORMALLY LOCKED CLOSED)
SOV-2A (10215S) (H2 recomb) (normally de-energized)	Close V-1080A (SAMPLE HOOD, NORMALLY LOCKED CLOSED)
SOV-3A (10205S1) (H2 recomb) (normally de-energized)	Close V-1076A (IB BASEMENT CLEAN SIDE, NORMALLY LOCKED CLOSED)
SOV-5A (10209S1) (H2 recomb) (normally de-energized)	Close V-1084A (IB BASEMENT CLEAN SIDE, NORMALLY LOCKED CLOSED)

EOP: E-0	TITLE: REACTOR TRIP OR SAFETY INJECTION	REV: 39 PAGE 1 of 29
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GINNA STATION

CONTROLLED COPY NUMBER 23


RESPONSIBLE MANAGER

12-15-2005
EFFECTIVE DATE

CATEGORY 1.0

REVIEWED BY: _____

EOP: E-0	TITLE: REACTOR TRIP OR SAFETY INJECTION	REV: 39 PAGE 2 of 29
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A. PURPOSE - This procedure provides actions to verify proper response of the automatic protection systems following manual or automatic actuation of a reactor trip or safety injection and to assess plant conditions, and identify the appropriate recovery procedure.

B. ENTRY CONDITIONS/SYMPTOMS

1. The following are symptoms that require a reactor trip, if one has not occurred:
 - o Any plant parameter reaches a reactor trip setpoint and logic as listed in procedure P-1, REACTOR CONTROL AND PROTECTION SYSTEM.
 - o Operator discretion.
2. The following are symptoms of a reactor trip:
 - o Any First Out reactor trip annunciator lit.
 - o A rapid decrease in core neutron level as indicated by nuclear instrumentation.
 - o MRPI indicates all control and shutdown rods on bottom.
 - o Reactor trip breakers indicate open.
3. The following are symptoms that require a reactor trip and safety injection, if one has not occurred:
 - o Any plant parameter reaches the Safety Injection setpoint and logic listed in procedure P-1, REACTOR CONTROL AND PROTECTION SYSTEM.
 - o Operator discretion.
4. The following are symptoms of a reactor trip and safety injection:
 - o Any SI annunciator lit.
 - o Safeguards sequencing started.

EOP: E-0	TITLE: REACTOR TRIP OR SAFETY INJECTION	REV: 39 PAGE 3 of 29
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STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
1	<p>Verify Reactor Trip:</p> <ul style="list-style-type: none"> o At least one train of reactor trip breakers - OPEN o Neutron flux - DECREASING o MRPI indicates - ALL CONTROL AND SHUTDOWN RODS ON BOTTOM 	<p>Manually trip reactor.</p> <p><u>IF</u> reactor trip breakers <u>NOT</u> open, <u>THEN</u> perform the following:</p> <ul style="list-style-type: none"> a. Open Bus 13 and Bus 15 normal feed breakers. b. Verify rod drive MG sets tripped. c. Close Bus 13 and Bus 15 normal feed breakers. d. Reset lighting breakers. <p><u>IF</u> the reactor will <u>NOT</u> trip <u>OR IF</u> power range NIS indicates greater than 5%, <u>THEN</u> go to FR-S.1, RESPONSE TO REACTOR RESTART/ATWS, Step 1</p>
2	<p>Verify Turbine Stop Valves - CLOSED</p>	<p>Manually trip turbine.</p> <p><u>IF</u> turbine trip can <u>NOT</u> be verified, <u>THEN</u> close both MSIVs.</p>
3	<p>Verify Both Trains Of AC Emergency Busses Energized To At Least 420 VOLTS:</p> <ul style="list-style-type: none"> o Bus 14 and Bus 18 o Bus 16 and Bus 17 	<p>Attempt to start any failed emergency D/G to restore power to all AC emergency busses.</p> <p><u>IF</u> Bus 14 <u>AND</u> Bus 16 are deenergized, <u>THEN</u> go to ECA-0.0, LOSS OF ALL AC POWER, Step 1.</p>

EOP: E-0	TITLE: REACTOR TRIP OR SAFETY INJECTION	REV: 39 PAGE 4 of 29
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STEP

ACTION/EXPECTED RESPONSE

RESPONSE NOT OBTAINED

4 Check if SI is Actuated:

a. Any SI Annunciator - LIT

a. IF any of the following conditions are met, THEN manually actuate SI and CI:

o PRZR pressure less than 1750 psig

-OR-

o Steamline pressure less than 514 psig

-OR-

o CNMT pressure greater than 4 psig

-OR-

o SI sequencing started

-OR-

o Operator determines SI required

IF SI is NOT required, THEN go to ES-0.1, REACTOR TRIP RESPONSE, Step 1.

b. SI sequencing - BOTH TRAINS STARTED.

b. Manually actuate SI and CI.

EOP: E-0	TITLE: REACTOR TRIP OR SAFETY INJECTION	REV: 39 PAGE 5 of 29
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STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
<p><u>NOTE:</u> o FOLDOUT page should be open and monitored periodically.</p> <p> o Adverse CNMT values should be used whenever CNMT pressure is greater than 4 psig or CNMT radiation is greater than 10^{+05} R/hr.</p>		
5	Verify SI and RHR Pumps Running:	
	a. All SI pumps - RUNNING	a. Manually start SI pumps.
	b. Both RHR pumps - RUNNING	b. Manually start RHR pumps.
6	Verify CNMT RECIRC Fans Running:	
	a. All fans - RUNNING	a. Manually start fans.
	b. Charcoal filter dampers green status lights - EXTINGUISHED	b. Dispatch personnel to relay room with relay rack key to locally open dampers by pushing in trip relay plungers. <ul style="list-style-type: none"> • AUX RELAY RACK RA-2 for fan A • AUX RELAY RACK RA-3 for fan C

EOP: E-0	TITLE: REACTOR TRIP OR SAFETY INJECTION	REV: 39 PAGE 6 of 29
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STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
* 7	Verify CNMT Spray Not Required: <ul style="list-style-type: none"> o Annunciator A-27, CNMT SPRAY - EXTINGUISHED o CNMT pressure - LESS THAN 28 PSIG 	<p>Verify CNMT spray initiated.</p> <p><u>IF</u> CNMT spray <u>NOT</u> initiated, <u>THEN</u> perform the following:</p> <ul style="list-style-type: none"> a. Depress manual CNMT spray pushbuttons (2 of 2). b. Ensure CNMT spray pumps running. <u>IF</u> no CNMT spray pump available, <u>THEN</u> go to Step 8. c. Ensure CNMT spray pump discharge valves open for operating pump(s). <ul style="list-style-type: none"> o CNMT spray pump A: <ul style="list-style-type: none"> • MOV-860A • MOV-860B o CNMT spray pump B: <ul style="list-style-type: none"> • MOV-860C • MOV-860D d. Verify NaOH flow (FI-930) <p><u>IF</u> NaOH flow <u>NOT</u> indicated, <u>THEN</u> place switches for NaOH tank outlet valves to OPEN.</p> <ul style="list-style-type: none"> • AOV-836A • AOV-836B

EOP: E-0	TITLE: REACTOR TRIP OR SAFETY INJECTION	REV: 39 PAGE 7 of 29
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STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
8	Check If Main Steamlines Should Be Isolated:	
	a. Any MSIV - OPEN	a. Go to Step 9.
	b. Check CNMT pressure - LESS THAN 18 PSIG	b. Ensure BOTH MSIVs closed and go to Step 9.
	c. Check if ANY main steamlines should be isolated:	c. Go to Step 9.
	o Low Tavg (545°F) AND high steam flow (0.4×10^6 lb/hr) from either S/G	
	-OR-	
	o High-High steam flow (3.6×10^6 lb/hr) from either S/G	
	d. Verify MSIV closed on the affected S/G(s)	d. Manually close valves.
9	Verify MFW Isolation:	
	a. MFW pumps - TRIPPED	a. Perform the following:.
		1) Manually close MFW pump discharge valves and trip MFW pumps.
		2) Continue with Step 9c. <u>WHEN</u> both MFPs are tripped, <u>THEN</u> perform Step 9b.
	b. Depress MANUAL pushbuttons for A and B S/G MFW regulating valve and bypass valve controllers <u>AND</u> adjust to 0% demand.	
	c. S/G blowdown and sample valves - CLOSED	c. Place S/G blowdown and sample valve isolation switch to CLOSE.

EOP: E-0	TITLE: REACTOR TRIP OR SAFETY INJECTION	REV: 39 PAGE 8 of 29
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STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
10 Verify Both MDAFW Pumps Running		<p>Manually start both MDAFW pumps.</p> <p><u>IF</u> less than 2 MDAFW pumps are running. <u>THEN</u> manually open TDAFW pump steam supply valves.</p> <ul style="list-style-type: none"> • MOV-3505A • MOV-3504A
11 Verify At Least Two SW Pumps - RUNNING		<p>Perform the following:</p> <ul style="list-style-type: none"> a. Ensure one SW pump running on each energized screenhouse AC emergency bus: <ul style="list-style-type: none"> • Bus 17 • Bus 18 b. <u>IF</u> offsite power <u>NOT</u> available, <u>THEN</u> ensure SW isolation. c. <u>IF NO</u> SW pumps running, <u>THEN</u> perform the following: <ul style="list-style-type: none"> 1) Pull stop any D/G that is <u>NOT</u> supplied by alternate cooling <u>AND</u> immediately depress associated VOLTAGE SHUTDOWN pushbutton. 2) Refer to ATT-2.4, ATTACHMENT NO SW PUMPS.

EOP: E-0	TITLE: REACTOR TRIP OR SAFETY INJECTION	REV: 39 PAGE 9 of 29
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STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
12	Verify CI And CVI:	
a.	CI and CVI annunciators - LIT <ul style="list-style-type: none"> Annunciator A-26, CNMT ISOLATION Annunciator A-25, CNMT VENTILATION ISOLATION 	a. Depress manual CI pushbutton.
b.	Verify CI and CVI valve status lights - BRIGHT	b. Manually close affected CI and CVI valve(s). <u>IF</u> valve(s) can <u>NOT</u> be closed from the MCB, <u>THEN</u> close alternate isolation valve(s). (Refer to ATT-3.0, ATTACHMENT CI/CVI).
c.	CNMT RECIRC fan coolers SW outlet valve status lights - BRIGHT <ul style="list-style-type: none"> FCV-4561 FCV-4562 	c. Dispatch AO to locally fail open valves.
d.	Letdown orifice valves - CLOSED <ul style="list-style-type: none"> AOV-200A AOV-200B AOV-202 	d. Place affected valve switch to CLOSE. <u>IF</u> valves can <u>NOT</u> be verified closed by MCB indication, <u>THEN</u> close alternate isolation valve(s). (Refer to ATT-3.0, ATTACHMENT CI/CVI)

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STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
13	Check CCW System Status:	
	a. Verify CCW pump - AT LEAST ONE RUNNING	a. <u>IF</u> offsite power available, <u>THEN</u> manually start one CCW pump.
	b. Place switch for excess letdown AOV-310 to CLOSE	
	c. Place switch for CCW from excess letdown, AOV-745 to CLOSE	
14	Verify SI And RHR Pump Flow:	
	a. SI flow indicators - CHECK FOR FLOW	a. <u>IF</u> RCS pressure less than 1400 psig, <u>THEN</u> manually start pumps and align valves. <u>IF NOT</u> , <u>THEN</u> go to Step 15.
	b. RHR flow indicator - CHECK FOR FLOW	b. <u>IF</u> RCS pressure less than 140 psig, <u>THEN</u> manually start pumps and align valves. <u>IF NOT</u> , <u>THEN</u> go to Step 15.
15	Verify AFW Valve Alignment:	Manually align valves as necessary.
	a. AFW flow - INDICATED TO BOTH S/G(s)	
	b. AFW flow from each MDAFW pump - LESS THAN 230 GPM	

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STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
	<p>*16 Monitor Heat Sink:</p>	
	<p>a. Check S/G narrow range level - GREATER THAN 7% [25% adverse CNMT] in any S/G</p>	<p>a. Perform the following:</p> <p>1) Verify total AFW flow - GREATER THAN 200 GPM</p> <p>IF total AFW is less than 200 gpm, THEN manually start pumps and align valves to establish greater than 200 gpm AFW flow. IF AFW flow greater than 200 gpm can NOT be established, THEN go to FR-H.1, RESPONSE TO LOSS OF SECONDARY HEAT SINK, Step 1.</p> <p>2) Go to Step 17.</p>
	<p>b. Check S/G narrow range level - BOTH S/G LESS THAN 50%</p>	<p>b. Secure AFW flow to any S/G with level above 50%.</p>
	<p>c. Control feed flow to maintain S/G narrow range level between 7% [25% adverse CNMT] and 50%.</p>	

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STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
17	Verify SI Pump And RHR Pump Emergency Alignment:	
	a. RHR pump discharge to Rx vessel deluge - OPEN	a. Ensure at least one valve open.
	• MOV-852A • MOV-852B	
	b. Verify SI pump C - RUNNING	b. Manually start pump on available bus.
	c. Verify SI pump A - RUNNING	c. Perform the following:
		1) Ensure SI pumps B and C running. <u>IF</u> either pump <u>NOT</u> . running, <u>THEN</u> go to Step 17e.
		2) Ensure SI pump C aligned to discharge line A:
		o MOV-871A open
		o MOV-871B closed
		3) Go to Step 18.
	d. Verify SI pump B - RUNNING	d. Perform the following:
		1) Ensure SI pumps A and C running. <u>IF</u> either pump <u>NOT</u> . running, <u>THEN</u> go to Step 17e.
		2) Ensure SI pump C aligned to discharge line B:
		o MOV-871B open
		o MOV-871A closed
		3) Go to Step 18.
	e. Verify SI pump C discharge valves - OPEN	e. Manually open valves as necessary.
	• MOV-871A • MOV-871B	

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STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
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CAUTION

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)

18 Check CCW Flow to RCP Thermal Barriers:

- o Annunciator A-7, RCP 1A CCW RETURN HI TEMP OR LO FLOW - EXTINGUISHED
- o Annunciator A-15, RCP 1B CCW RETURN HI TEMP OR LO FLOW - EXTINGUISHED

IF CCW to a RCP is lost, THEN perform the following:

- a. Stop affected RCPs.
- b. Reset SI.
- c. Verify adequate power available to run one charging pump (75 kw).
- d. Start one charging pump at minimum speed for seal injection.
- e. Adjust HCV-142 to establish either of the following:
 - o Labyrinth seal D/P to each RCP greater than 15 inches of water.

-OR-

- o RCP seal injection flow to each RCP greater than 6 gpm.
- f. IF large imbalance in seal injection flow exists, THEN consider local adjustment of V-300A and V-300B.

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STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
19	<p>Check If TDAFW Pump Can Be Stopped:</p> <ul style="list-style-type: none"> a. Both MDAFW pumps - RUNNING b. PULL STOP TDAFW pump steam supply valves <ul style="list-style-type: none"> • MOV-3504A • MOV-3505A 	<ul style="list-style-type: none"> a. Go to Step 20.
*20	<p>Monitor RCS Tavg - STABLE AT OR TRENDING TO 547°F</p>	<p><u>IF</u> temperature less than 547°F and decreasing, <u>THEN</u> perform the following:</p> <ul style="list-style-type: none"> a. Stop dumping steam. b. Ensure reheater steam supply valves are closed. c. <u>IF</u> cooldown continues, <u>THEN</u> control total feed flow greater than 200 gpm until narrow range level greater than 7% [25% adverse CNMT] in at least one S/G. d. <u>WHEN</u> S/G level greater than 7% [25% adverse CNMT] in one S/G, <u>THEN</u> limit feed flow to that required to maintain level in at least one S/G. e. <u>IF</u> cooldown continues, <u>THEN</u> close both MSIVs. <p><u>IF</u> temperature greater than 547°F and increasing, <u>THEN</u> dump steam to stabilize and slowly decrease temperature to 547°F.</p>

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STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
21	Check PRZR PORVs And Spray Valves:	
a.	PORVs - CLOSED	<p>a. <u>IF</u> PRZR pressure less than 2335 psig, <u>THEN</u> manually close PORVs.</p> <p><u>IF</u> any valve can <u>NOT</u> be closed, <u>THEN</u> manually close its block valve.</p> <ul style="list-style-type: none"> • MOV-516 for PCV-430 • MOV-515 for PCV-431C <p><u>IF</u> block valve can <u>NOT</u> be closed, <u>THEN</u> go to E-1, LOSS OF REACTOR OR SECONDARY COOLANT, Step 1.</p>
b.	Auxiliary spray valve (AOV-296) - CLOSED	<p>b. Manually close auxiliary spray valve. <u>IF</u> valve can <u>NOT</u> be closed, <u>THEN</u> perform the following:</p> <ol style="list-style-type: none"> 1) Decrease charging pump flow to minimum. 2) Ensure charging valve to loop B cold leg open (AOV-294).
c.	Check PRZR pressure - LESS THAN 2260 PSIG	<p>c. Continue with Step 22. <u>WHEN</u> pressure less than 2260 psig, <u>THEN</u> do Step 21d.</p>
d.	Normal PRZR spray valves - CLOSED	<p>d. Place controllers in MANUAL at 0% demand. <u>IF</u> valves can <u>NOT</u> be closed, <u>THEN</u> stop associated RCP(s).</p> <ul style="list-style-type: none"> • PCV-431A • PCV-431B

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STEP

ACTION/EXPECTED RESPONSE

RESPONSE NOT OBTAINED

22 Monitor RCP Trip Criteria:

- | | |
|-----------------------------------------------------------------------------------------|-------------------|
| a. RCP status - ANY RCP RUNNING | a. Go to Step 23. |
| b. SI pumps - AT LEAST TWO RUNNING | b. Go to Step 23. |
| c. RCS pressure minus maximum S/G pressure - LESS THAN 175 psig [400 psig adverse CNMT] | c. Go to Step 23. |
| d. Stop both RCPs | |

23 Verify CREATS Actuation:

- | | |
|------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------|
| a. At least one damper in each flowpath - CLOSED | a. Depress both CREATS actuation pushbuttons |
| <ul style="list-style-type: none"> • Normal Supply Air • Normal Return Air • Lavatory Exhaust Air | <ul style="list-style-type: none"> • CONTROL ROOM MANUAL ISOLATION A • CONTROL ROOM MANUAL ISOLATION B |
| b. CREATS fans - BOTH RUNNING | b. Start both CREATS fans |

24 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

IF any S/G pressure decreasing in an uncontrolled manner OR completely depressurized, THEN go to E-2, FAULTED STEAM GENERATOR ISOLATION, Step 1.

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STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
25	<p>Check If S/G Tubes Are Intact:</p> <ul style="list-style-type: none"> o Air ejector radiation monitors (R-15 or R-15A) - NORMAL o S/G blowdown radiation monitor (R-19) - NORMAL o Steamline radiation monitors (R-31 and R-32) - NORMAL 	Go to E-3, STEAM GENERATOR TUBE RUPTURE, Step 1.
26	<p>Check If RCS Is Intact:</p> <ul style="list-style-type: none"> a. CNMT area radiation monitors - NORMAL <ul style="list-style-type: none"> • R-2 • R-7 • R-29 • R-30 b. CNMT pressure - LESS THAN 0.5 PSIG c. CNMT sump B level - LESS THAN 8 INCHES d. CNMT sump A level <ul style="list-style-type: none"> o Level - STABLE o Annunciator C-19, CONTAINMENT SUMP A HI LEVEL - EXTINGUISHED 	Go to E-1, LOSS OF REACTOR OR SECONDARY COOLANT, Step 1.

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STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
27	Check If SI Should Be Terminated:	
a.	RCS pressure: <ul style="list-style-type: none"> Pressure - GREATER THAN 1625 PSIG Pressure - STABLE OR INCREASING 	a. Do <u>NOT</u> stop SI pumps. Go to Step 28.
b.	RCS subcooling based on core exit T/Cs - GREATER THAN 0°F USING FIG-1.0. FIGURE MIN SUBCOOLING	b. Do <u>NOT</u> stop SI pumps. Go to Step 28.
c.	Secondary heat sink: <ul style="list-style-type: none"> Total feed flow to S/Gs - GREATER THAN 200 GPM -OR- Narrow range level in at least one S/G - GREATER THAN 7% 	c. <u>IF</u> neither condition met, <u>THEN</u> do <u>NOT</u> stop SI pumps. Go to Step 28.
d.	PRZR level - GREATER THAN 10%	d. Do <u>NOT</u> stop SI pumps. Perform the following: <ol style="list-style-type: none"> <u>IF</u> normal PRZR spray available, <u>THEN</u> try to stabilize RCS pressure with PRZR spray. Go to Step 28.
e.	Go to ES-1.1, SI TERMINATION. Step 1.	

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STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
	<p><u>NOTE:</u></p> <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 The Critical Safety Function Red Path Summary is available in APPENDIX 1. 	
28	Initiate Monitoring of Critical Safety Function Status Trees	
*29	Monitor S/G Levels:	
	<ul style="list-style-type: none"> a. Narrow range level - GREATER THAN 7% b. Control feed flow to maintain narrow range level between 17% and 50% 	<ul style="list-style-type: none"> a. Maintain total feed flow greater than 200 gpm until narrow range level greater than 7% in at least one S/G. b. <u>IF</u> narrow range level in any S/G continues to increase in an uncontrolled manner, <u>THEN</u> go to E-3, STEAM GENERATOR TUBE RUPTURE, Step 1.
30	Check Secondary Radiation Levels - NORMAL	Go to E-3, STEAM GENERATOR TUBE RUPTURE, Step 1.
	<ul style="list-style-type: none"> o Steamline radiation monitor (R-31 and R-32) o Dispatch AO to locally check steamline radiation o Request RP sample S/Gs for activity 	

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STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
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CAUTION

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)

31 Reset SI

32 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.

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STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
33 Verify Adequate SW Flow:		
a.	At least three SW pumps - RUNNING	<p>a. Manually start SW pumps as power supply permits (257 kw each).</p> <p><u>IF</u> less than three pumps running, <u>THEN</u> ensure SW isolation.</p> <p><u>IF NO</u> SW pumps running, <u>THEN</u> perform the following:</p> <ol style="list-style-type: none"> 1) Pull stop any D/G that is <u>NOT</u> supplied by alternate cooling <u>AND</u> immediately depress associated VOLTAGE SHUTDOWN pushbutton. 2) Refer to ATT-2.4, ATTACHMENT NO SW PUMPS. <p><u>IF</u> only one SW pump running, <u>THEN</u> refer to AP-SW.2, LOSS OF SERVICE WATER.</p>
b.	Dispatch AO to establish normal shutdown alignment (Refer to ATT-17.0, ATTACHMENT SD-1)	

STEP

ACTION/EXPECTED RESPONSE

RESPONSE NOT OBTAINED

34 Establish IA to CNMT:

a. Verify non-safeguards busses energized from offsite power

- o Bus 13 normal feed - CLOSED

-OR-

- o Bus 15 normal feed - CLOSED

a. Perform the following:

- 1) Close non-safeguards bus tie breakers:

- Bus 13 to Bus 14 tie
- Bus 15 to Bus 16 tie

- 2) Verify adequate emergency D/G capacity to run air compressor(s) (75 kw each).

IF NOT, THEN 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) WHEN bus 15 is restored, THEN reset control room lighting.

b. Check SW Pumps - AT LEAST TWO PUMPS RUNNING

b. Perform the following:

- 1) Restore IA using service air compressor OR diesel air compressor (refer to ATT-11.2, ATTACHMENT DIESEL AIR COMPRESSOR)

- 2) Go to step 34d.

This Step continued on the next page.

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STEP

ACTION/EXPECTED RESPONSE

RESPONSE NOT OBTAINED

(Step 34 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 compressor(s) as power supply permits (75 kw each).

IF electric air compressor 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 35. WHEN IA restored, THEN do Steps 34f and g.

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STEP

ACTION/EXPECTED RESPONSE

RESPONSE NOT OBTAINED

35 Check Auxiliary Building Radiation - NORMAL

- Plant vent iodine (R-10B)
- Plant vent particulate (R-13)
- Plant vent gas (R-14)

- CCW liquid monitor (R-17)
- LTD line monitor (R-9)
- CHG pump room (R-4)

Evaluate cause of abnormal conditions.

IF the cause is a loss of RCS inventory outside CNMT, THEN go to ECA-1.2, LOCA OUTSIDE CONTAINMENT, Step 1.

36 Check PRT Conditions

- o PRT level (LI-442) - LESS THAN 84%
- o PRT temperature (TI-439) - LESS THAN 120°F
- o PRT pressure (PI-440A) - LESS THAN 3 PSIG

Evaluate the following flowpaths for cause of abnormal conditions:

- RCP seal return relief
- PRZR PORVs
- PRZR safeties
- Letdown line relief

IF excess letdown previously in service, THEN close AOV-310, excess letdown isolation valve from loop A cold.

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STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED

<p style="text-align: center;"><u>CAUTION</u></p> <p>RCS PRESSURE SHOULD BE MONITORED. IF RCS PRESSURE DECREASES IN AN UNCONTROLLED MANNER TO LESS THAN 250 PSIG, THEN THE RHR PUMPS MUST BE MANUALLY RESTARTED TO SUPPLY WATER TO THE RCS.</p> <p>*****</p>		
*37	<p>Monitor If RHR Pumps Should Be Stopped:</p> <p>a. Check RCS pressure:</p> <p>1) Pressure - GREATER THAN 250 PSIG</p> <p>2) Pressure - STABLE OR INCREASING</p> <p>b. Stop both RHR pumps and place in AUTO</p>	<p>1) Go to E-1, LOSS OF REACTOR OR SECONDARY COOLANT, Step 1.</p> <p>2) Go to Step 38.</p>
38	<p>Check Normal Power Available To Charging Pumps:</p> <p>o Bus 14 normal feed breaker - CLOSED</p> <p>o Bus 16 normal feed breaker - CLOSED</p>	<p>Verify adequate emergency D/G capacity to run charging pumps (75 kw each).</p> <p><u>IF NOT, THEN</u> evaluate if CNMT RECIRC fans can be stopped (Refer to ATT-4.0, ATTACHMENT CNMT RECIRC FANS).</p>

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STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
39	Check If Charging Flow Has Been Established:	
	a. Charging pumps - ANY RUNNING	a. Perform the following: <ol style="list-style-type: none"> 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 close seal injection needle valve(s) to affected RCP: <ul style="list-style-type: none"> • V-300A for RCP A • V-300B for RCP B 2) Ensure HCV-142 open, demand at 0%.
	b. Charging pump suction aligned to RWST: <ul style="list-style-type: none"> o LCV-112B - OPEN o LCV-112C - CLOSED 	b. Manually align valves. <p><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"> 1) Direct AO to locally open V-358, manual charging pump suction from RWST (Charging Pump Room). 2) Verify charging pump A <u>NOT</u> running and place in PULL STOP. 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).
	c. Start charging pumps as necessary and adjust charging flow to restore PRZR level	

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STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
40	Maintain PRZR Pressure Between 1800 PSIG And 2235 PSIG <ul style="list-style-type: none">o Reset PRZR heaterso Use normal PRZR spray	

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STEP

ACTION/EXPECTED RESPONSE

RESPONSE NOT OBTAINED

41 Check If Emergency D/Gs
Should Be Stopped:

a. Verify AC emergency busses
energized by offsite power:

- o Emergency D/G output breakers
- OPEN
- o AC emergency bus voltage -
GREATER THAN 420 VOLTS
- o AC emergency bus normal feed
breakers - CLOSED

a. Perform the following:

- 1) Verify non-safeguards bus tie
breakers closed:
 - Bus 13 to Bus 14 tie
 - Bus 15 to Bus 16 tie
- 2) Place the following pumps in
PULL STOP:
 - EH pumps
 - Turning gear oil pump
 - HP seal oil backup pump
- 3) Ensure condenser steam dump
mode control in MANUAL.
- 4) Restore power to MCCs:
 - A from Bus 13
 - B from Bus 15
 - E from Bus 15
 - F from Bus 15
- 5) Start HP seal oil backup pump.
- 6) Ensure D/G load within limits.
- 7) Refer to ATT-8.4, ATTACHMENT
SI/UV for other equipment
lost with loss of offsite
power.
- 8) Try to restore offsite power
(Refer to ER-ELEC.1,
RESTORATION OF OFFSITE POWER).

b. Stop any unloaded emergency D/G
and place in standby (Refer to
ATT-8.1, ATTACHMENT D/G STOP)

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STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
42	Return to Step 20	
		-END-

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E-0 APPENDIX LIST

TITLE

- 1) RED PATH SUMMARY
- 2) FIGURE MIN SUBCOOLING (FIG-1.0)
- 3) ATTACHMENT CI/CVI (ATT-3.0)
- 4) ATTACHMENT SD-1 (ATT-17.0)
- 5) ATTACHMENT CNMT RECIRC FANS (ATT-4.0)
- 6) ATTACHMENT D/G STOP (ATT-8.1)
- 7) ATTACHMENT SI/UV (ATT-8.4)
- 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)
- 11) FOLDOUT

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FOLDOUT PAGE

1. RCP TRIP CRITERIA

IF BOTH conditions listed below occur, THEN trip both RCPs:

- a. SI pumps - AT LEAST TWO RUNNING
- b. RCS pressure minus maximum S/G pressure - LESS THAN 175 PSIG [400 psig adverse CNMT]

2. 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.

3. AFW SUPPLY SWITCHOVER CRITERION

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 AFW PUMPS).

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GINNA STATION
CONTROLLED COPY NUMBER 23

Richard Linggi
RESPONSIBLE MANAGER

12-15-2005
EFFECTIVE DATE

CATEGORY 1.0

REVIEWED BY: _____

EOP: E-1	TITLE: LOSS OF REACTOR OR SECONDARY COOLANT	REV: 33 PAGE 2 of 23
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A. PURPOSE - This procedure provides actions to recover from a loss of reactor or secondary coolant.

B. ENTRY CONDITIONS/SYMPTOMS

1. ENTRY CONDITIONS - This procedure is entered from:

- a. E-0, REACTOR TRIP OR SAFETY INJECTION, and FR-H.1, RESPONSE TO LOSS OF SECONDARY HEAT SINK, when a PRZR PORV is stuck open and its block valve can not be closed.
- b. E-0, REACTOR TRIP OR SAFETY INJECTION, with any of the following symptoms: high containment radiation, high containment pressure, or high containment recirculation sump level.
- c. E-0, REACTOR TRIP OR SAFETY INJECTION, ECA-2.1, UNCONTROLLED DEPRESSURIZATION OF BOTH STEAM GENERATORS, and FR-H.1, RESPONSE TO LOSS OF SECONDARY HEAT SINK, when RCS pressure is less than the shutoff head pressure of the RHR pumps or is decreasing.
- d. ES-1.1, SI TERMINATION, and FR-I.2, RESPONSE TO LOW PRESSURIZER LEVEL, if SI has to be reinitiated.
- e. E-2, FAULTED STEAM GENERATOR ISOLATION, after identification and isolation of a faulted S/G.
- f. ECA-0.2, LOSS OF ALL AC POWER RECOVERY WITH SI REQUIRED, after normal injection mode conditions are established.
- g. ECA-1.2, LOCA OUTSIDE CONTAINMENT, when a LOCA outside containment is isolated.
- h. FR-C.1, RESPONSE TO INADEQUATE CORE COOLING, and FR-C.2, RESPONSE TO DEGRADED CORE COOLING, after core cooling has been reestablished.
- i. FR-H.1, RESPONSE TO LOSS OF SECONDARY HEAT SINK, after secondary heat sink has been reestablished and all PRZR PORVs are closed.

EOP: E-1	TITLE: LOSS OF REACTOR OR SECONDARY COOLANT	REV: 33 PAGE 3 of 23
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STEP

ACTION/EXPECTED RESPONSE

RESPONSE NOT OBTAINED

- NOTE:
- o FOLDOUT page should be open AND monitored periodically.
 - o Critical Safety Function Status Trees should be monitored. (Refer to Appendix 1 for Red Path Summary.)
 - o Conditions should be evaluated for Site Contingency Reporting (Refer to EPIP-1.0, GINNA STATION EVENT EVALUATION AND CLASSIFICATION).
 - o Adverse CNMT values should be used whenever CNMT pressure is greater than 4 psig or CNMT radiation is greater than 10^{+05} R/hr.

1 Monitor RCP Trip Criteria:

- | | |
|-----------------------------------------------------------------------------------------|------------------|
| a. RCP status - ANY RCP RUNNING | a. Go to Step 2. |
| b. SI pumps - AT LEAST TWO RUNNING | b. Go to Step 2. |
| c. RCS pressure minus maximum S/G pressure - LESS THAN 175 psig [400 psig adverse CNMT] | c. Go to Step 2. |
| d. Stop both RCPs | |

* 2 Check If RHR Should Be Throttled:

- | | |
|--------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------|
| a. Check RWST level - LESS THAN 70% | a. Continue with Step 3. <u>WHEN</u> RWST level less than 70%. <u>THEN</u> perform step 2b. |
| b. Direct an AO to perform ATT-14.7, ATTACHMENT ADJUST RHR FLOW to locally adjust HCV-624 and HCV-625. | b. Manually adjust RHR Hx outlet valves equally to reduce flow to less than 1500 gpm per operating pump |
| | <ul style="list-style-type: none"> • RHR Hx A, HCV-625 • RHR Hx B, HCV-624 |

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STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
3	<p>Check If S/G Secondary Side Is Intact:</p> <ul style="list-style-type: none"> o Pressure in both S/Gs - STABLE OR INCREASING o Pressure in both S/Gs - GREATER THAN 110 PSIG 	<p><u>IF</u> any S/G pressure decreasing in an uncontrolled manner <u>OR</u> completely depressurized, <u>THEN</u> verify faulted S/G isolated unless needed for RCS cooldown:</p> <ul style="list-style-type: none"> • Steamlines • Feedlines <p><u>IF NOT</u>, <u>THEN</u> go to E-2, FAULTED STEAM GENERATOR ISOLATION, Step 1.</p>
<p><u>NOTE</u>: TDAFW pump flow control AOVs may drift open on loss of IA.</p>		
* 4	<p>Monitor Intact S/G Levels:</p> <ul style="list-style-type: none"> a. Narrow range level - GREATER THAN 7% [25% adverse CNMT] b. Control feed flow to maintain narrow range level between 17% [25% adverse CNMT] and 50% 	<ul style="list-style-type: none"> a. Maintain total feed flow greater than 200 gpm until narrow range level greater than 7% [25% adverse CNMT] in at least one S/G. b. <u>IF</u> narrow range level in any S/G continues to increase in an uncontrolled manner, <u>THEN</u> go to E-3, STEAM GENERATOR TUBE RUPTURE, Step 1.
* 5	<p>Monitor If Secondary Radiation Levels Are Normal</p> <ul style="list-style-type: none"> o Steamline radiation monitor (R-31 and R-32) o Request RP sample S/Gs for activity 	<p><u>IF</u> steamline radiation monitors <u>NOT</u> available, <u>THEN</u> dispatch AO to locally check steamline radiation.</p> <p><u>IF</u> abnormal radiation levels detected in any S/G, <u>THEN</u> go to E-3, STEAM GENERATOR TUBE RUPTURE, Step 1.</p>

EOP: E-1	TITLE: LOSS OF REACTOR OR SECONDARY COOLANT	REV: 33 PAGE 5 of 23
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STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
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CAUTION

IF ANY PRZR PORV OPENS BECAUSE OF HIGH PRZR PRESSURE, IT SHOULD BE CLOSED AFTER PRESSURE DECREASES TO LESS THAN 2335 PSIG (REFER TO STEP 6B).

* 6 Monitor PRZR PORV Status:

a. Power to PORV block valves - AVAILABLE

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. PORVs - CLOSED

b. IF PRZR pressure less than 2335 psig, THEN manually close PORVs.

IF any PORV can NOT be closed, THEN manually close its block valve. IF block valve can NOT be closed, THEN dispatch A0 to locally check breaker.

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

c. Block valves - AT LEAST ONE OPEN

c. Open one block valve unless it was closed to isolate an open PORV.

EOP: E-1	TITLE: LOSS OF REACTOR OR SECONDARY COOLANT	REV: 33 PAGE 6 of 23
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STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
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CAUTION

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)

7. Reset SI

8. 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.

EOP: E-1	TITLE: LOSS OF REACTOR OR SECONDARY COOLANT	REV: 33 PAGE 7 of 23
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STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
9	Verify Adequate SW Flow:	
a.	Check at least two SW pumps - RUNNING	<p>a. Manually start SW pumps as power supply permits (257 kw each).</p> <p><u>IF</u> less than two SW pumps running, <u>THEN</u> perform the following:</p> <ol style="list-style-type: none"> 1) Ensure SW isolation. 2) <u>IF NO</u> SW pumps running, <u>THEN</u> perform the following: <ol style="list-style-type: none"> 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

10 Establish IA to CNMT:

a. Verify non-safeguards busses energized from offsite power

o Bus 13 normal feed - CLOSED

-OR-

o Bus 15 normal feed - CLOSED

a. Perform the following:

1) Close non-safeguards bus tie breakers:

- Bus 13 to Bus 14 tie
- Bus 15 to Bus 16 tie

2) Verify adequate emergency D/G capacity to run air compressors (75 kw each).

IF NOT, THEN 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) WHEN bus 15 restored, THEN reset control room lighting.

b. Check SW pumps - AT LEAST TWO PUMPS RUNNING

b. Perform the following:

1) Restore IA using service air compressor OR diesel air compressor (refer to ATT-11.2, ATTACHMENT DIESEL AIR COMPRESSOR)

2) Go to step 10d.

This Step continued on the next page.

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STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
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(Step 10 continued from previous page)

c. Verify turbine building SW isolation valves - OPEN

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

d. Verify adequate air compressors - 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 A0 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 11. WHEN IA restored, THEN do Steps 10f and g.

EOP: E-1	TITLE: LOSS OF REACTOR OR SECONDARY COOLANT	REV: 33 PAGE 10 of 23
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STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
11	Check Normal Power Available To Charging Pumps: <ul style="list-style-type: none">o Bus 14 normal feed breaker - CLOSEDo Bus 16 normal feed breaker - CLOSED	Verify adequate emergency D/G capacity to run charging pumps (75 kw each). <u>IF NOT, THEN</u> evaluate if CNMT RECIRC fans can be stopped (Refer to ATT-4.0, ATTACHMENT CNMT RECIRC FANS).

EOP: E-1	TITLE: LOSS OF REACTOR OR SECONDARY COOLANT	REV: 33 PAGE 11 of 23
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STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
12 Check If Charging Flow Has Been Established:		
a. Charging pumps - ANY RUNNING		<p>a. Perform the following:</p> <ol style="list-style-type: none"> 1) IF 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 close seal injection needle valve(s) to affected RCP: <ul style="list-style-type: none"> • V-300A for RCP A • V-300B for RCP B 2) Ensure HCV-142 open, demand at 0%.
b. Charging pump suction aligned to RWST:	<ul style="list-style-type: none"> o LCV-112B - OPEN o LCV-112C - CLOSED 	<p>b. Manually align valves as necessary.</p> <p><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"> 1) Direct AO to locally open V-358, manual charging pump suction from RWST (charging pump room). 2) Verify charging pump A <u>NOT</u> running and place in PULL STOP. 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).
c. Start charging pumps as necessary and adjust charging flow to restore PRZR level		

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STEP

ACTION/EXPECTED RESPONSE

RESPONSE NOT OBTAINED

13 Check If SI Should Be Terminated:

a. RCS pressure:

o Pressure - GREATER THAN 1625 psig [1825 psig adverse CNMT]

o Pressure - STABLE OR INCREASING

b. RCS subcooling based on core exit T/Cs - GREATER THAN 0°F USING FIG-1.0, FIGURE MIN SUBCOOLING

c. Secondary heat sink:

o Total feed flow to intact S/Gs - GREATER THAN 200 GPM

-OR-

o Narrow range level in at least one intact S/G - GREATER THAN 7% [25% adverse CNMT]

d. PRZR level - GREATER THAN 10% [30% adverse CNMT]

e. Go to ES-1.1, SI TERMINATION, Step 1.

a. Do NOT stop SI pumps. Go to Step 14.

b. Do NOT stop SI pumps. Go to Step 14.

c. IF neither condition satisfied, THEN do NOT stop SI pumps. Go to Step 14.

d. Do NOT stop SI pumps. Perform the following:

1) IF normal PRZR spray available, THEN try to stabilize RCS pressure with PRZR spray.

2) Go to Step 14.

EOP: E-1	TITLE: LOSS OF REACTOR OR SECONDARY COOLANT	REV: 33 PAGE 13 of 23
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STEP

ACTION/EXPECTED RESPONSE

RESPONSE NOT OBTAINED

***14** Monitor If CNMT Spray Should Be Stopped:

- a. CNMT spray pumps - ANY RUNNING a. Go to Step 15.
- b. Determine number of CNMT spray pumps required from table:

CNMT PRESSURE	CNMT RECIRC FANS RUNNING	CNMT SPRAY PUMPS REQUIRED
GREATER THAN 60 PSIG	-	2
BETWEEN 28 PSIG AND 60 PSIG AND INCREASING	- -	2
BETWEEN 28 PSIG AND 60 PSIG AND DECREASING	0 OR 1	2
	2, 3, OR 4	1
LESS THAN 28 PSIG	-	1

This Step continued on the next page.

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STEP

ACTION/EXPECTED RESPONSE

RESPONSE NOT OBTAINED

(Step 14 continued from previous page)

c. CNMT spray pumps running - EQUAL
TO NUMBER REQUIRED

c. Start or stop CNMT spray pumps
as necessary to meet table
requirements.

IF CNMT spray pump is to be
stopped, THEN perform the
following:

1) Place CNMT spray pump in PULL
STOP.

2) IF CNMT pressure less than
28 psig, THEN perform the
following:

a) Place NaOH Tank outlet
valve switches to OPEN

- AOV-836A
- AOV-836B

b) Reset CNMT spray

c) Close discharge valves for
idle CNMT spray pump.

o Pump A

- MOV-860A
- MOV-860B

-OR-

o Pump B

- MOV-860C
- MOV-860D

d. Verify CNMT pressure - STABLE OR
DECREASING

d. IF all available CNMT spray
pumps are running, THEN go to
Step 15.

IF NOT, THEN return to Step 14b.

EOP:

E-1

TITLE:

LOSS OF REACTOR OR SECONDARY COOLANT

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STEP

ACTION/EXPECTED RESPONSE

RESPONSE NOT OBTAINED

CAUTION

RCS PRESSURE SHOULD BE MONITORED. IF RCS PRESSURE DECREASES IN AN UNCONTROLLED MANNER TO LESS THAN 250 PSIG [465 PSIG ADVERSE CNMT], THEN THE RHR PUMPS MUST BE MANUALLY RESTARTED TO SUPPLY WATER TO THE RCS.

***15 Monitor If RHR Pumps Should Be Stopped:**

a. RHR pumps - ANY RUNNING IN INJECTION MODE

a. Go to Step 16.

b. Check RCS pressure:

1) Pressure - GREATER THAN 250 psig [465 psig adverse CNMT]

1) Go to Step 17.

2) RCS pressure - STABLE OR INCREASING

2) Go to Step 16.

c. Stop RHR pumps and place in AUTO

16 Check RCS And S/G Pressures

a. Check pressures in both S/Gs - STABLE OR INCREASING

a. Return to Step 1.

b. Check pressures in both S/Gs - GREATER THAN 110 PSIG

b. Monitor RCS pressure. IF RCS pressure does NOT increase after faulted S/G dryout, THEN go to Step 17.

c. Check RCS pressure - STABLE OR DECREASING

c. Return to Step 1.

EOP: E-1	TITLE: LOSS OF REACTOR OR SECONDARY COOLANT	REV: 33 PAGE 16 of 23
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STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
17	<p>Check If Emergency D/Gs Should Be Stopped:</p> <p>a. Verify AC emergency busses energized by offsite power:</p> <ul style="list-style-type: none"> o Emergency D/G output breakers - OPEN o AC emergency bus voltage - GREATER THAN 420 VOLTS o AC emergency bus normal feed breakers - CLOSED <p>b. Stop any unloaded emergency D/G and place in standby (Refer to ATT-8.1. ATTACHMENT D/G STOP)</p>	<p>a. Perform the following:</p> <ol style="list-style-type: none"> 1) Close non-safeguards bus tie breakers as necessary: <ul style="list-style-type: none"> • Bus 13 to Bus 14 tie • Bus 15 to Bus 16 tie 2) Place the following pumps in PULL STOP: <ul style="list-style-type: none"> • EH pumps • Turning gear oil pump • HP seal oil backup pump 3) Ensure condenser steam dump mode control in MANUAL. 4) Restore power to MCCs: <ul style="list-style-type: none"> • A from Bus 13 • B from Bus 15 • E from Bus 15 • F from Bus 15 5) Start HP seal oil backup pump. 6) Ensure D/G load within limits. 7) <u>WHEN</u> bus 15 restored, <u>THEN</u> reset control room lighting breaker. 8) Refer to ATT-8.4. ATTACHMENT SI/UV for other equipment lost with loss of offsite power. 9) Try to restore offsite power (Refer to ER-ELEC.1, RESTORATION OF OFFSITE POWER).

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STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
18	Verify CNMT Sump Recirculation Capability:	
a.	Check RHR and CCW systems:	a. <u>IF</u> at least one flowpath of cold leg recirculation capability can <u>NOT</u> be verified, <u>THEN</u> go to ECA-1.1, LOSS OF EMERGENCY COOLANT RECIRCULATION, Step 1.
	1) At least one recirculation flowpath, including required power supplies, from Sump B and back to RCS available per ATT-14.5, ATTACHMENT RHR SYSTEM	
	2) At least one CCW pump available.	
	3) At least one CCW Hx available.	
b.	Check SW pumps - AT LEAST 2 PUMPS AVAILABLE	b. Attempt to restore at least 2 SW pumps to operable. <u>IF</u> only 1 SW pump available, <u>THEN</u> refer to ATT-2.1, ATTACHMENT MIN SW for additional guidance. <u>IF</u> no SW pumps are available, <u>THEN</u> perform the following:
		1) Pull stop any D/G that is <u>NOT</u> supplied by alternate cooling, <u>AND</u> immediately depress associated VOLTAGE SHUTDOWN pushbutton.
		2) Refer to ATT-2.4, ATTACHMENT NO SW PUMPS.
		3) Go to ECA-1.1, LOSS OF EMERGENCY COOLANT RECIRCULATION.
c.	Dispatch AO to check AUX BLDG sub-basement for RHR system leakage (AUX BLDG sub-basement key may be required)	c. <u>IF</u> any RHR pump seal leakage indicated, <u>THEN</u> leakage should be evaluated and isolated if necessary.

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STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
19	Evaluate Plant Status:	
a.	Check auxiliary building radiation - NORMAL	a. Notify RP and refer to appropriate AR-RMS procedure.
	<ul style="list-style-type: none"> • Plant vent iodine (R-10B) • Plant vent particulate (R-13) • Plant vent gas (R-14) • CCW liquid monitor (R-17) • LTDN line monitor (R-9) • CHG pump room (R-4) 	<p><u>IF</u> the cause is a loss of RCS inventory outside CNMT, <u>THEN</u> go to ECA-1.2, LOCA OUTSIDE CONTAINMENT, Step 1.</p>
b.	Direct RP to obtain following samples:	
	<ul style="list-style-type: none"> • RCS boron • RCS activity • CNMT hydrogen • CNMT sump boron • CNMT Sump pH 	
c.	Verify adequate Rx head cooling:	
	<ol style="list-style-type: none"> 1) Verify at least one control rod shroud fan - RUNNING 2) Verify one Rx compartment cooling fan - RUNNING 	<ol style="list-style-type: none"> 1) Manually start one fan as power supply permits (45 kw) 2) Perform the following: <ul style="list-style-type: none"> o Dispatch AO to reset UV relays at MCC C and MCC D. o Manually start one fan as power supply permits (23 kw)

EOP: E-1	TITLE: LOSS OF REACTOR OR SECONDARY COOLANT	REV: 33 PAGE 19 of 23
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STEP

ACTION/EXPECTED RESPONSE

RESPONSE NOT OBTAINED

20 Check If RCS Cooldown And
Depressurization Is Required:

- a. RCS pressure - GREATER THAN
250 psig [465 psig adverse CNMT]
- b. Go to ES-1.2, POST LOCA COOLDOWN
AND DEPRESSURIZATION, Step 1

- a. IF RHR pump flow greater than
475 gpm. THEN go to Step 21.

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STEP

ACTION/EXPECTED RESPONSE

RESPONSE NOT OBTAINED

NOTE: IF D/Gs supplying emergency AC busses, THEN non-essential loads may be shed as necessary to allow start of additional SW pumps.

21 Establish Adequate SW Flow:

a. Verify at least two SW pumps -
RUNNING

a. Start additional SW pumps as power supply permits (257 kw each). IF only 1 SW pump operable, THEN perform the following:

1) Ensure ATT-2.1, ATTACHMENT MIN SW is in progress.

2) Go to Step 22.

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

1) Pull stop any D/G that is NOT supplied by alternate cooling, AND immediately depress associated VOLTAGE SHUTDOWN pushbutton.

2) Refer to ATT-2.4, ATTACHMENT NO SW PUMPS.

3) Go to ECA-1.1, LOSS OF EMERGENCY COOLANT RECIRCULATION.

b. Verify AUX BLDG SW isolation valves - OPEN

- MOV-4615 and MOV-4734
- MOV-4616 and MOV-4735

b. Manually align valves.

This Step continued on the next page.

STEP

ACTION/EXPECTED RESPONSE

RESPONSE NOT OBTAINED

(Step 21 continued from previous page)

- c. Determine required SW flow to CCW HXs per table:

SW DISCHARGE ALIGNMENT	CCW HXs AVAILABLE	REQUIRED SW FLOW
Normal	2	Total of 5000 - 6000 gpm equally divided to both HXs
Normal	1	5000 - 6000 gpm to in-service HX
Alternate	2	30 - 33 inches d/p across each HX
Alternate	1	95 - 100 inches d/p across in-service HX

- d. Direct AO to adjust SW flow to required value

- o IF on normal SW discharge:

- V-4619, CCW HX A
- V-4620, CCW HX B

-OR-

- o IF on alternate SW discharge:

- V-4619C, CCW HX A
- V-4620B, CCW HX B

- d. IF the required SW flow can NOT be obtained, THEN perform the following:

- 1) Isolate SW to screenhouse and air conditioning headers.

- MOV-4609/MOV-4780 - AT LEAST ONE CLOSED
- MOV-4663/MOV-4733 - AT LEAST ONE CLOSED

- 2) Direct AO to locally adjust SW flow to required value.

- 3) Direct AO to locally isolate SW return from SFP Hxs:

- SFP Hx A (V-4622) (for alternate SW discharge use V-4622A)
- SFP Hx B (V-8689)

- 4) Verify SW portions of ATT-17.0, ATTACHMENT SD-1 are complete.

EOP: E-1	TITLE: LOSS OF REACTOR OR SECONDARY COOLANT	REV: 33 PAGE 22 of 23
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STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
22	Establish CCW flow to RHR Hxs:	
a.	Check both CCW pumps - RUNNING	a. Perform the following: <ul style="list-style-type: none"> 1) Start CCW pumps as power supply permits (122 kw each) 2) <u>IF</u> both CCW pumps are running. <u>THEN</u> go to step 22b. 3) <u>IF</u> only one CCW pump is running. <u>THEN</u> perform the following: <ul style="list-style-type: none"> a) Direct AO to isolate CCW to boric acid evaporator <ul style="list-style-type: none"> o Close V-760A b) Manually open CCW MOV to only one operable RHR Loop <ul style="list-style-type: none"> o Open MOV-738A
		-OR-
		o Open MOV-738B
		c) Go to step 23.
b.	Manually open CCW valves to RHR Hxs <ul style="list-style-type: none"> • MOV-738A • MOV-738B 	b. Dispatch AO to locally open valves.

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STEP

ACTION/EXPECTED RESPONSE

RESPONSE NOT OBTAINED

23 Check If Transfer To Cold Leg
Recirculation Is Required:

a. RWST level - LESS THAN 28%

a. Return to Step 18.

b. Go to ES-1.3. TRANSFER TO COLD
LEG RECIRCULATION, Step 1

-END-

EOP: E-1	TITLE: LOSS OF REACTOR OR SECONDARY COOLANT	REV: 33 PAGE 1 of 1
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E-1 APPENDIX LIST

TITLE

- 1) RED PATH SUMMARY
- 2) FIGURE MIN SUBCOOLING (FIG-1.0)
- 3) ATTACHMENT CNMT RECIRC FANS (ATT-4.0)
- 4) ATTACHMENT D/G STOP (ATT-8.1)
- 5) ATTACHMENT SD-1 (ATT-17.0)
- 6) ATTACHMENT SI/UV (ATT-8.4)
- 7) ATTACHMENT MIN SW (ATT-2.1)
- 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)
- 11) ATTACHMENT RHR SYSTEM (ATT-14.5)
- 12) ATTACHMENT ADJUST RHR FLOW (ATT-14.7)
- 13) FOLDOUT

EOP: E-1	TITLE: LOSS OF REACTOR OR SECONDARY COOLANT	REV: 33 PAGE 1 of 2
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FOLDOUT PAGE

1. RCP TRIP CRITERIA

IF BOTH conditions listed below occur, THEN trip both RCPs:

- a. SI pumps - AT LEAST TWO RUNNING
- b. RCS pressure minus maximum S/G pressure - LESS THAN 175 PSIG [400 psig adverse CNMT]

2. 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.

3. SI REINITIATION CRITERIA

IF EITHER condition listed below occurs, THEN manually start SI pumps as necessary:

- o RCS subcooling based on core exit T/Cs - LESS THAN 0° F USING FIGURE MIN SUBCOOLING
- OR -
- o PRZR level - CHARGING CAN NOT CONTROL LEVEL GREATER THAN 10% [30% adverse CNM]

4. SI TERMINATION CRITERIA

IF ALL conditions listed below occur, THEN go to ES-1.1, SI TERMINATION, Step 1:

- a. RCS subcooling based on core exit T/Cs - GREATER THAN 0° F USING FIGURE MIN SUBCOOLING
- b. Total feed flow to intact S/Gs - GREATER THAN 200 GPM
- OR -
Narrow range level in at least one intact S/G - GREATER THAN 7% [25% adverse CNMT]
- c. RCS pressure:
 - o GREATER THAN 1625 PSIG [1825 psig adverse CNMT]
 - o STABLE OR INCREASING
- d. PRZR level - GREATER THAN 10% [30% adverse CNMT]

5. SECONDARY INTEGRITY CRITERIA

IF any S/G pressure is decreasing in an uncontrolled manner or is completely depressurized AND has not been isolated, THEN go to E-2, FAULTED S/G ISOLATION, Step 1.

6. E-3 TRANSITION CRITERIA

IF any S/G level increased in an uncontrolled manner or any S/G has abnormal radiation, THEN manually start SI pumps as necessary AND go to E-3, STEAM GENERATOR TUBE RUPTURE, Step 1.

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7. COLD LEG RECIRCULATION SWITCHOVER CRITERION

IF RWST level decreases to less than 28%, THEN go to ES-1.3, TRANSFER TO COLD LEG RECIRCULATION, Step 1.

8. AFW SUPPLY SWITCHOVER CRITERION

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 AFW PUMPS).

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GINNA STATION

CONTROLLED COPY NUMBER 23

Resili
RESPONSIBLE MANAGER

12-15-2005
EFFECTIVE DATE

CATEGORY 1.0

REVIEWED BY: _____

EOP: ECA-0.0	TITLE: LOSS OF ALL AC POWER	REV: 30 PAGE 2 of 25
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A. PURPOSE - This procedure provides actions to respond to a loss of all AC power.

B. ENTRY CONDITIONS/SYMPTOMS

1. ENTRY CONDITIONS - This procedure may be entered directly or from:
 - a. E-0, REACTOR TRIP OR SAFETY INJECTION, on the indication that both Bus 14 and Bus 16 are deenergized.
2. SYMPTOMS - Which indicate a loss of all AC power are:
 - a. Neither 480 volt AC emergency bus 14 nor 16 available.

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STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED

CAUTION		
DUE TO POTENTIALLY EXTREME ENVIRONMENTAL CONDITIONS, CAUTION SHOULD BE USED WHEN ENTERING THE INTERMEDIATE BLDG FOR LOCAL ACTIONS.		

NOTE: o CSFSTs should be monitored for information only. FR procedures should not be implemented.		
o Local actions may require portable lighting and communication devices.		
1	Verify Reactor Trip:	Manually trip reactor.
	o At least one train of reactor trip breakers - OPEN	IF reactor trip breakers <u>NOT</u> open, <u>THEN</u> perform the following:
	o Neutron flux - DECREASING	a. Open Bus 13 and Bus 15 normal feed breakers.
	o MRPI indicates - ALL CONTROL AND SHUTDOWN RODS ON BOTTOM	b. Verify rod drive MG sets tripped.
		c. Close Bus 13 and Bus 15 normal feed breakers.
		d. Reset lighting breakers.
2	Verify Turbine Stop Valves - CLOSED	Manually trip turbine.
		IF turbine trip can <u>NOT</u> be verified, <u>THEN</u> close both MSIVs.

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STEP

ACTION/EXPECTED RESPONSE

RESPONSE NOT OBTAINED

NOTE: FOLDOUT page should be open and monitored periodically.

- * 3 Adjust S/G ARVs To Control
Tavg At Approximately 547° F

4 Stop Both RCPs

NOTE: Adverse CNMT values should be used whenever CNMT pressure is greater than 4 psig or CNMT radiation is greater than 10^{+05} R/hr.

5 Check If RCS Is Isolated:

a. PRZR PORVs - CLOSED

a. IF PRZR pressure less than 2335 psig, THEN manually close PORVs.

b. Verify RCS isolation valves closed:

1) Place letdown orifice valve switches to CLOSE

- AOV-200A
- AOV-200B
- AOV-202

2) Place letdown isolation valve switches to CLOSE

- AOV-371
- AOV-427

3) Place excess letdown isolation valve switch to CLOSE (AOV-310)

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STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
6	Verify Adequate TDAFW Flow:	
a.	Verify TDAFW pump - RUNNING	<p>a. Perform the following:</p> <ol style="list-style-type: none"> 1) Verify governor valve, V-3652, latched. <u>IF</u> governor valve tripped, <u>THEN</u> dispatch AO to locally reset valve. 2) Manually or locally open at least one TDAFW pump steam supply valve. <ul style="list-style-type: none"> • MOV-3505A • MOV-3504A
b.	Verify TDAFW pump flow - GREATER THAN 200 GPM	<p>b. Verify proper TDAFW valve alignment:</p> <ol style="list-style-type: none"> 1) TDAFW pump discharge valve (MOV-3996) open. 2) Intact S/G TDAFW pump flow control valves open. <u>IF NOT</u>, <u>THEN</u> manually align valves as necessary.

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STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
<p><u>NOTE:</u> o Conditions should be evaluated for Site Contingency Reporting (Refer to EPIP-1.0, GINNA STATION EVENT EVALUATION AND CLASSIFICATION).</p> <p> o AO should increase surveillance of TDAFW pump until AC power is restored.</p>		
7	Try To Restore Power to Any Train Of AC Emergency Busses:	
	<p>a. Verify emergency D/G aligned for unit operation</p> <p> o Mode switch in UNIT</p> <p> o Voltage control selector in AUTO</p> <p>b. Check emergency D/Gs - BOTH D/G RUNNING</p>	<p>a. Manually align switches on rear of MCB.</p> <p>b. <u>WHEN</u> non-running D/G available for starting, <u>THEN</u> perform the following:</p> <p> 1) Depress D/G FIELD RESET pushbutton</p> <p> 2) Depress D/G RESET pushbutton</p> <p> 3) Start D/G</p> <p> 4) <u>IF</u> D/G starts, <u>THEN</u> go to Step 7c.</p> <p> 5) <u>IF</u> D/G will <u>NOT</u> start, <u>THEN</u> dispatch AO to locally start emergency D/Gs.</p> <p> <u>IF</u> no emergency D/G available, <u>THEN</u> perform the following:</p> <p> a) Direct AO to attempt to restore emergency D/G (Refer to ER-D/G.1, RESTORING D/G)</p> <p> b) Go to Step 8.</p>
This Step continued on the next page.		

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STEP

ACTION/EXPECTED RESPONSE

RESPONSE NOT OBTAINED

(Step 7 continued from previous page)

c. Check D/G voltage and frequency

1) Voltage - APPROXIMATELY 480v

1) Adjust voltage control to restore voltage to approximately 480v

2) Frequency - APPROXIMATELY 60 Hz

2) Adjust governor to restore frequency to approximately 60 Hz

d. Verify adequate D/G cooling

- o Bus 17 and/or Bus 18 - ENERGIZED
- o One SW Pump running for each running D/G

d. Manually energize busses and start SW Pumps.

IF adequate cooling can NOT be supplied to a running D/G, THEN perform the following:

- 1) Pull stop the D/G AND immediately depress associated VOLTAGE SHUTDOWN pushbutton.
- 2) Align alternate cooling (Refer to ER-D/G.2. ALTERNATE COOLING FOR EMERGENCY D/Gs).

e. Verify at least one train of AC emergency busses - ENERGIZED

- Bus 14 and Bus 18
- Bus 16 and Bus 17

e. Manually energize AC emergency busses.

IF Bus 14 AND Bus 16 are deenergized, THEN go to Step 8.

f. Return to procedure and step in effect

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STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
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CAUTION

- o WHEN POWER IS RESTORED TO BUS 14 AND/OR BUS 16, RECOVERY ACTIONS SHOULD CONTINUE STARTING WITH STEP 27.
- o IF AN SI SIGNAL EXISTS OR IF AN SI SIGNAL IS ACTUATED DURING THIS PROCEDURE, IT SHOULD BE RESET TO PERMIT MANUAL LOADING OF EQUIPMENT ON AN AC EMERGENCY BUS.

8 Establish The Following Equipment Alignment:

a. Pull stop AC emergency bus loads

- RHR pumps
- CNMT RECIRC fans
- CNMT spray pumps
- SI pumps
- CCW pumps
- Charging pumps
- MDAFW pumps

b. Evaluate non-vital loads (Refer to ATT-8.3, ATTACHMENT NONVITAL)

c. Place non-running SW pump switches to STOP, then return to AUTO

d. Place switch for MOV-313, RCP seal return isolation valve, to CLOSE

e. Momentarily place to CLOSE RCP CCW return valves

- MOV-759A
- MOV-759B

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STEP

ACTION/EXPECTED RESPONSE

RESPONSE NOT OBTAINED

NOTE: Temporary power may be provided to Bus 16 by performing procedure ER-ELEC.4 and to Bus 13 by performing procedure ER-ELEC.5 at the Shift Supervisor's discretion.

9 Try To Restore Offsite Power:

- a. Consult RG&E Energy Control Center to determine if either normal offsite power supply - AVAILABLE

- o 12B transformer via breaker 76702

-OR-

- o 12A transformer via breaker 75112

- b. Reset SI, if necessary

- c. Restore offsite power (Refer to ER-ELEC.1, RESTORATION OF OFFSITE POWER)

- a. IF normal offsite power supply NOT readily available, THEN perform the following:

- 1) Restore IA system using the Diesel Air Compressor (Refer to ATT-11.2, ATTACHMENT DIESEL AIR COMPRESSOR).

- 2) Evaluate Main transformer backfeed for long term concerns (Refer to ER-ELEC.3, EMERGENCY OFFSITE BACKFEED VIA MAIN & UNIT TRANSFORMER).

- 3) Go to Step 10.

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STEP

ACTION/EXPECTED RESPONSE

RESPONSE NOT OBTAINED

10 Initiate Local Actions To Isolate RCS And To Provide Cooling To Vital Areas And Equipment

- a. Open all Reactor Protection and Control System rack doors in the Control Room.
- b. Direct Security personnel to open the following vital area doors to increase cooling:
 - Control Room Door S51
 - Intermediate Bldg Door S37 (AFW pump area)
 - Intermediate Bldg Door F36 (Automatic fire door, Rod Drive MG set area)
 - Intermediate Bldg Door S44 (Steam Header area)
- c. Dispatch AO To Locally Isolate RCP Seals and BASTs (Refer to ATT-21.0, ATTACHMENT RCS ISOLATION)
- d. Dispatch AO to align backup cooling water to TDAFW Pump (Refer to ATT-5.2, ATTACHMENT FIRE WATER COOLING TO TDAFW PUMP)

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STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
11	Isolate Makeup And Reject From Hotwell To CST By Placing Hotwell Level Controller (LC-107) In Manual AT 50%	<p><u>IF</u> valves can <u>NOT</u> be manually closed, <u>THEN</u> dispatch AO to locally isolate makeup and reject lines.</p> <ul style="list-style-type: none"> • Makeup isolation V-4058 • Reject isolation V-4055
12	Isolate S/G:	<u>IF</u> valves can <u>NOT</u> be manually closed, <u>THEN</u> dispatch AO to locally isolate the affected flow path.
	a. Manually close both MSIVs	
	b. Depress MANUAL pushbuttons <u>AND</u> manually close MFW flow control valves	
	<ul style="list-style-type: none"> • MFW regulating valves • MFW bypass valves 	
	c. Place MCB master switch for S/G blowdown and sample valves to CLOSE	

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STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
<p>*****</p> <p style="text-align: center;"><u>CAUTION</u></p> <p>A FAULTED OR RUPTURED S/G THAT IS ISOLATED SHOULD REMAIN ISOLATED. STEAM SUPPLY TO THE TDAFW PUMP MUST BE MAINTAINED FROM AT LEAST ONE S/G.</p> <p>*****</p>		
13	<p>Check If S/G Secondary Side Is Intact:</p> <ul style="list-style-type: none"> o Pressure in both S/Gs - STABLE OR INCREASING o Pressure in both S/Gs - GREATER THAN 110 PSIG 	<p>Perform the following:</p> <ul style="list-style-type: none"> a. <u>IF</u> any S/G pressure decreasing in an uncontrolled manner <u>OR</u> completely depressurized, <u>THEN</u> isolate faulted S/G unless needed for RCS cooldown: <ul style="list-style-type: none"> 1) Close faulted S/G MDAFW pump discharge valve. <ul style="list-style-type: none"> • S/G A, MOV-4007 • S/G B, MOV-4008 2) Close faulted S/G TDAFW flow control valve. <ul style="list-style-type: none"> • S/G A, AOV-4297 • S/G B, AOV-4298 3) Verify faulted S/G ARV controller in MANUAL with output at 0%. <ul style="list-style-type: none"> • S/G A, AOV-3411 • S/G B, AOV-3410 4) Pull stop faulted S/G TDAFW pump steam supply valve. <ul style="list-style-type: none"> • S/G A, MOV-3505A • S/G B, MOV-3504A <p><u>IF</u> valve(s) can <u>NOT</u> be closed manually, <u>THEN</u> dispatch AO to locally close valve(s) to isolate flow.</p> b. Dispatch AO to complete faulted S/G isolation (Refer to ATT-10.0, ATTACHMENT FAULTED S/G).

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STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
14	<p>Check If S/G Tubes Are Intact:</p> <ul style="list-style-type: none"> Dispatch RP tech or A0 to locally check steamline radiation - NORMAL 	<p>Try to identify ruptured S/G. Continue with Step 15. <u>WHEN</u> ruptured S/G identified, <u>THEN</u> perform the following:</p> <p>a. Isolate ruptured S/G unless needed for RCS cooldown:</p> <ol style="list-style-type: none"> Close ruptured S/G MDAFW pump discharge valve. <ul style="list-style-type: none"> S/G A, MOV-4007 S/G B, MOV-4008 Pull stop ruptured S/G MDAFW pump. Close ruptured S/G TDAFW flow control valve. <ul style="list-style-type: none"> S/G A, AOV-4297 S/G B, AOV-4298 Adjust ruptured S/G ARV controller to 1050 psig in AUTO. <u>WHEN</u> S/G pressure less than 1050 psig, <u>THEN</u> ensure ruptured S/G ARV closed. <ul style="list-style-type: none"> S/G A, AOV-3411 S/G B, AOV-3410 Pull stop ruptured S/G TDAFW pump steam supply valve. <ul style="list-style-type: none"> S/G A, MOV-3505A S/G B, MOV-3504A <p><u>IF</u> valve(s) can <u>NOT</u> be closed manually, <u>THEN</u> dispatch A0 to locally close valve(s) to isolate flow.</p> <p>b. Dispatch A0 to complete ruptured S/G isolation (Refer to ATT-16.0, ATTACHMENT RUPTURED S/G).</p>

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STEP

ACTION/EXPECTED RESPONSE

RESPONSE NOT OBTAINED

CAUTION

IF CST LEVEL DECREASES TO LESS THAN 5 FEET, THEN ALTERNATE WATER SOURCES FOR AFW PUMPS, USING FIRE OR CITY WATER, WILL BE NECESSARY (REFER TO ER-AFW.1, ALTERNATE WATER SUPPLY TO AFW PUMPS).

NOTE: TDAFW pump AOV flow control AOVs may drift open on loss of IA.

*15 Monitor Intact S/G Levels:

a. Narrow range level - GREATER THAN 7% [25% adverse CNMT]

b. Control AFW flow by throttling TDAFW flow control valves

- S/G A, AOV-4297
- S/G B, AOV-4298

c. Control AFW flow to maintain narrow range level between 17% [25% adverse CNMT] and 50%

a. Maintain maximum AFW flow until narrow range level greater than 7% [25% adverse CNMT] in at least one S/G.

b. Control AFW flow by throttling TDAFP discharge MOV-3996.

IF MOV-3996 can NOT be controlled, THEN dispatch AO to locally control AFW flow by throttling TDAFW flow control valves.

- S/G A, AOV-4297
- S/G B, AOV-4298

IF valves can NOT be throttled, THEN control AFW flow by starting and stopping TDAFW pump.

c. IF narrow range level in any intact S/G continues to increase in an uncontrolled manner, THEN return to Step 14.

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STEP

ACTION/EXPECTED RESPONSE

RESPONSE NOT OBTAINED

NOTE: IF the loss of power is expected to continue beyond 4 hours, THEN degassing of main generator should commence as soon as personnel become available (Refer to ATT-8.2, ATTACHMENT GEN DEGAS).

16 Check DC Bus Loads:

- a. Place control switches for MFW pump AC oil pumps to OFF (allows timer to stop DC oil pumps)
- b. Stop all large non-essential DC loads
 - 1) Evaluate DC loads (Refer to ATT-8.0, ATTACHMENT DC LOADS).
 - 2) WHEN turbine is stopped, THEN perform the following:
 - a) Locally close Turbine backup seal oil reg outlet valve V-5475J.
 - b) Stop Turbine DC lube oil pump (within 1 hour).
- c. Check DC bus voltage - GREATER THAN 105 VOLTS DC
 - Bus A
 - Bus B
- c. IF either DC bus less than 105 volts DC, THEN refer to ER-ELEC.2, RECOVERY FROM LOSS OF A or B DC BUS.
- d. Direct electricians to locally monitor DC power supply

EOP: ECA-0.0	TITLE: LOSS OF ALL AC POWER	REV: 30 PAGE 16 of 25
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STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
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17 Verify Source Range
Detector(s) - ENERGIZED

- N-31
- N-32

Dispatch personnel with relay rack key to turn off 125 VDC power switches in REACTOR PROTECTION racks RLTR-1 and RLTR-2 to deenergize source range block relays.

CAUTION

WHEN POWER IS RESTORED TO BUS 14 AND/OR BUS 16, RECOVERY ACTIONS SHOULD CONTINUE STARTING WITH STEP 27.

18 Check CST Level - GREATER
THAN 5 FEET

Initiate makeup to CSTs using fire or city water as a source. (Refer to ER-AFW.1, ALTERNATE WATER SUPPLY TO AFW PUMPS).

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STEP

ACTION/EXPECTED RESPONSE

RESPONSE NOT OBTAINED

CAUTION

- o S/G PRESSURES SHOULD BE MAINTAINED GREATER THAN 200 PSIG TO PREVENT INJECTION OF SI ACCUM NITROGEN INTO THE RCS.
- o S/G NARROW RANGE LEVEL SHOULD BE MAINTAINED GREATER THAN 7% [25% ADVERSE CNMT] IN AT LEAST ONE INTACT S/G. IF LEVEL CANNOT BE MAINTAINED, S/G DEPRESSURIZATION SHOULD BE STOPPED UNTIL LEVEL IS RESTORED IN AT LEAST ONE S/G.

- NOTE:
- o The S/Gs should be depressurized at maximum rate to minimize RCS inventory loss.
 - o PRZR level may be lost and reactor vessel upper head voiding may occur due to depressurization of S/Gs. Depressurization should not be stopped to prevent these occurrences.
 - o S/G ARV nitrogen pressure should be monitored and nitrogen supply bottles changed as necessary.

19 Initiate Depressurization Of Intact S/Gs To 300 PSIG:

- | | |
|---------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p>a. Check S/G narrow range levels - GREATER THAN 17% [25% adverse CNMT] IN AT LEAST ONE S/G</p> | <p>a. Perform the following:</p> <ol style="list-style-type: none"> 1) Maintain maximum AFW flow until narrow range level greater than 17% [25% adverse CNMT] in at least one S/G. 2) Continue with Step 20. <u>WHEN</u> narrow range level greater than 17% [25% adverse CNMT] in at least one S/G, <u>THEN</u> do Steps 19b and 20. |
| <p>b. Manually dump steam from intact S/Gs at maximum rate using S/G ARVs</p> | <p>b. Locally dump steam from intact S/Gs at maximum rate using S/G ARV.</p> |

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STEP

ACTION/EXPECTED RESPONSE

RESPONSE NOT OBTAINED

- NOTE:
- o Adverse CNMT conditions or loss of forced air cooling may result in failure of NIS detectors.
 - o IF Instrument Bus D deenergized, THEN NIS SUR meters will NOT be available.

***20 Monitor Reactor For Subcriticality:**

- a. Verify Subcriticality using the following indications:

- 1) Check source range(s), N-31
AND N-32
 - o Indicator - ON SCALE
 - o Power - STABLE OR DECREASING
- 2) Check intermediate range, N-35
 - o Indicator - ON SCALE
 - o Power - STABLE OR DECREASING
- 3) Check power range, N-41 and N-43
 - o Indicators - LESS THAN 5%
 - o Power - STABLE OR DECREASING

- a. IF unable to verify subcriticality using NIS, THEN perform the following:

- o Control S/G ARVs to stop S/G depressurization and allow RCS to heat up.
- o Direct RP to sample RCS and PRZR for boron concentration.
- o Request plant staff assistance in evaluating core reactivity status

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STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
<p><u>NOTE:</u> Depressurization of S/Gs will result in a SI actuation. SI should be reset to permit manual loading of equipment on emergency busses.</p>		
<p>21 Check SI Signal Status:</p>		
a. Any SI annunciator - LIT		a. Go to Step 25. <u>WHEN</u> SI actuated, <u>THEN</u> do Steps 21b, 22, 23 and 24.
b. Reset SI		
<p>22 Verify CI And CVI:</p>		
a. CI and CVI annunciators - LIT		a. Depress manual CI pushbutton.
<ul style="list-style-type: none"> Annunciator A-26, CNMT ISOLATION Annunciator A-25, CONTAINMENT VENTILATION ISOLATION 		
b. Verify CI and CVI valve status lights - BRIGHT		b. Manually close affected CI and CVI valves.
		<u>IF</u> valves can <u>NOT</u> be verified closed by MCB indication, <u>THEN</u> close alternate isolation valves (Refer to ATT-3.0, ATTACHMENT CI/CVI).
c. CNMT RECIRC fan coolers SW outlet valve status lights - BRIGHT		c. Dispatch AO to locally fail open valves.
<ul style="list-style-type: none"> AOV-4561 AOV-4562 		
d. Verify RHR Pump Suction from CNMT Sump B valves - CLOSED		d. <u>IF</u> sump recirculation <u>NOT</u> in progress, <u>THEN</u> manually close valves.
<ul style="list-style-type: none"> MOV-850A MOV-850B 		<u>IF</u> valves can <u>NOT</u> be verified closed by MCB indication, <u>THEN</u> dispatch AO to locally close valves.

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STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
23	Check If S/G Depressurization Should Be Stopped:	
a.	Check RCS cold leg temperatures - GREATER THAN 315° F	a. Perform the following: 1) Control S/G ARVs to stop S/G depressurization. 2) Go to Step 24.
b.	Check S/G pressures - LESS THAN 300 PSIG	b. Continue with Step 24. <u>WHEN</u> S/G pressure decreases to less than 300 psig, <u>THEN</u> do Step 23c and d.
c.	Check IA supply: o Pressure - GREATER THAN 60 PSIG o Pressure - STABLE OR INCREASING	c. Control S/G ARVs in manual to maintain S/G pressures at 300 psig <u>IF</u> manual control is <u>NOT</u> available, <u>THEN</u> locally control S/G ARVs to maintain S/G pressures at 300 psig.
d.	Control S/G ARVs to maintain S/G pressures at 300 psig IN AUTO	d. Control S/G ARVs in manual to maintain S/G pressures at 300 psig <u>IF</u> manual control is <u>NOT</u> available, <u>THEN</u> locally control S/G ARVs to maintain S/G pressures at 300 psig.

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STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
24	<p>Check CNMT Pressure - HAS REMAINED LESS THAN 28 PSIG</p> <ul style="list-style-type: none"> o Annunciator A-27, CNMT SPRAY - EXTINGUISHED o CNMT pressure indicators - LESS THAN 28 PSIG 	<p><u>IF</u> CNMT pressure is less than 28 psi, <u>THEN</u> perform the following:</p> <ul style="list-style-type: none"> a. Reset CNMT spray. b. Place CNMT spray pump discharge valve switches to CLOSE to deenergize open contactor. <p><u>IF NOT</u>, <u>THEN</u> continue with step 25. <u>WHEN</u> CNMT pressure less than 28 psig, <u>THEN</u> reset CNMT spray and place CNMT spray pump discharge valve switches to CLOSE.</p>
25	<p>Check Core Exit T/Cs - LESS THAN 1200°F</p>	<p><u>IF</u> core exit temperatures greater than 1200°F and increasing, <u>THEN</u> go to SACRG-1, SEVERE ACCIDENT CONTROL ROOM GUIDELINE INITIAL RESPONSE, step 1.</p>
26	<p>Check If AC Emergency Power Is Restored - BUSSES 14 AND/OR 16 ENERGIZED</p>	<p>Continue to control RCS conditions and monitor plant status:</p> <ul style="list-style-type: none"> a. Check status of desired actions: <ul style="list-style-type: none"> o AC power restoration o ARV nitrogen pressure o Diesel air compressor to IA system o RCP seal isolation o DC power supply b. Return to Step 13.

STEP

ACTION/EXPECTED RESPONSE

RESPONSE NOT OBTAINED

NOTE: SW isolation may occur when power is restored to AC emergency busses.

28 Verify SW System Operation:

a. Check Bus 17 and Bus 18 - AT
LEAST ONE ENERGIZED

a. Perform the following:

1) Pull stop any D/G that is NOT supplied by alternate cooling. AND immediately depress associated VOLTAGE SHUTDOWN pushbutton.

2) Refer to ATT-2.4, ATTACHMENT NO SW PUMPS.

3) Go to Step 29.

b. Verify two SW pumps - RUNNING

b. IF normal power available, THEN establish two SW pumps running.

IF normal power NOT available, THEN establish one SW pump running for each operating D/G.

IF NO SW pumps running, THEN perform the following:

1) Pull stop any D/G that is NOT supplied by alternate cooling. AND immediately depress associated VOLTAGE SHUTDOWN pushbutton.

2) Refer to ATT-2.4, ATTACHMENT NO SW PUMPS.

IF only one SW pump running, THEN perform the following:

1) Manually perform SW isolation.

2) Refer to AP-SW.2, LOSS OF SERVICE WATER.

EOP: ECA-0.0	TITLE: LOSS OF ALL AC POWER	REV: 30 PAGE 24 of 25
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STEP

ACTION/EXPECTED RESPONSE

RESPONSE NOT OBTAINED

CAUTION

THE LOADS PLACED ON THE ENERGIZED AC EMERGENCY BUS SHOULD NOT EXCEED THE CAPACITY OF THE POWER SOURCE.

29 Verify Following Equipment
Loaded On Available AC
Emergency Busses:

Manually load equipment as power
supply permits.

- o 480 volt MCCs - ENERGIZED
 - MCC C from Bus 14
 - MCC D from Bus 16
- o Verify instrument busses -
ENERGIZED
 - Bus A from MCC C (A battery)
 - Bus B from MCC C
 - Bus C from MCC D (B battery)
- o Dispatch personnel to verify
proper operation of battery
chargers

EOP: ECA-0.0	TITLE: LOSS OF ALL AC POWER	REV: 30 PAGE 25 of 25
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STEP

ACTION/EXPECTED RESPONSE

RESPONSE NOT OBTAINED

30 Select Recovery Procedure:

- | | |
|----------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------|
| <p>a. Check RCS subcooling based on core exit T/Cs - GREATER THAN 0°F USING FIG-1.0, FIGURE MIN SUBCOOLING</p> | <p>a. Go to ECA-0.2, LOSS OF ALL AC POWER RECOVERY WITH SI REQUIRED, Step 1.</p> |
| <p>b. Check PRZR level - GREATER THAN 10% [30% adverse CNMT]</p> | <p>b. Go to ECA-0.2, LOSS OF ALL AC POWER RECOVERY WITH SI REQUIRED, Step 1.</p> |
| <p>c. Check SI and RHR Pumps - NONE RUNNING</p> | <p>c. Go to ECA-0.2, LOSS OF ALL AC POWER RECOVERY WITH SI REQUIRED, Step 1.</p> |
| <p>d. Go to ECA-0.1, LOSS OF ALL AC POWER RECOVERY WITHOUT SI REQUIRED, Step 1</p> | |

-END-

EOP: ECA-0.0	TITLE: LOSS OF ALL AC POWER	REV: 30 PAGE 1 of 1
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ECA-0.0 APPENDIX LIST

TITLE

- 1) FIGURE MIN SUBCOOLING (FIG-1.0)
- 2) ATTACHMENT DC LOADS (ATT-8.0)
- 3) ATTACHMENT FAULTED S/G (ATT-10.0)
- 4) ATTACHMENT RUPTURED S/G (ATT-16.0)
- 5) ATTACHMENT CI/CVI (ATT-3.0)
- 6) ATTACHMENT NONVITAL (ATT-8.3)
- 7) ATTACHMENT GEN DEGAS (ATT-8.2)
- 8) ATTACHMENT RCS ISOLATION (ATT-21.0)
- 9) ATTACHMENT FIRE WATER COOLING TO TDAFW PUMP (ATT-5.2)
- 10) ATTACHMENT DIESEL AIR COMPRESSOR (ATT-11.2)
- 11) ATTACHMENT NO SW PUMPS (ATT-2.4)
- 12) FOLDOUT

EOP: ECA-0.0	TITLE: LOSS OF ALL AC POWER	REV: 30 PAGE 1 of 1
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FOLDOUT PAGE

1. LOSS OF SW CRITERIA

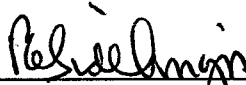
IF no SW pumps are available, THEN perform the following:

- 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.

EOP: ECA-0.2	TITLE: LOSS OF ALL AC POWER RECOVERY WITH SI REQUIRED	REV: 17 PAGE 1 of 9
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GINNA STATION

CONTROLLED COPY NUMBER 23



RESPONSIBLE MANAGER

12-15-2005

EFFECTIVE DATE

CATEGORY 1.0

REVIEWED BY: _____

EOP: ECA-0.2	TITLE: LOSS OF ALL AC POWER RECOVERY WITH SI REQUIRED	REV: 17 PAGE 2 of 9
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A. PURPOSE - This procedure provides actions to use engineered safeguards systems to recover plant conditions following restoration of AC emergency power.

B. ENTRY CONDITIONS/SYMPTOMS

1. ENTRY CONDITIONS - This procedure is entered from:
 - a. ECA-0.0, LOSS OF ALL AC POWER, when AC emergency power is restored and SI is required.
 - b. ECA-0.1, LOSS OF ALL AC POWER RECOVERY WITHOUT SI REQUIRED, if SI is required.

EOP: ECA-0.2	TITLE: LOSS OF ALL AC POWER RECOVERY WITH SI REQUIRED	REV: 17 PAGE 3 of 9
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STEP

ACTION/EXPECTED RESPONSE

RESPONSE NOT OBTAINED

- NOTE:
- o CSFSTs should be monitored for information only. FR procedures should not be implemented prior to completion of Step 10.
 - o Adverse CNMT values should be used whenever CNMT pressure is greater than 4 psig or CNMT radiation is greater than 10^{+05} R/hr.
 - o FOLDOUT page should be open and monitored periodically.

1 Reset SI

2 Check RCP CCW Isolation
Status:

a. CCW pumps - BOTH PUMPS OFF

b. RCP CCW return valves - CLOSED

- MOV-759A
- MOV-759B

a. Go to Step 3.

b. Manually close valves as necessary:

o RCP CCW thermal barrier outlet valves

- AOV-754A
- AOV-754B

-OR-

o RCP CCW supply valves

- MOV-749A
- MOV-749B

EOP: ECA-0.2	TITLE: LOSS OF ALL AC POWER RECOVERY WITH SI REQUIRED	REV: 17 PAGE 4 of 9
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STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
3	Check RWST Level - GREATER THAN 28%	Go to ES-1.3, TRANSFER TO COLD LEG RECIRCULATION, Step 1.
<p><u>NOTE:</u> SI actuation to establish safeguards valve alignment is not recommended.</p>		
4	Manually Align SI And RHR Pumps To Establish SI Injection:	
a.	SI pump suction valves from RWST - OPEN	a. Ensure at least one SI pump suction valve from RWST open.
	<ul style="list-style-type: none"> • MOV-825A • MOV-825B 	<ul style="list-style-type: none"> • MOV-825A • MOV-825B
b.	Verify SI pump C discharge valves - OPEN	b. Manually open valves as necessary.
	<ul style="list-style-type: none"> • MOV-871A • MOV-871B 	
c.	RHR pump discharge to Rx vessel deluge - OPEN	c. Ensure at least one deluge valve open.
	<ul style="list-style-type: none"> • MOV-852A • MOV-852B 	<ul style="list-style-type: none"> • MOV-852A • MOV-852B

EOP: ECA-0.2	TITLE: LOSS OF ALL AC POWER RECOVERY WITH SI REQUIRED	REV: 17 PAGE 5 of 9
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STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
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CAUTION

THE LOADS PLACED ON THE ENERGIZED AC EMERGENCY BUS SHOULD NOT EXCEED THE CAPACITY OF THE POWER SOURCE.

5 Manually Load Following
Safeguards Equipment On AC
Emergency Bus:

a. Start all SI pumps

a. Perform the following:

1) Start available SI pumps.

2) IF SI pump A or B NOT
available, THEN verify SI
pump C aligned as follows:

o IF SI pump A NOT
available, THEN ensure
MOV-871B closed.

o IF SI pump B NOT
available, THEN ensure
MOV-871A closed.

b. Check RCS pressure:

b. Manually start both RHR pumps
and go to Step 5d.

o Pressure - GREATER THAN
250 psig [465 psig adverse
CNMT]

o Pressure - STABLE OR
INCREASING

c. Place RHR pump switches in AUTO

d. Start all available CNMT RECIRC
fans

EOP: ECA-0.2	TITLE: LOSS OF ALL AC POWER RECOVERY WITH SI REQUIRED	REV: 17 PAGE 6 of 9
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STEP

ACTION/EXPECTED RESPONSE

RESPONSE NOT OBTAINED

CAUTION

- o IF CST LEVEL DECREASES TO LESS THAN 5 FEET, THEN ALTERNATE WATER SOURCES FOR AFW PUMPS WILL BE NECESSARY (REFER TO ER-AFW.1, ALTERNATE WATER SUPPLY TO AFW PUMPS).
- o IF S/G NR LEVEL DECREASES TO LESS THAN 7% [25% ADVERSE CNMT] AND FEED FLOW IS LESS THAN 200 GPM, THEN THE MDAFW PUMPS SHOULD BE MANUALLY LOADED ON AC EMERGENCY BUS TO SUPPLY WATER TO THE S/G(S).

- NOTE:
- o If MDAFW pump operation is not required, pump switches should be maintained in PULL-STOP to prevent automatic start.
 - o TDAFW pump flow control AOVs may drift open on loss of IA.

* 6 Monitor Intact S/G Levels:

- a. Narrow range level - GREATER THAN 7% [25% adverse CNMT]
 - a. Maintain total feed flow greater than 200 gpm until narrow range level greater than 7% [25% adverse CNMT] in at least one S/G.
 - IF feed flow less than 200 gpm, THEN perform the following:
 - 1) Verify MDAFW pump discharge valve to intact S/G(s) open.
 - S/G A, MOV-4007
 - S/G B, MOV-4008
 - 2) Manually start MDAFW pumps as necessary (223 kw).
- b. Control feed flow to maintain narrow range level between 17% [25% adverse CNMT] and 50%

EOP: ECA-0.2	TITLE: LOSS OF ALL AC POWER RECOVERY WITH SI REQUIRED	REV: 17 PAGE 7 of 9
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STEP

ACTION/EXPECTED RESPONSE

RESPONSE NOT OBTAINED

7 Verify CI And CVI:

a. CI and CVI annunciators - LIT

- Annunciator A-26, CNMT ISOLATION
- Annunciator A-25, CONTAINMENT VENTILATION ISOLATION

b. Verify CI and CVI valve status lights - BRIGHT

c. CNMT RECIRC fan coolers SW outlet valve status lights - BRIGHT

- AOV-4561
- AOV-4562

a. Depress manual CI pushbutton.

b. Manually close affected CI and CVI valves.

IF valves can NOT be verified closed by MCB indication, THEN close alternate isolation valves (Refer to ATT-3.0, ATTACHMENT CI/CVI).

c. Dispatch AO to locally fail open valves.

EOP: ECA-0.2	TITLE: LOSS OF ALL AC POWER RECOVERY WITH SI REQUIRED	REV: 17 PAGE 8 of 9
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STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
8	<p>Verify CNMT Spray Not Required:</p> <ul style="list-style-type: none"> o Annunciator A-27, CNMT SPRAY - EXTINGUISHED o CNMT pressure - LESS THAN 28 PSIG 	<p><u>IF</u> CNMT pressure is less than 28 psig. <u>THEN</u> perform the following:</p> <ul style="list-style-type: none"> a. Reset CNMT spray. b. Place CNMT spray pump discharge valve switches to CLOSE to deenergize open contactor. <p><u>IF NOT</u>. <u>THEN</u> perform the following:</p> <ul style="list-style-type: none"> a. Depress manual CNMT spray pushbuttons (2 of 2). b. Ensure CNMT spray pump discharge valves open. <ul style="list-style-type: none"> o CNMT spray pump A: <ul style="list-style-type: none"> • MOV-860A • MOV-860B o CNMT spray pump B: <ul style="list-style-type: none"> • MOV-860C • MOV-860D c. Verify NaOH tank flow (FI-930). <p><u>IF</u> NaOH flow <u>NOT</u> indicated, <u>THEN</u> place switches for NaOH tank outlet valves to OPEN.</p> <ul style="list-style-type: none"> • AOV-836A • AOV-836B d. Start both CNMT spray pumps. e. Go to step 10.

EOP:

ECA-0.2

TITLE:

LOSS OF ALL AC POWER RECOVERY WITH SI
REQUIRED

REV: 17

PAGE 9 of 9

STEP

ACTION/EXPECTED RESPONSE

RESPONSE NOT OBTAINED

9 Place CNMT Spray Pumps In AUTO

10 Check RCP Seal Injection
Needle Valves - CLOSED

Locally close valves before
starting charging pump.

- V-300A
- V-300B

NOTE: FR procedures may now be implemented as necessary.

11 Go to E-1, LOSS OF REACTOR OR
SECONDARY COOLANT, Step 1

-END-

EOP: ECA-0.2	TITLE: LOSS OF ALL AC POWER RECOVERY WITH SI REQUIRED	REV: 17 PAGE 1 of 1
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ECA-0.2 APPENDIX LIST

TITLE

- 1) ATTACHMENT CI/CVI (ATT-3.0)
- 2) ATTACHMENT NO SW PUMPS (ATT-2.4)
- 3) FOLDOUT

EOP: ECA-0.2	TITLE: LOSS OF ALL AC POWER RECOVERY WITH SI REQUIRED	REV: 17 PAGE 1 of 1
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FOLDOUT PAGE

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.

EOP: ES-1.3	TITLE: TRANSFER TO COLD LEG RECIRCULATION	REV: 39 PAGE 1 of 23
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GINNA STATION
CONTROLLED COPY NUMBER 23

Paul J. Amey
RESPONSIBLE MANAGER

12-15-2005
EFFECTIVE DATE

CATEGORY 1.0

REVIEWED BY: _____

EOP: ES-1.3	TITLE: TRANSFER TO COLD LEG RECIRCULATION	REV: 39 PAGE 2 of 23
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A. PURPOSE - This procedure provides the necessary instructions for transferring the Safety Injection system and Containment Spray system to recirculation modes of operation.

B. ENTRY CONDITIONS/SYMPTOMS

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

- a. E-1, LOSS OF REACTOR OR SECONDARY COOLANT, or,
- b. ECA-0.2, LOSS OF ALL AC POWER RECOVERY WITH SI REQUIRED, or,
- c. ECA-2.1, UNCONTROLLED DEPRESSURIZATION OF BOTH STEAM GENERATORS, or,
- d. FR-C.1, RESPONSE TO INADEQUATE CORE COOLING, or,
- e. FR-C.2, RESPONSE TO DEGRADED CORE COOLING, or,
- f. FR-C.3, RESPONSE TO SATURATED CORE COOLING, or,
- g. FR-H.1, RESPONSE TO LOSS OF SECONDARY HEAT SINK, or,
- h. FR-Z.1, RESPONSE TO HIGH CONTAINMENT PRESSURE, on low RWST level.
- i. Other procedures whenever RWST level reaches the switchover setpoint (28%).

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
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CAUTION

- o 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)
- o CONSULT WITH RADIATION PROTECTION BEFORE DISPATCHING PERSONNEL TO AUXILIARY BUILDING. SWITCHOVER TO RECIRCULATION MAY CAUSE HIGH RADIATION LEVELS.

NOTE: o FOLDOUT page should be open and monitored periodically.

o Adverse CNMT values should be used whenever CNMT pressure is greater than 4 psig or CNMT radiation is greater than 10^{+05} R/hr.

* 1 Verify RWST level - GREATER THAN 15%

IF sump recirculation NOT in progress, THEN pull-stop all pumps taking suction from RWST, EXCEPT one SI pump AND go to ECA-1.1, LOSS OF EMERGENCY COOLANT RECIRCULATION, Step 1.

2 Verify CNMT Sump B Level - AT LEAST 113 INCHES

IF RWST level is less than 28% AND CNMT sump B level is less than 113 inches, THEN go to ECA-1.2, LOCA OUTSIDE CONTAINMENT, Step 1.

NOTE: Steps 3 through 14 should be performed without delay. FR procedures should not be implemented prior to completion of these steps.

3 Reset SI

EOP: ES-1.3	TITLE: TRANSFER TO COLD LEG RECIRCULATION	REV: 39 PAGE 4 of 23
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STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
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CAUTION

- o THE RHR HX OUTLET VALVES (HCV-624 AND HCV-625) WILL FAIL OPEN ON LOSS OF INSTRUMENT AIR PRESSURE.
- o CONSULT WITH RADIATION PROTECTION BEFORE DISPATCHING PERSONNEL TO AUXILIARY BUILDING. SWITCHOVER TO RECIRCULATION MAY CAUSE HIGH RADIATION LEVELS.

4 Throttle RHR Flow:

- o Direct an AO to perform ATT-14.7, ATTACHMENT ADJUST RHR FLOW, to locally adjust HCV-624 and HCV-625.

Manually adjust RHR Hx outlet valves equally to reduce flow to less than 1500 gpm per operating pump

- RHR Hx A, HCV-625
- RHR Hx B, HCV-624

EOP: ES-1.3	TITLE: TRANSFER TO COLD LEG RECIRCULATION	REV: 39 PAGE 5 of 23
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STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
5	Check IF Unnecessary Pumps Can Be Stopped:	
a.	Three SI pumps - RUNNING	a. Go to Step 5c.
b.	Stop SI pump C and place both switches in PULL STOP	
c.	Stop both RHR pumps and place in PULL STOP	
d.	Both CNMT spray pumps - RUNNING	d. Pull stop any idle CNMT spray pump and go to Step 5f.
e.	Pull stop one CNMT spray pump	
f.	Check CNMT pressure - LESS THAN 28 PSIG.	f. Go to Step 6.
g.	Place NaOH Tank outlet valve switches to OPEN.	
	<ul style="list-style-type: none"> • AOV-836A • AOV-836B 	
h.	Reset CNMT spray	
i.	Close discharge valves for idle CNMT spray pump(s)	
	<ul style="list-style-type: none"> o Pump A <ul style="list-style-type: none"> • MOV-860A • MOV-860B o Pump B <ul style="list-style-type: none"> • MOV-860C • MOV-860D 	

EOP: ES-1.3	TITLE: TRANSFER TO COLD LEG RECIRCULATION	REV: 39 PAGE 6 of 23
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STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
<p><u>NOTE:</u> <u>IF</u> D/Gs supplying emergency AC busses, <u>THEN</u> non-essential loads may be shed as necessary to allow start of additional SW pumps.</p>		
<p>6 Establish Adequate SW Flow:</p>		
a.	Verify at least two SW pumps - RUNNING	<p>a. Start additional SW pumps as power supply permits (257 kw each). <u>IF</u> only 1 SW pump operable, <u>THEN</u> perform the following:</p> <ol style="list-style-type: none"> 1) Ensure SW aligned to one CCW Hx per ATT-2.1, ATTACHMENT MIN SW. 2) Go to Step 7. <p><u>IF</u> no SW pumps are available, <u>THEN</u> perform the following:</p> <ol style="list-style-type: none"> 1) Pull stop any D/G that is <u>NOT</u> supplied by alternate cooling, <u>AND</u> immediately depress associated VOLTAGE SHUTDOWN pushbutton. 2) Refer to ATT-2.4, ATTACHMENT NO SW PUMPS.
b.	Verify AUX BLDG SW isolation valves - OPEN	b. Manually align valves.
	<ul style="list-style-type: none"> • MOV-4615 and MOV-4734 • MOV-4616 and MOV-4735 	
<p>This Step continued on the next page.</p>		

EOP: ES-1.3	TITLE: TRANSFER TO COLD LEG RECIRCULATION	REV: 39 PAGE 7 of 23
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STEP

ACTION/EXPECTED RESPONSE

RESPONSE NOT OBTAINED

(Step 6 continued from previous page)

- c. Determine required SW flow to CCW HXs per table:

SW DISCHARGE ALIGNMENT	CCW HXs AVAILABLE	REQUIRED SW FLOW
Normal	2	Total of 5000 - 6000 gpm equally divided to both HXs
Normal	1	5000 - 6000 gpm to in-service HX
Alternate	2	30 - 33 inches d/p across each HX
Alternate	1	95 - 100 inches d/p across in-service HX

- d. Direct AO to adjust SW flow to required value

- o IF on normal SW discharge:

- V-4619, CCW HX A
- V-4620, CCW HX B

-OR-

- o IF on alternate SW discharge:

- V-4619C, CCW HX A
- V-4620B, CCW HX B

- d. IF the required SW flow can NOT be obtained, THEN perform the following:

- 1) Isolate SW to screenhouse and air conditioning headers.

- MOV-4609/MOV-4780 - AT LEAST ONE CLOSED
- MOV-4663/MOV-4733 - AT LEAST ONE CLOSED

- 2) Direct AO to locally adjust SW flow to required value.

- 3) Direct AO to locally isolate SW return from SFP Hxs:

- SFP Hx A (V-4622) (for alternate SW discharge use V-4622A)
- SFP Hx B (V-8689)

- 4) Verify SW portions of ATT-17.0, ATTACHMENT SD-1 are complete.

EOP: ES-1.3	TITLE: TRANSFER TO COLD LEG RECIRCULATION	REV: 39 PAGE 8 of 23
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STEP

ACTION/EXPECTED RESPONSE

RESPONSE NOT OBTAINED

7 Establish CCW flow to RHR Hxs:

a. Check both CCW pumps - RUNNING

a. Perform the following:

- 1) Start CCW pumps as power supply permits (122 kw each).
 - 2) IF both CCW pumps are running, THEN go to step 7b.
 - 3) IF only one CCW pump is running, THEN perform the following:
 - a) Direct AO to isolate CCW to boric acid evaporator
 - o Close V-760A
 - b) Manually open CCW MOV to only one operable RHR loop.
 - o Open MOV-738A
- OR-
- o Open MOV-738B
 - c) Go to step 8.

b. Open CCW valves to RHR Hxs

b. Dispatch AO to locally open valves.

- MOV-738A
- MOV-738B

EOP: ES-1.3	TITLE: TRANSFER TO COLD LEG RECIRCULATION	REV: 39 PAGE 9 of 23
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STEP

ACTION/EXPECTED RESPONSE

RESPONSE NOT OBTAINED

8 Verify RHR System Alignment:

a. Verify the following valves -
CLOSED

- o RHR suction valves from loop
A hot leg

- MOV-700
- MOV-701

- o RHR discharge valves to loop
B cold leg

- MOV-720
- MOV-721

b. Verify RHR pump suction crosstie
valves - OPEN

- MOV-704A
- MOV-704B

c. Verify the following valves -
OPEN

- o RHR pump discharge to Rx
vessel deluge valves

- MOV-852A
- MOV-852B

- o RHR suction from sump B
(inside CNMT)

- MOV-851A
- MOV-851B

d. Verify RCDT pump suction valves
from sump B - CLOSED

- MOV-1813A
- MOV-1813B

a. Ensure at least one suction
valve and one discharge valve
closed.

b. Manually open valves. If valves
can NOT be opened, THEN dispatch
A0 to locally open valves.

c. Ensure at least one valve in
each set open.

d. Manually close valves.

EOP: ES-1.3	TITLE: TRANSFER TO COLD LEG RECIRCULATION	REV: 39 PAGE 10 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>RHR FLOW INDICATED ON FI-626 SHOULD BE LIMITED TO 1500 GPM PER OPERATING PUMP TO ENSURE OPTIMUM PUMP PERFORMANCE.</p> <p>*****</p>		
9	Initiate RHR Sump Recirculation:	
a.	Close RWST outlet valve to RHR pump suction, MOV-856 (turn on DC power key switch)	a. Dispatch AO to locally close valve and continue with Step 9b.
b.	Open both RHR suction valves from sump B (outside CNMT)	b. <u>IF</u> only one valve will open, <u>THEN</u> perform the following:
	o MOV-850A - OPEN	1) Initiate only one train of RHR recirculation (Refer to ATT-14.3, ATTACHMENT RHR NPSH for further guidance).
	o MOV-850B - OPEN	2) Go to step 9e.
		<u>IF</u> neither valve will open, <u>THEN</u> refer to ATT-14.6, ATTACHMENT RHR PRESS REDUCTION for further guidance.
c.	Check MOV-738A AND MOV-738B - BOTH OPEN	c. Perform the following:
		1) <u>IF</u> MOV-738A open, <u>THEN</u> start RHR Pump A and go to step 9e.
		2) <u>IF</u> MOV-738B open, <u>THEN</u> start RHR Pump B and go to step 9e.
d.	Start both RHR pumps	
e.	Verify at least one RHR pump - RUNNING	e. <u>IF</u> no RHR pump can be started, <u>THEN</u> go to ECA-1.1, LOSS OF EMERGENCY COOLANT RECIRCULATION, Step 1.

EOP: ES-1.3	TITLE: TRANSFER TO COLD LEG RECIRCULATION	REV: 39 PAGE 11 of 23
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STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
*10	<p>Monitor Indications Of CNMT Sump B Blockage</p> <ul style="list-style-type: none"> o Check running RHR Pump motor current - STABLE <ul style="list-style-type: none"> • RHR Pump A, PPCS point I0685AD • RHR Pump B, PPCS point I0685BD o Check running RHR pump discharge flows - STABLE o Check running SI pump discharge flows - STABLE FOR SI PUMPS TAKING SUCTION FROM RHR PUMPS o Check audible indications for RHR, SI or CNMT spray pump - NO SOUNDS OF CAVITATION 	<p><u>IF</u> any SI pump running with suction aligned to RHR pump, <u>THEN</u> go to ECA-1.3, RESPONSE TO SUMP B BLOCKAGE.</p> <p><u>IF NOT</u>, <u>THEN</u> perform the following:</p> <ul style="list-style-type: none"> a. Stop all CNMT spray pumps taking suction from RHR pumps. b. Stop all but one RHR pump. c. Reduce RHR flow as low as possible but <u>NOT</u> less than requirements of FIG-6.0, FIGURE MIN RCS INJECTION. d. Contact the TSC for additional guidance. e. <u>IF</u> indications of cavitation continue, <u>THEN</u> go to ECA-1.3, RESPONSE TO SUMP B BLOCKAGE, Step 1.
<p>*****</p> <p style="text-align: center;"><u>CAUTION</u></p> <p>SUMP RECIRCULATION FLOW TO RCS MUST BE MAINTAINED AT ALL TIMES, EXCEPT DURING ALIGNMENT FOR HIGH HEAD RECIRCULATION.</p> <p>*****</p>		
<p><u>NOTE:</u> The TSC should be requested to establish periodic monitoring of the AUX BLDG sub-basement, as radiological conditions permit, to monitor RHR pump operation.</p>		
11	<p>Check RWST Level - LESS THAN 15%</p>	<p>DO <u>NOT</u> continue with this procedure until RWST level is less than 15%.</p>

EOP: ES-1.3	TITLE: TRANSFER TO COLD LEG RECIRCULATION	REV: 39 PAGE 12 of 23
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STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
12	<p>Stop All Pumps Supplied From RWST:</p> <ul style="list-style-type: none"> a. Stop all SI pumps and place in PULL STOP b. Stop all charging pumps c. Stop operating CNMT spray pump and place in PULL STOP d. Check CNMT pressure - LESS THAN 28 PSIG e. Reset CNMT spray if necessary f. Close CNMT spray pump discharge valves <ul style="list-style-type: none"> • MOV-860A • MOV-860B • MOV-860C • MOV-860D 	d. Go to Step 13.

EOP:	TITLE:	REV: 39
ES-1.3	TRANSFER TO COLD LEG RECIRCULATION	PAGE 13 of 23

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
<p>*****</p> <p style="text-align: center;"><u>CAUTION</u></p> <p>RHR FLOW MUST BE MAINTAINED LESS THAN 1500 GPM PER OPERATING RHR PUMP AS DETERMINED BY THE TOTAL OF FI-931A, FI-931B AND FI-626 INDICATIONS.</p> <p>*****</p>		
13	Align SI And CNMT Spray For Sump Recirculation:	
a.	Verify SI pump suction valves from BASTs - CLOSED	a. Ensure at least one valve in each flowpath closed.
	<ul style="list-style-type: none"> • MOV-826A and MOV-826B • MOV-826C and MOV-826D 	
b.	Close RWST outlet valves to SI and CNMT spray pumps (turn on DC power key switches)	b. Ensure at least one valve closed.
	<ul style="list-style-type: none"> • MOV-896A • MOV-896B 	
c.	Close SI pump RECIRC valves	c. Ensure at least one valve closed.
	<ul style="list-style-type: none"> • MOV-898 • MOV-897 	
d.	Verify SI pump suction valves from RWST - OPEN	d. Ensure at least one valve open.
	<ul style="list-style-type: none"> • MOV-825A • MOV-825B 	
e.	Align operating RHR pump flow path(s) to SI and CNMT spray pump suction.	e. Ensure at least one flowpath aligned from RHR pump(s) to SI and CS pump suction header (Refer to ATT-14.5, ATTACHMENT RHR SYSTEM).
	<ul style="list-style-type: none"> o <u>IF</u> RHR Pump A operating, <u>THEN</u> open MOV-857A and MOV-857C o <u>IF</u> RHR Pump B operating, <u>THEN</u> open MOV-857B 	<p><u>IF</u> neither flow path can be aligned, <u>THEN</u> refer to ATT-14.6, ATTACHMENT RHR PRESS REDUCTION for further guidance.</p>

STEP

ACTION/EXPECTED RESPONSE

RESPONSE NOT OBTAINED

CAUTION

SI PUMPS SHOULD BE STOPPED IF RCS PRESSURE IS GREATER THAN THEIR SHUTOFF HEAD PRESSURE.

NOTE: Operation of SI pump C is preferred since it delivers to both RCS loops.

14 Verify Adequate RCS Makeup Flow:

a. RCS pressure - LESS THAN
225 psig [425 psig adverse CNMT]

a. Perform the following:

1) Check RCS conditions:

- o RCS subcooling based on core exit T/Cs greater than FIG-1.0, FIGURE MIN SUBCOOLING.
- o PRZR level greater than 10% [30% adverse CNMT].

IF either condition NOT met, THEN start one SI pump.

2) Go to Step 15.

b. RHR injection flow adequate:

b. Start one SI pump.

- o Core exit T/Cs - LESS THAN REQUIREMENTS OF FIG-5.0, FIGURE RHR INJECTION
- o Check RVLIS level (no RCPS) - GREATER THAN 52% [55% adverse CNMT]

EOP: ES-1.3	TITLE: TRANSFER TO COLD LEG RECIRCULATION	REV: 39 PAGE 15 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 A CNMT SPRAY PUMP IS STARTED, THEN CNMT PRESSURE SHOULD BE CLOSELY MONITORED. CNMT PRESSURE SHOULD NOT BE REDUCED TO LESS THAN 22 PSIG.</p> <p>*****</p>		
*15	Check If CNMT Spray Is Required:	
	<p>a. CNMT pressure - GREATER THAN 28 PSIG</p> <p>b. Verify CNMT spray pump discharge valves - OPEN</p> <ul style="list-style-type: none"> • MOV-860A • MOV-860B • MOV-860C • MOV-860D <p>c. Start selected CNMT spray pump</p> <p>d. Adjust RHR flow to maintain less than 1500 gpm per operating RHR pump as indicated by the total of FI-931A, FI-931B and FI-626 indications.</p>	<p>a. Perform the following:</p> <p>1) <u>IF</u> CNMT spray previously actuated and NaOH tank level greater than 55%, <u>THEN</u> consult TSC to determine if CNMT spray should be restarted.</p> <p>2) Go to Step 16.</p> <p>b. Manually open valve(s) for selected pump.</p> <ul style="list-style-type: none"> • CS pump A, MOV-860A or MOV-860B • CS pump B, MOV-860C or MOV-860D <p>c. <u>IF</u> the selected CNMT spray pump will not start, <u>THEN</u> align and start the other CNMT spray pump. <u>IF</u> neither pump will start, <u>THEN</u> continue with Step 16. <u>WHEN</u> a CNMT spray pump can be started, <u>THEN</u> do steps 15d, e and f.</p>
This Step continued on the next page.		

EOP: ES-1.3	TITLE: TRANSFER TO COLD LEG RECIRCULATION	REV: 39 PAGE 16 of 23
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STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
	(Step 15 continued from previous page)	
e.	Verify NaOH flow (FI-930)	e. <u>IF</u> NaOH flow <u>NOT</u> indicated, <u>THEN</u> place switches for NaOH tank outlet valves to OPEN. <ul style="list-style-type: none"> • AOV-836A • AOV-836B
f.	<u>WHEN</u> CNMT pressure decreases to 22 psig, <u>THEN</u> perform the following: 1) Reset CNMT spray 2) Check NaOH flow (FI-930) - NO FLOW 3) Stop CNMT spray pumps and place in PULL STOP 4) Close CNMT spray pump discharge valves <ul style="list-style-type: none"> • MOV-860A • MOV-860B • MOV-860C • MOV-860D 	2) Place NaOH tank outlet valve switches to close <ul style="list-style-type: none"> • AOV-836A • AOV-836B
16	Verify Adequate Core Cooling: <ul style="list-style-type: none"> o Core exit T/Cs - STABLE OR DECREASING o RVLIS level (no RCPs) - STABLE OR INCREASING o RVLIS level (no RCPs) - GREATER THAN 52% [55% adverse CNMT] 	<u>IF</u> both RHR pumps running, <u>THEN</u> ensure two SI pumps running. <u>IF</u> only one RHR pump running, <u>THEN</u> perform the following: a. Ensure one SI pump running. b. <u>WHEN</u> CNMT spray pumps stopped, <u>THEN</u> start one additional SI pump.

EOP: ES-1.3	TITLE: TRANSFER TO COLD LEG RECIRCULATION	REV: 39 PAGE 17 of 23
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STEP

ACTION/EXPECTED RESPONSE

RESPONSE NOT OBTAINED

NOTE: TDAFW pump flow control AOVs may drift open on loss of IA.

***17 Monitor Intact S/G Levels:**

a. Narrow range level - GREATER
THAN 7% [25% adverse CNMT]

a. Maintain total feed flow greater
than 200 gpm until narrow range
level greater than 7% [25%
adverse CNMT] in at least one
S/G.

b. Control feed flow to maintain
narrow range level between 17%
[25% adverse CNMT] and 50%

EOP:	TITLE:	REV: 39
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STEP

ACTION/EXPECTED RESPONSE

RESPONSE NOT OBTAINED

18 Establish Normal Shutdown Alignment:

a. Check condenser - AVAILABLE

a. Dispatch AO to perform ATT-17.1, ATTACHMENT SD-2.

b. Perform the following:

- o Open generator disconnects
 - 1G13A71
 - 9X13A73
- o Place voltage regulator to OFF
- o Open turbine drain valves
- o Rotate reheater steam supply controller cam to close valves
- o Place reheater dump valve switches to HAND
- o Stop all but one condensate pump

c. Verify adequate Rx head cooling:

- 1) Verify at least one control rod shroud fan - RUNNING
- 2) Verify one Rx compartment cooling fan - RUNNING

1) Manually start one fan as power supply permits (45 kw)

2) Perform the following:

- o Dispatch AO to reset UV relays at MCC C and MCC D.
- o Manually start one fan as power supply permits (23 kw)

d. Verify ATT-17.0, ATTACHMENT SD-1
- COMPLETE

EOP: ES-1.3	TITLE: TRANSFER TO COLD LEG RECIRCULATION	REV: 39 PAGE 19 of 23
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STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
19	<p>Check If Emergency D/Gs Should Be Stopped:</p> <ul style="list-style-type: none"> a. Verify AC emergency busses energized by offsite power: <ul style="list-style-type: none"> o Emergency D/G output breakers - OPEN o AC emergency bus voltage - GREATER THAN 420 VOLTS o AC emergency bus normal feed breakers - CLOSED b. Stop any unloaded emergency D/G and place in standby (Refer to ATT-8.1, ATTACHMENT D/G STOP) 	<ul style="list-style-type: none"> a. Try to restore offsite power (Refer to ER-ELEC.1, RESTORATION OF OFFSITE POWER).

EOP: ES-1.3	TITLE: TRANSFER TO COLD LEG RECIRCULATION	REV: 39 PAGE 20 of 23
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STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
20	Check If SI ACCUMs Should Be Isolated:	
a.	Both RCS hot leg temperatures - LESS THAN 400°F	a. Continue with Step 21. <u>WHEN</u> both RCS hot leg temperatures less than 400°F, <u>THEN</u> do Steps 20b through d.
b.	Dispatch AO with locked valve key to locally close breakers for SI ACCUM discharge valves <ul style="list-style-type: none"> • MOV-841, MCC C position 12F • MOV-865, MCC D position 12C 	
c.	Close SI ACCUM discharge valves <ul style="list-style-type: none"> • ACCUM A, MOV-841 • ACCUM B, MOV-865 	c. Vent any unisolated ACCUMs: <ol style="list-style-type: none"> 1) Open vent valves for unisolated SI ACCUMs. <ul style="list-style-type: none"> • ACCUM A, AOV-834A • ACCUM B, AOV-834B 2) Open HCV-945. <p><u>IF</u> an accumulator can <u>NOT</u> be isolated or vented, <u>THEN</u> consult TSC to determine contingency actions.</p>
d.	Locally reopen breakers for MOV-841 and MOV-865	

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STEP

ACTION/EXPECTED RESPONSE

RESPONSE NOT OBTAINED

CAUTION

IF FUEL DAMAGE IS SUSPECTED, MAINTAIN S/G PRESSURE SLIGHTLY GREATER THAN RCS PRESSURE.

21 Check If Intact S/Gs Should
Be Depressurized To RCS
Pressure:

- | | |
|-----------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------|
| a. RCS pressure - LESS THAN INTACT
S/G PRESSURES | a. Go to Step 22. |
| b. Direct RP to sample S/Gs for
activity | |
| c. Request TSC perform a dose
projection on steaming S/Gs | |
| d. Dose projection for each S/G -
ACCEPTABLE | d. Do <u>NOT</u> dump steam from a S/G
with an unacceptable dose
projection. |
| e. Dump steam to condenser from
intact S/G(s) until S/G pressure
less than RCS pressure | e. <u>IF</u> steam dump to condenser <u>NOT</u>
available, <u>THEN</u> dump steam using
intact S/G ARVs until S/G
pressure less than RCS pressure. |

22 Consult TSC to Determine If
Rx Vessel Head Should Be
Vented

EOP: ES-1.3	TITLE: TRANSFER TO COLD LEG RECIRCULATION	REV: 39 PAGE 22 of 23
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STEP

ACTION/EXPECTED RESPONSE

RESPONSE NOT OBTAINED

NOTE: This procedure should be continued while obtaining CNMT hydrogen sample in Step 23.

23 Check CNMT Hydrogen Concentration:

- a. Direct RP to start CNMT hydrogen monitors as necessary
- b. Hydrogen concentration - LESS THAN 0.5%
 - b. Consult TSC to determine if hydrogen recombiners should be placed in service.

NOTE: The TSC should be consulted before changing recirculation lineups.

24 Check Event Duration - GREATER THAN 19 HOURS AFTER EVENT INITIATION

Consult TSC to evaluate long term plant status.

25 Secure CNMT Spray

- a. Reset CNMT spray
- b. Place NaOH Tank outlet valve switches in AUTO
 - AOV-836A
 - AOV-836B
- c. Place CNMT spray pumps in PULL STOP
- d. Close discharge valves for idle CNMT spray pumps
 - o Pump A
 - MOV-860A
 - MOV-860B
 - o Pump B
 - MOV-860C
 - MOV-860D

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STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
26	Verify Two SI Pumps - RUNNING	Manually start pumps.
27	Check Core Exit T/Cs - LESS THAN REQUIREMENTS OF FIG-5.0, FIGURE RHR INJECTION	<p>Perform the following:</p> <ul style="list-style-type: none"> a. Manually open both PRZR PORVs and block valves. b. Verify core exit T/Cs decreasing to less than requirements of FIG-5.0, FIGURE RHR INJECTION. <u>IF NOT, THEN</u> dump steam from intact S/Gs until core exit T/Cs less than required.
28	Consult TSC To Evaluate Long Term Plant Status	

-END-

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ES-1.3 APPENDIX LIST

TITLE

- 1) RED PATH SUMMARY
- 2) FIGURE RHR INJECTION (FIG-5.0)
- 3) FIGURE MIN SUBCOOLING (FIG-1.0)
- 4) FIGURE MIN RCS INJECTION (FIG-6.0)
- 5) ATTACHMENT D/G STOP (ATT-8.1)
- 6) ATTACHMENT SD-1 (ATT-17.0)
- 7) ATTACHMENT SD-2 (ATT-17.1)
- 8) ATTACHMENT RHR NPSH (ATT-14.3)
- 9) ATTACHMENT RHR SYSTEM (ATT-14.5)
- 10) ATTACHMENT MIN SW (ATT-2.1)
- 11) ATTACHMENT RHR PRESS REDUCTION (ATT-14.6)
- 12) ATTACHMENT LOSS OF OFFSITE POWER (ATT-8.5)
- 13) ATTACHMENT NO SW PUMPS (ATT-2.4)
- 14) FOLDOUT

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FOLDOUT PAGE

1. ECA-1.1 TRANSITION CRITERIA

IF emergency coolant recirculation is established and subsequently lost AND the cause is something OTHER THAN sump blockage, THEN go to ECA-1.1, LOSS OF EMERGENCY COOLANT RECIRCULATION, Step 1.

2. 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.
- c. Go to ECA-1.1, LOSS OF EMERGENCY COOLANT RECIRCULATION.

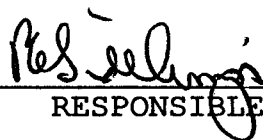
3. AFW SUPPLY SWITCHOVER CRITERION

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 AFW PUMPS).

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GINNA STATION

CONTROLLED COPY NUMBER 23


RESPONSIBLE MANAGER

12-15-2005
EFFECTIVE DATE

CATEGORY 1.0

REVIEWED BY: _____

EOP: FR-C.1	TITLE: RESPONSE TO INADEQUATE CORE COOLING	REV: 23 PAGE 2 of 19
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A. PURPOSE - This procedure provides actions to restore core cooling.

B. ENTRY CONDITIONS/SYMPTOMS

1. ENTRY CONDITIONS - This procedure is entered from:

- a. F-0.2, CORE COOLING Critical Safety Function Status Tree, on a RED condition.

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STEP

ACTION/EXPECTED RESPONSE

RESPONSE NOT OBTAINED

NOTE: o Adverse CNMT values should be used whenever CNMT pressure is greater than 4 psig or CNMT radiation is greater than 10^{+05} R/hr.

o Foldout Page should be open and monitored periodically.

* 1 Monitor RWST Level - GREATER THAN 28%

Perform the following:

- a. Ensure SI system aligned for cold leg recirculation using Steps 1 through 14 of ES-1.3, TRANSFER TO COLD LEG RECIRCULATION.
- b. WHEN the SI system is aligned for sump recirculation, THEN go to Step 4.

2 Verify SI Pump Suction Aligned to RWST:

a. Verify SI pump suction valves from RWST - OPEN

- MOV-825A
- MOV-825B

a. Ensure at least one SI pump suction valve from RWST open.

- MOV-825A
- MOV-825B

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED

CAUTION		
RHR PUMPS SHOULD NOT BE RUN LONGER THAN 1 HOUR WITHOUT CCW TO THE RHR HEAT EXCHANGERS.		

3	Verify SI Pump And RHR Pump Emergency Alignment:	
	a. RHR pump discharge to Rx vessel deluge - OPEN	a. Ensure at least one valve open.
	• MOV-852A • MOV-852B	
	b. Verify both RHR pumps - RUNNING	b. Manually start pumps
	c. Verify SI pump C - RUNNING	c. Manually start pump on available bus.
	d. Verify SI pump A - RUNNING	d. Perform the following:
		1) Ensure SI pumps B and C running.
		2) Ensure SI pump C aligned to discharge line A:
		o MOV-871B closed
		o MOV-871A open
		3) Go to Step 4.
This Step continued on the next page.		

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STEP

ACTION/EXPECTED RESPONSE

RESPONSE NOT OBTAINED

(Step 3 continued from previous page)

e. Verify SI pump B - RUNNING

e. Perform the following:

- 1) Ensure SI pumps A and C running.
- 2) Ensure SI pump C aligned to discharge line B:
 - o MOV-871B open
 - o MOV-871A closed
- 3) Go to Step 4.

f. Verify both SI pump C discharge valves - OPEN

f. Manually open valves as necessary.

- MOV-871A
- MOV-871B

4 Verify SI Flow In Both Trains:

Perform the following:

o SI line loop A and B flow indicators - CHECK FOR FLOW

a. Manually start pumps and align valves as necessary.

o RHR loop flow indicator - CHECK FOR FLOW

b. Establish maximum charging flow.

c. Continue efforts to establish SI or RHR flow.

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STEP

ACTION/EXPECTED RESPONSE

RESPONSE NOT OBTAINED

5 Check RCP Support Conditions:

a. Verify Bus 11A or 11B - ENERGIZED

a. Restore power to Bus 11A or 11B
(Refer to ER-ELEC.1, RESTORATION
OF OFFSITE POWER).

b. Check other RCP support
conditions (Refer to ATT-15.0,
ATTACHMENT RCP START)

b. Continue attempts to establish
RCP support conditions.

6 Check SI ACCUM Discharge
Valves - OPEN

- MOV-841
- MOV-865

IF SI ACCUM discharge valves closed
after ACCUM discharge, THEN go to
Step 7. IF NOT, THEN perform the
following:

a. Dispatch A0 with locked valve
key to locally close breakers
for SI ACCUM discharge valves.

- MOV-841, MCC C position 12F
- MOV-865, MCC D position 12C

b. Open SI ACCUM discharge valves.

- ACCUM A, MOV-841
- ACCUM B, MOV-865

7 Check Core Exit T/Cs - LESS
THAN 1200° F

Go to Step 10.

EOP:

FR-C.1

TITLE:

RESPONSE TO INADEQUATE CORE COOLING

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STEP

ACTION/EXPECTED RESPONSE

RESPONSE NOT OBTAINED

8 Check RVLIS Indication:

a. RCPs - BOTH SECURED

a. Return to procedure and step in effect

b. RVLIS level - GREATER THAN 52%
[55% adverse CNMT]b. IF RVLIS increasing, THEN return to Step 1. IF NOT, THEN go to Step 9.

c. Return to procedure and step in effect

9 Check Core Exit T/Cs:

a. Temperature - LESS THAN 700°F

a. IF decreasing, THEN return to Step 1. IF NOT, THEN go to Step 10.

b. Return to procedure and step in effect

CAUTIONIF 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)

10 Reset SI

EOP: FR-C.1	TITLE: RESPONSE TO INADEQUATE CORE COOLING	REV: 23 PAGE 8 of 19
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STEP

ACTION/EXPECTED RESPONSE

RESPONSE NOT OBTAINED

11 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.

NOTE: This procedure should be continued while obtaining CNMT hydrogen sample in Step 12.

12 Check CNMT Hydrogen
Concentration:

a. Direct RP to start CNMT hydrogen
monitors as necessary

b. Hydrogen concentration - LESS
THAN 0.5%

b. Consult TSC to determine if
hydrogen recombiners should be
placed in service.

EOP: FR-C.1	TITLE: RESPONSE TO INADEQUATE CORE COOLING	REV: 23 PAGE 9 of 19
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STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
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CAUTION

- o IF CST LEVEL DECREASES TO LESS THAN 5 FEET, THEN ALTERNATE WATER SOURCES FOR AFW PUMPS WILL BE NECESSARY (REFER TO ER-AFW.1, ALTERNATE WATER SUPPLY TO AFW PUMPS).
- o A FAULTED OR RUPTURED S/G SHOULD NOT BE USED IN SUBSEQUENT STEPS UNLESS NO INTACT S/G IS AVAILABLE.

NOTE: TDAFW pump flow control AOVs may drift open on loss of IA.

***13 Monitor Intact S/G Levels:**

a. Narrow range level - GREATER THAN 7% [25% adverse CNMT]

a. Maintain total feed flow greater than 200 gpm until narrow range level greater than 7% [25% adverse CNMT] in at least one S/G.

IF total feed flow greater than 200 gpm can NOT be established, THEN perform the following:

1) Continue attempts to establish a heat sink in at least one S/G (Refer to ER-AFW.1, ALTERNATE WATER SUPPLY TO AFW PUMPS).

2) Go to Step 23.

b. Control feed flow to maintain narrow range level between 17% [25% adverse CNMT] and 50%

EOP: FR-C.1	TITLE: RESPONSE TO INADEQUATE CORE COOLING	REV: 23 PAGE 10 of 19
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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, IT SHOULD BE CLOSED AFTER PRESSURE DECREASES TO LESS THAN 2335 PSIG (REFER TO STEP 14B).</p> <p>*****</p>		
14	Check RCS Vent Paths:	
a.	Power to PRZR PORV block valves - AVAILABLE	a. Restore power to block valves unless block valve was closed to isolate an open PORV:
		<ul style="list-style-type: none"> • MOV-515, MCC D position 6C • MOV-516, MCC C position 6C
b.	PORVs - CLOSED	b. <u>IF</u> PRZR pressure less than 2335 psig, <u>THEN</u> manually close PORVs.
		<u>IF</u> any PORV can <u>NOT</u> be closed, <u>THEN</u> manually close its block valve.
c.	Block valves - AT LEAST ONE OPEN	c. Open one block valve unless it was closed to isolate an open PORV.
d.	Rx vessel head vent valves - CLOSED	d. Manually close valves.
	<ul style="list-style-type: none"> • SOV-590 • SOV-591 • SOV-592 • SOV-593 	

EOP: FR-C.1	TITLE: RESPONSE TO INADEQUATE CORE COOLING	REV: 23 PAGE 11 of 19
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STEP

ACTION/EXPECTED RESPONSE

RESPONSE NOT OBTAINED

15 Establish Condenser Steam
Dump Manual Control

a. Verify condenser available:

- o Intact S/G MSIV - OPEN
- o Annunciator G-15, STEAM DUMP
ARMED - LIT

b. Place steam dump mode selector
switch in MANUAL

c. Place steam dump controller in
MANUAL

a. Place intact S/G ARV controller
in MANUAL and go to Step 16.

NOTE: Partial uncovering of S/G tubes is acceptable in the following steps.

16 Depressurize All Intact S/Gs
To 200 PSIG:

a. Dump steam to condenser at
maximum rate

b. Check S/G pressure - LESS THAN
200 PSIG

c. Check RCS hot leg temperatures -
BOTH LESS THAN 400°F

d. Stop S/G depressurization

a. Manually or locally dump steam
at maximum rate using S/G ARVs.

b. IF S/G pressure decreasing, THEN
return to Step 13.

IF NOT, THEN go to Step 23.

c. IF RCS hot leg temperatures
decreasing, THEN return to
Step 13.

IF NOT, THEN go to Step 23.

EOP: FR-C.1	TITLE: RESPONSE TO INADEQUATE CORE COOLING	REV: 23 PAGE 12 of 19
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STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
17	Check If SI ACCUMs Should Be Isolated:	
a.	RCS hot leg temperatures - BOTH LESS THAN 400°F	a. Go to Step 23.
b.	Dispatch AO with locked valve key to locally close breakers for SI ACCUM discharge valves if necessary <ul style="list-style-type: none"> • MOV-841 MCC C position 12F • MOV-865 MCC D position 12C 	
c.	Verify SI reset	c. Manually reset SI.
d.	Close SI ACCUM discharge valves <ul style="list-style-type: none"> • ACCUM A, MOV-841 • ACCUM B, MOV-865 	d. Perform the following to vent an unisolated accumulator: <ol style="list-style-type: none"> 1) Reset CI. 2) Ensure adequate air compressor(s) running. 3) Establish IA to CNMT. 4) Open vent valves for unisolated SI ACCUMs. <ul style="list-style-type: none"> • ACCUM A, AOV-834A • ACCUM B, AOV-834B 5) Open HCV-945. <p><u>IF</u> an accumulator can <u>NOT</u> be isolated or vented, <u>THEN</u> consult TSC to determine contingency actions.</p>
e.	Locally reopen breakers for MOV-841 and MOV-865	

EOP: FR-C.1	TITLE: RESPONSE TO INADEQUATE CORE COOLING	REV: 23 PAGE 13 of 19
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STEP

ACTION/EXPECTED RESPONSE

RESPONSE NOT OBTAINED

18 Stop Both RCPs

19 Dump Steam to Condenser At
Maximum Rate To Depressurize
All Intact S/Gs To
Atmospheric Pressure

Manually or locally dump steam at
maximum rate using S/G ARVs.

20 Verify SI Flow:

Perform the following:

- o SI line loop A and B flow
indicators - CHECK FOR FLOW

- a. Continue efforts to establish SI
or RHR flow.

-OR-

- b. Try to establish charging flow.

- o RHR loop flow indicator - CHECK
FOR FLOW

- c. IF core exit T/Cs less than
1200°F, THEN return to Step 19.

IF NOT, THEN go to Step 23.

21 Check Core Cooling:

- a. Core exit T/Cs - LESS THAN 1200°F

- a. Go to Step 23.

- b. RCS hot leg temperatures - BOTH
LESS THAN 320°F

- b. Return to Step 19.

- c. RVLIS level (no RCPs) - GREATER
THAN 77% [82% adverse CNMT]

- c. Return to Step 19.

EOP: FR-C.1	TITLE: RESPONSE TO INADEQUATE CORE COOLING	REV: 23 PAGE 14 of 19
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STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
22	Go to Appropriate Plant Procedure	
a.	Check RWST level - GREATER THAN 28%	a. Go to ES-1.3, TRANSFER TO COLD LEG RECIRCULATION, Step 1.
b.	Go to E-1, LOSS OF REACTOR OR SECONDARY COOLANT, Step 18	

EOP: FR-C.1	TITLE: RESPONSE TO INADEQUATE CORE COOLING	REV: 23 PAGE 15 of 19
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STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
	<p><u>NOTE:</u> Normal conditions are desired but not required for starting the RCPs.</p>	
23	Check If RCPs Should Be Started:	
	<p>a. Core Exit T/Cs - GREATER THAN 1200°F</p> <p>b. Check if an idle RCS cooling loop is available</p> <ul style="list-style-type: none"> o Narrow range S/G level - GREATER THAN 7% [25% adverse CNMT] o RCP in associated loop - AVAILABLE AND NOT OPERATING <p>c. Start RCP in one idle RCS cooling loop</p> <p>d. Return to Step 23a</p>	<p>a. Go to Step 24.</p> <p>b. Perform the following:</p> <ol style="list-style-type: none"> 1) Reset SI. 2) Reset CI. 3) Ensure adequate air compressor(s) running. 4) Establish IA to CNMT. 5) Open all PRZR PORVs and block valves <ul style="list-style-type: none"> a) <u>IF</u> any block valve can <u>NOT</u> be opened, <u>THEN</u> ensure power supplied to block valve. b) <u>IF</u> IA <u>NOT</u> available, <u>THEN</u> refer to ATT-12.0, ATTACHMENT N2 PORVS. 6) <u>IF</u> core exit T/Cs remain greater than 1200°F, <u>THEN</u> open Rx vessel head vent valves. <ul style="list-style-type: none"> • SOV-590 • SOV-591 • SOV-592 • SOV-593 7) Go to Step 24.

EOP: FR-C.1	TITLE: RESPONSE TO INADEQUATE CORE COOLING	REV: 23 PAGE 16 of 19
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STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
24	Dump Steam To Condenser At Maximum Rate To Depressurize All Intact S/Gs To Atmospheric Pressure:	<p>Manually or locally dump steam from all intact S/Gs using ARVs.</p> <p><u>IF</u> ARVs not available on intact S/Gs, <u>THEN</u>:</p> <ul style="list-style-type: none"> o Open TDAFW pump steam supply valve from intact S/G(s) <ul style="list-style-type: none"> • S/G A, MOV-3505A • S/G B, MOV-3504A <p style="text-align: center;">-OR-</p> <ul style="list-style-type: none"> o Perform the following: <ul style="list-style-type: none"> a. Open intact S/G MISV bypass valves b. Open both priming air ejector steam inlet valves <ul style="list-style-type: none"> • V-3580 • V-3581 <p><u>IF</u> no intact S/G available, <u>THEN</u> use faulted or ruptured S/G.</p>
25	Check Core Exit T/Cs - LESS THAN 1200° F	<p><u>IF</u> core exit temperatures decreasing, <u>THEN</u> return to step 23.</p> <p><u>IF</u> core exit temperatures increasing, <u>THEN</u> go to SACRG-1, SEVERE ACCIDENT CONTROL ROOM GUIDELINE INITIAL RESPONSE, step 1.</p>

EOP: FR-C.1	TITLE: RESPONSE TO INADEQUATE CORE COOLING	REV: 23 PAGE 17 of 19
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STEP

ACTION/EXPECTED RESPONSE

RESPONSE NOT OBTAINED

26 Check If SI ACCUMs Should Be Isolated:

- | | |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p>a. RHR loop flow indicator - AT LEAST INTERMITTENT FLOW</p> <p>b. Dispatch AO with locked valve key to locally close breakers for SI ACCUM discharge valves if necessary</p> <ul style="list-style-type: none"> • MOV-841 MCC C position 12F • MOV-865 MCC D position 12C <p>c. Reset SI.</p> <p>d. Close SI ACCUM discharge valves</p> <ul style="list-style-type: none"> • ACCUM A, MOV-841 • ACCUM B, MOV-865 <p>e. Locally reopen breakers for MOV-841 and MOV-865</p> | <p>a. Go to Step 28.</p> <p>d. Perform the following to vent an unisolated accumulator:</p> <ol style="list-style-type: none"> 1) Reset CI. 2) Ensure adequate air compressor(s) running. 3) Establish IA to CNMT. 4) Open vent valves for unisolated SI ACCUMs. <ul style="list-style-type: none"> • ACCUM A, AOV-834A • ACCUM B, AOV-834B 5) Open HCV-945. <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-C.1	TITLE: RESPONSE TO INADEQUATE CORE COOLING	REV: 23 PAGE 18 of 19
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STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
27	Check If RCPs Should Be Stopped: a. Both RCS hot leg temperatures - LESS THAN 320°F b. Stop all RCPs	a. Go to Step 28.
28	Verify SI Flow: o SI line loop A and B flow indicators - CHECK FOR FLOW -OR- o RHR loop flow indicator - CHECK FOR FLOW	Perform the following: a. Continue efforts to establish SI or RHR flow. b. Try to establish charging flow. c. Return to Step 23.
29	Check Core Cooling: a. RCS hot leg temperatures - LESS THAN 320°F b. RCPs - BOTH SECURED c. RVLIS level - GREATER THAN 77% [82% adverse CNMT]	a. Return to Step 23. b. Stop all RCPs. c. Return to Step 23.

EOP: FR-C.1	TITLE: RESPONSE TO INADEQUATE CORE COOLING	REV: 23 PAGE 19 of 19
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STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
30	Go to Appropriate Plant Procedure	
a.	IF PRZR PORVs and head vents were opened in Step 23. THEN consult TSC to evaluate long term status AND continue with transitions.	
b.	Check RWST level - GREATER THAN 28%	b. Go to ES-1.3. TRANSFER TO COLD LEG RECIRCULATION, Step 1.
c.	Go to E-1. LOSS OF REACTOR OR SECONDARY COOLANT, Step 18.	
-END-		

EOP: FR-C.1	TITLE: RESPONSE TO INADEQUATE CORE COOLING	REV: 23 PAGE 1 of 1
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FR-C.1 APPENDIX LIST

TITLE

- 1) ATTACHMENT RCP START (ATT-15.0)
- 2) ATTACHMENT N2 PORVS (ATT-12.0)
- 3) ATTACHMENT LOSS OF OFFSITE POWER (ATT-8.5)
- 4) ATTACHMENT NO SW PUMPS (ATT-2.4)
- 5) FOLDOUT PAGE

EOP: FR-C.1	TITLE: RESPONSE TO INADEQUATE CORE COOLING	REV: 23 PAGE 1 of 1
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FOLDOUT PAGE

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

1. LOSS OF SW CRITERIA

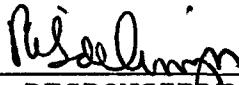
IF no SW pumps are available, THEN perform the following:

- 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.

EOP: FR-C.2	TITLE: RESPONSE TO DEGRADED CORE COOLING	REV: 21 PAGE 1 of 14
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GINNA STATION

CONTROLLED COPY NUMBER 23


RESPONSIBLE MANAGER

12-15-2005
EFFECTIVE DATE

CATEGORY 1.0

REVIEWED BY: _____

EOP: FR-C.2	TITLE: RESPONSE TO DEGRADED CORE COOLING	REV: 21 PAGE 2 of 14
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A. PURPOSE - This procedure provides actions to restore adequate core cooling.

B. ENTRY CONDITIONS/SYMPTOMS

1. ENTRY CONDITIONS - This procedure is entered from:

- a. F-0.2, CORE COOLING Critical Safety Function Status Tree, on any ORANGE condition.

EOP: FR-C.2	TITLE: RESPONSE TO DEGRADED CORE COOLING	REV: 21 PAGE 3 of 14
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STEP

ACTION/EXPECTED RESPONSE

RESPONSE NOT OBTAINED

- NOTE:
- o Adverse CNMT values should be used whenever CNMT pressure is greater than 4 psig or CNMT radiation is greater than 10^{+05} R/hr.
 - o Normal conditions for running RCPs are desired, but RCPs should NOT be tripped if normal conditions cannot be established or maintained.
 - o Foldout Page should be open and monitored periodically.

* 1 Monitor RWST Level - GREATER THAN 28%

Perform the following:

- a. Ensure SI system aligned for cold leg recirculation using Steps 1 through 14 of ES-1.3, TRANSFER TO COLD LEG RECIRCULATION.
- b. Go to Step 4.

2 Verify SI Pump Suction Aligned To RWST:

- a. SI pump suction valves from RWST - OPEN

- MOV-825A
- MOV-825B

- a. Ensure at least one SI pump suction valve from RWST open

- MOV-825A
- MOV-825B

EOP: FR-C.2	TITLE: RESPONSE TO DEGRADED CORE COOLING	REV: 21 PAGE 4 of 14
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STEP

ACTION/EXPECTED RESPONSE

RESPONSE NOT OBTAINED

3 Verify SI Pump And RHR Pump
Emergency Alignment:

a. RHR pump discharge to Rx vessel
deluge - OPEN

- MOV-852A
- MOV-852B

b. Verify SI pump C - RUNNING

c. Verify SI pump A - RUNNING

d. Verify SI pump B - RUNNING

e. Verify both SI pump C discharge
valves - OPEN

- MOV-871A
- MOV-871B

a. Ensure at least one valve open.

b. Manually start pump on available
bus.

c. Perform the following:

- 1) Ensure SI pumps B and C
running.
- 2) Ensure SI pump C aligned to
discharge line A:
 - o MOV-871B closed
 - o MOV-871A open
- 3) Go to Step 4.

d. Perform the following:

- 1) Ensure SI pumps A and C
running.
- 2) Ensure SI pump C aligned to
discharge line B:
 - o MOV-871B open
 - o MOV-871A closed
- 3) Go to Step 4.

e. Manually open valves as
necessary.

EOP: FR-C.2	TITLE: RESPONSE TO DEGRADED CORE COOLING	REV: 21 PAGE 5 of 14
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STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
4	Verify SI Flow In Both Trains:	
a.	SI line loop A and B flow indicators - CHECK FOR FLOW	a. Perform the following: 1) Manually start SI pumps and align valves as necessary. 2) Establish maximum charging flow.
b.	RCS pressure - LESS THAN 250 psig [465 psig adverse CNMT]	b. Go to Step 5.
c.	RHR loop flow indicator - CHECK FOR FLOW	c. Manually start RHR pumps and align valves.

EOP: FR-C.2	TITLE: RESPONSE TO DEGRADED CORE COOLING	REV: 21 PAGE 6 of 14
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STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED

CAUTION		
IF ANY PRZR PORV OPENS BECAUSE OF HIGH PRZR PRESSURE, IT SHOULD BE CLOSED AFTER PRESSURE DECREASES TO LESS THAN 2335 PSIG (REFER TO STEP 5B).		

5	Check RCS Vent Paths:	
a.	Power to PRZR PORV block valves - AVAILABLE	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.	PORVs - CLOSED	b. <u>IF</u> PRZR pressure less than 2335 psig. <u>THEN</u> manually close PORVs. <u>IF</u> any PORV can <u>NOT</u> be closed, <u>THEN</u> manually close its block valve.
c.	Block valves - AT LEAST ONE OPEN	c. Open one block valve unless it was closed to isolate an open PORV.
d.	Rx vessel head vent valves - CLOSED • SOV-590 • SOV-591 • SOV-592 • SOV-593	d. Manually close valves.

EOP: FR-C.2	TITLE: RESPONSE TO DEGRADED CORE COOLING	REV: 21 PAGE 7 of 14
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STEP

ACTION/EXPECTED RESPONSE

RESPONSE NOT OBTAINED

6 Check RCP Status:

- | | |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------|
| <ul style="list-style-type: none"> a. At least one RCP - RUNNING b. Support conditions for the operating RCP(s) available (Refer to ATT-15.0, ATTACHMENT RCP START) | <ul style="list-style-type: none"> a. Go to Step 9. b. Try to establish support conditions for the operating RCP. |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------|

7 Check RVLIS Fluid Fraction

- | | |
|---------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------|
| <ul style="list-style-type: none"> a. Fluid fraction (any RCP on) - GREATER THAN 66% b. Return to procedure and step in effect. | <ul style="list-style-type: none"> a. <u>IF</u> increasing. <u>THEN</u> return to Step 1. <u>IF NOT</u>. then go to Step 8. |
|---------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------|

8 Check If One RCP Should Be Stopped:

- | | |
|-----------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------|
| <ul style="list-style-type: none"> a. Both RCPs - RUNNING b. Stop one RCP c. Go to Step 10 | <ul style="list-style-type: none"> a. Go to Step 10. |
|-----------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------|

9 Check Core Cooling:

- | | |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <ul style="list-style-type: none"> a. RVLIS level (no RCPs) - GREATER THAN 52% [55% adverse CNMT] b. Core exit T/Cs - LESS THAN 700°F c. Return to procedure and step in effect | <ul style="list-style-type: none"> a. <u>IF</u> increasing. <u>THEN</u> return to Step 1. <u>IF NOT</u>. <u>THEN</u> go to Step 10. b. <u>IF</u> decreasing. <u>THEN</u> return to Step 1. <u>IF NOT</u>. <u>THEN</u> go to Step 10. |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
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10 Check SI ACCUM Discharge Valves - OPEN

- MOV-841
- MOV-865

IF SI ACCUM discharge valves closed after ACCUM discharge, THEN go to Step 11. IF NOT, THEN perform the following:

- a. Dispatch A0 with locked valve key to locally close breakers for SI ACCUM discharge valves.
 - MOV-841, MCC C position 12F
 - MOV-865, MCC D position 12C
- b. Open SI ACCUM discharge valves.
 - ACCUM A, MOV-841
 - ACCUM B, MOV-865

CAUTION

- o IF CST LEVEL DECREASES TO LESS THAN 5 FEET, THEN ALTERNATE WATER SOURCES FOR AFW PUMPS WILL BE NECESSARY (REFER TO ER-AFW.1, ALTERNATE WATER SUPPLY TO AFW PUMPS).
- o A FAULTED OR RUPTURED S/G SHOULD NOT BE USED IN SUBSEQUENT STEPS UNLESS NO INTACT S/G IS AVAILABLE.

NOTE: TDAFW pump flow control AOVs may drift open on loss of IA.

***11 Monitor Intact S/G Levels:**

- a. Narrow range level - GREATER THAN 7% [25% adverse CNMT]
- a. Increase total feed flow to restore narrow range level greater than 7% [25% adverse CNMT] in at least one S/G.
- b. Control feed flow to maintain narrow range level between 17% [25% adverse CNMT] and 50%

EOP: FR-C.2	TITLE: RESPONSE TO DEGRADED CORE COOLING	REV: 21 PAGE 9 of 14
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STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
12	Establish Condenser Steam Dump Manual Control	
a.	Verify condenser available:	a. Place intact S/G ARV controller in MANUAL and go to Step 13.
	o Intact S/G MSIV - OPEN	
	o Annunciator G-15, STEAM DUMP ARMED - LIT	
b.	Place steam dump mode selector switch in MANUAL	
c.	Place steam dump controller in MANUAL	

EOP: FR-C.2	TITLE: RESPONSE TO DEGRADED CORE COOLING	REV: 21 PAGE 10 of 14
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STEP

ACTION/EXPECTED RESPONSE

RESPONSE NOT OBTAINED

CAUTION

THE FOLLOWING STEP WILL CAUSE SI ACCUMULATOR INJECTION WHICH MAY RESULT IN A RED PATH CONDITION IN F-0.4, INTEGRITY STATUS TREE. THIS PROCEDURE SHOULD BE COMPLETED BEFORE TRANSITION TO FR-P.1, RESPONSE TO IMMINENT PRESSURIZED THERMAL SHOCK.

13 Depressurize All Intact S/Gs
To 200 PSIG:

a. Maintain cooldown rate in RCS
cold legs - LESS THAN 100°F/HR

b. Dump steam to condenser

b. Manually or locally dump steam
from intact S/Gs:

o Use S/G ARVs.

-OR-

o Open TDAFW pump steam supply
valve(s) for affected S/G(s):

- S/G A, MOV-3505A
- S/G B, MOV-3504A

-OR-

o Locally perform the following:

o Open intact S/G MSIV
bypass valve.

o Open priming air ejector
steam isolation valves.

- V-3580
- V-3581

c. Check S/G pressures - LESS THAN
200 PSIG

c. Return to Step 11.

d. Check RCS hot leg temperatures -
BOTH LESS THAN 400°F

d. Return to Step 11.

e. Stop S/G depressurization

STEP

ACTION/EXPECTED RESPONSE

RESPONSE NOT OBTAINED

CAUTION

RHR PUMPS SHOULD NOT BE RUN LONGER THAN 1 HOUR WITHOUT CCW TO THE RHR HEAT EXCHANGERS.

14 Check RHR Pumps - RUNNING

Manually start pumps as necessary.

STEP

ACTION/EXPECTED RESPONSE

RESPONSE NOT OBTAINED

15 Isolate Both SI ACCUMs

- a. Dispatch AO with locked valve key to locally close breakers for SI ACCUM discharge valves if necessary

- MOV-841, MCC C position 12F
- MOV-865, MCC D position 12C

- b. Reset SI

- c. Close SI ACCUM discharge valves

- MOV-841
- MOV-865

- c. Perform the following to vent an unisolated accumulator:

- 1) Reset CI
- 2) Ensure adequate air compressor(s) running
- 3) Establish IA to CNMT
- 4) Open vent valves for unisolated SI ACCUMs.
 - ACCUM A, AOV-834A
 - ACCUM B, AOV-834B
- 5) Open HCV-945.

IF an accumulator can NOT be isolated or vented, THEN consult TSC to determine contingency actions.

- d. Locally reopen breakers for MOV-841 and MOV-865

EOP: FR-C.2	TITLE: RESPONSE TO DEGRADED CORE COOLING	REV: 21 PAGE 13 of 14
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STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
<p>*****</p> <p style="text-align: center;"><u>CAUTION</u></p> <p>SYMPTOMS FOR FR-C.1, RESPONSE TO INADEQUATE CORE COOLING, SHOULD BE CLOSELY MONITORED DURING SUBSEQUENT STEPS.</p> <p>*****</p>		
16	Stop All RCPs	
17	Depressurize All Intact S/Gs To Atmospheric Pressure:	
	<p>a. Maintain cooldown rate in RCS cold legs - LESS THAN 100°F/HR</p> <p>b. Dump steam to condenser</p>	<p>b. Manually or locally dump steam from intact S/Gs:</p> <p>1) Use S/G ARVs.</p> <p>2) Open TDAFW pump steam supply valve(s) for affected S/G(s):</p> <ul style="list-style-type: none"> • S/G A, MOV-3505A • S/G B, MOV-3504A <p>3) Locally perform the following:</p> <ul style="list-style-type: none"> o Open intact S/G MSIV bypass valve. o Open priming air ejector steam isolation valves. <ul style="list-style-type: none"> • V-3580 • V-3581

EOP: FR-C.2	TITLE: RESPONSE TO DEGRADED CORE COOLING	REV: 21 PAGE 14 of 14
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STEP

ACTION/EXPECTED RESPONSE

RESPONSE NOT OBTAINED

18 Verify SI Flow:

- o SI line loop A and B flow indicators - CHECK FOR FLOW
- OR-
- o RHR loop flow indicator - CHECK FOR FLOW

Perform the following:

- a. Continue efforts to establish SI or RHR flow.
- b. Try to establish maximum charging flow.
- c. Return to Step 17.

19 Check Core Cooling:

- o RVLIS level (no RCPs) - GREATER THAN 77% [82% adverse CNMT]
- o Both RCS hot leg temperatures - LESS THAN 320°F

Return to Step 17.

20 Go to Appropriate Plant Procedure

- a. Check RWST level - GREATER THAN 28%
- b. Go to E-1, LOSS OF REACTOR OR SECONDARY COOLANT, Step 18

- a. Go to ES-1.3, TRANSFER TO COLD LEG RECIRCULATION, Step 1.

-END-

EOP: FR-C.2	TITLE: RESPONSE TO DEGRADED CORE COOLING	REV: 21 PAGE 1 of 1
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FR-C.2 APPENDIX LIST

TITLE

- 1) ATTACHMENT RCP START (ATT-15.0)
- 2) ATTACHMENT NO SW PUMPS (ATT-2.4)
- 3) FOLDOUT

EOP: FR-C.2	TITLE: RESPONSE TO DEGRADED CORE COOLING	REV: 21 PAGE 1 of 1
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FOLDOUT PAGE

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

1. LOSS OF SW CRITERIA

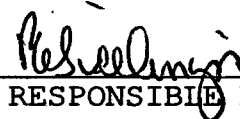
IF no SW pumps are available, THEN perform the following:

- 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.

EOP: FR-S.1	TITLE: RESPONSE TO REACTOR RESTART/ATWS	REV: 18 PAGE 1 of 13
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GINNA STATION

CONTROLLED COPY NUMBER 23


RESPONSIBLE MANAGER

12-15-2005
EFFECTIVE DATE

CATEGORY 1.0

REVIEWED BY: _____

EOP: FR-S.1	TITLE: RESPONSE TO REACTOR RESTART/ATWS	REV: 18 PAGE 2 of 13
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A. PURPOSE - This procedure provides actions to add negative reactivity to a core which is observed to be critical when expected to be shut down.

B. ENTRY CONDITIONS/SYMPTOMS

1. ENTRY CONDITIONS - This procedure is entered from:

- a. E-0, REACTOR TRIP OR SAFETY INJECTION,
when reactor trip is not verified and manual
trip is not effective.
- b. F-0.1, SUBCRITICALITY, Critical Safety Function
Status Tree on either a RED or ORANGE condition.

EOP: FR-S.1	TITLE: RESPONSE TO REACTOR RESTART/ATWS	REV: 18 PAGE 3 of 13
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STEP

ACTION/EXPECTED RESPONSE

RESPONSE NOT OBTAINED

NOTE: Adverse CNMT values should be used whenever CNMT pressure is greater than 4 psig or CNMT radiation is greater than 10^{+05} R/hr.

1 Verify Reactor Trip:

Manually trip reactor.

- o At least one train of reactor trip breakers - OPEN
- o Neutron flux - DECREASING
- o MRPI indicates - ALL CONTROL AND SHUTDOWN RODS ON BOTTOM

IF reactor trip breakers NOT open, THEN manually insert control rods.

2 Verify Turbine Stop Valves - CLOSED

Manually trip turbine.

IF turbine trip can NOT be verified, THEN close both MSIVs.

3 Check AFW Pumps Running:

- a. MDAFW pumps - RUNNING
- b. TDAFW pump - RUNNING IF NECESSARY

a. Manually start MDAFW pumps.

b. Manually open steam supply valves.

- MOV-3505A
- MOV-3504A

EOP: FR-S.1	TITLE: RESPONSE TO REACTOR RESTART/ATWS	REV: 18 PAGE 4 of 13
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STEP

ACTION/EXPECTED RESPONSE

RESPONSE NOT OBTAINED

CAUTION

ACTIONS TAKEN TO INITIATE RCS BORATION SHALL NOT BE REVERSED WHEN PERFORMING STEPS 1 THROUGH 12 OF E-0, REACTOR TRIP OR SAFETY INJECTION.

- *****
- NOTE:
- o If offsite power is lost coincident with SI, then MCC C and MCC D lockout relays must be reset to restore BA and RMW pumps.
 - o Foldout page should be open and monitored periodically.

4 Initiate Emergency Boration
Of RCS:

a. Check SI status:

- o All SI annunciators - EXTINGUISHED
- o All SI pumps OFF IN AUTO

a. Perform the following:

- 1) Complete steps 1 through 12 of E-0, REACTOR TRIP OR SAFETY INJECTION, while continuing with this procedure
- 2) IF SI flow indicated, THEN go to Step 5. IF NOT, THEN go to Step 4b.

b. Verify at least one charging pump - RUNNING

b. Perform the following:

- 1) Reset SI if necessary.
- 2) Start one charging pump.

c. Align boration path:

- 1) Start two BA transfer pumps
- 2) Open MOV-350
- 3) Verify BA flow

c. Initiate normal boration at maximum rate using the boric acid flow control valve, FCV-110A. IF flow can NOT be established, THEN refer to ER-CVCS.1, REACTOR MAKEUP CONTROL MALFUNCTION.

d. Verify charging flow path:

- o Charging valve to loop B cold leg (AOV-294) - OPEN
- o Charging flow control valve (HCV-142) - DEMAND AT 0%

d. Manually align valves and verify flow.

EOP: FR-S.1	TITLE: RESPONSE TO REACTOR RESTART/ATWS	REV: 18 PAGE 5 of 13
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STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
5	Check PRZR PORV Status:	
a.	RCS pressure - LESS THAN 2335 PSIG	<p>a. Verify PRZR PORVs and block valves open. <u>IF NOT</u>, <u>THEN</u> open PRZR PORVs and block valves as necessary until PRZR pressure less than 2335 psig.</p>
b.	Check PORVs - BOTH CLOSED	<p>b. <u>IF</u> PRZR pressure less than 2335 psig, <u>THEN</u> manually close PORVs.</p> <p><u>IF</u> any PORV can <u>NOT</u> be closed, <u>THEN</u> manually close its block valve. <u>IF</u> block valve can <u>NOT</u> be closed, <u>THEN</u> dispatch AO to locally check breaker.</p> <ul style="list-style-type: none"> • MOV-515, MCC D position 6C • MOV-516, MCC C position 6C
6	Verify CNMT Ventilation Isolation	
a.	CVI annunciator - LIT	a. Momentarily deenergize CNMT particulate monitor, R-11, to actuate CVI.
	<ul style="list-style-type: none"> • Annunciator A-25, CNMT VENTILATION ISOLATION 	
b.	Verify CVI valve status lights - BRIGHT	<p>b. Manually close affected CVI valves</p> <p><u>IF</u> valves can <u>NOT</u> be verified closed by MCB indication, <u>THEN</u> close alternate isolation valves (Refer to ATT-3.0, ATTACHMENT CI/CVI for alternate isolation valves).</p>

EOP:	TITLE:	REV: 18
FR-S.1	RESPONSE TO REACTOR RESTART/ATWS	PAGE 6 of 13

STEP

ACTION/EXPECTED RESPONSE

RESPONSE NOT OBTAINED

7 Check If The Following Trips
Have Occurred:

a. Reactor trip

a. Dispatch AO to locally trip
reactor:

o Trip MG set breakers at bus
13 and bus 15.

-OR-

o Open reactor trip breakers
locally.

b. Turbine trip

b. Dispatch AO to locally trip
turbine using manual trip lever
on west end of HP turbine.

* 8 Check If Reactor Is
Subcritical:

a. Energize MCC A AND B

b. Check power range channels -
LESS THAN 5%

b. Go to Step 9.

c. Check Intermediate range channels

c. Go to Step 9.

o Startup rate - NEGATIVE

-OR-

o Intermediate range channels -
DECREASING

d. Go to Step 18.

STEP

ACTION/EXPECTED RESPONSE

RESPONSE NOT OBTAINED

CAUTION

IF CST LEVEL DECREASES TO LESS THAN 5 FEET, THEN ALTERNATE WATER SOURCES FOR AFW PUMPS WILL BE NECESSARY (REFER TO ER-AFW.1, ALTERNATE WATER SUPPLY TO AFW PUMPS).

* 9 Monitor S/G Level:

a. Narrow range level in at least one S/G - GREATER THAN 7% [25% adverse CNMT]

a. Perform the following:

1) Verify total feed flow greater than 400 gpm.

IF NOT, THEN manually start pumps and align valves as necessary.

IF AFW can NOT be established, THEN establish SAFW (Refer to ATT-5.1, ATTACHMENT SAFW)

2) Maintain total feed flow greater than 400 gpm until narrow range level greater than 7% [25% adverse CNMT] in at least one S/G.

b. Control feed flow to maintain narrow range level between 17% [25% adverse CNMT] and 50%

EOP: FR-S.1	TITLE: RESPONSE TO REACTOR RESTART/ATWS	REV: 18 PAGE 8 of 13
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STEP

ACTION/EXPECTED RESPONSE

RESPONSE NOT OBTAINED

10 Verify Dilution Paths -
ISOLATED

- a. Place RMW mode switch to BORATE
- b. Stop RMW pumps

b. Perform the following:

- 1) Close RMW to blender (AOV-111)
- 2) Direct AO to locally open RMW pump breaker
 - RMW Pump A, MCC C Pos 13B
 - RMW Pump B, MCC D Pos 1B

11 Stabilize RCS Temperature:

- a. Control steam dump as necessary
- b. Verify the following:
 - o Core exit T/Cs - STABLE OR INCREASING
 - o Pressure in both S/Gs - STABLE OR INCREASING
 - o Pressure in both S/Gs - GREATER THAN 110 PSIG
- c. Go to Step 16

- b. IF RCS cooldown can NOT be controlled, THEN close both MSIVs and go to Step 12.

EOP: FR-S.1	TITLE: RESPONSE TO REACTOR RESTART/ATWS	REV: 18 PAGE 9 of 13
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STEP

ACTION/EXPECTED RESPONSE

RESPONSE NOT OBTAINED

12 Verify MFW Isolation:

- | | |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------|
| <ul style="list-style-type: none"> a. MFW pumps - TRIPPED
 b. Depress MANUAL pushbutton for A and B S/G MFW regulating valve and bypass valve controllers <u>AND</u> adjust to 0% demand. | <ul style="list-style-type: none"> a. Manually close MFW pump discharge valves and trip MFW pumps. |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------|

13 Identify Faulted S/G:

Go to Step 16.

- o Any S/G Pressure - DECREASING IN AN UNCONTROLLED MANNER

-OR-

- o Any S/G Pressure - LESS THAN 110 PSIG

EOP: FR-S.1	TITLE: RESPONSE TO REACTOR RESTART/ATWS	REV: 18 PAGE 10 of 13
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STEP

ACTION/EXPECTED RESPONSE

RESPONSE NOT OBTAINED

CAUTION

- o AT LEAST ONE S/G SHALL BE MAINTAINED AVAILABLE FOR RCS COOLDOWN.
- o IF BOTH S/GS ARE FAULTED, AT LEAST 50 GPM FEED FLOW SHOULD BE MAINTAINED TO EACH S/G.

14 Isolate Feed Flow To Faulted S/G:

Manually close valves.

IF valves can NOT be closed, THEN dispatch AO to locally isolate flowpaths as necessary.

- o Close faulted S/G MDAFW pump discharge valve
 - S/G A, MOV-4007
 - S/G B, MOV-4008
- o Pull stop faulted S/G MDAFW pump
- o Close faulted S/G TDAFW flow control valve
 - S/G A, AOV-4297
 - S/G B, AOV-4298
- o Verify faulted S/G MFW regulating valve and bypass valve - CLOSED
 - S/G A, HCV-466 and HCV-480
 - S/G B, HCV-476 and HCV-481
- o Verify MDAFW pump crosstie valves - BOTH CLOSED
 - MOV-4000A
 - MOV-4000B
- o Close faulted S/G SAFW pump discharge valve
 - S/G A, MOV-9701A
 - S/G B, MOV-9701B

EOP: FR-S.1	TITLE: RESPONSE TO REACTOR RESTART/ATWS	REV: 18 PAGE 11 of 13
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STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED

CAUTION		
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.		

15	Isolate Steam Flow From Faulted S/G:	Manually close valves.
	<ul style="list-style-type: none"> o Verify faulted S/G ARV - CLOSED <ul style="list-style-type: none"> • S/G A, AOV-3411 • S/G B, AOV-3410 o Close faulted S/G TDAFW pump steam supply valve and place in PULL STOP <ul style="list-style-type: none"> • S/G A, MOV-3505A • S/G B, MOV-3504A o Verify faulted S/G blowdown and sample valves - CLOSED <ul style="list-style-type: none"> • S/G A, AOV-5738 and AOV-5735 • S/G B, AOV-5737 and AOV-5736 o Dispatch AO to complete faulted S/G isolation (Refer to ATT-10.0, ATTACHMENT FAULTED S/G) 	<p>IF valves can <u>NOT</u> be closed, <u>THEN</u> dispatch AO to locally isolate flowpaths as necessary.</p>

EOP: FR-S.1	TITLE: RESPONSE TO REACTOR RESTART/ATWS	REV: 18 PAGE 12 of 13
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STEP

ACTION/EXPECTED RESPONSE

RESPONSE NOT OBTAINED

16 Check Core Exit T/Cs - LESS THAN 1200°F

IF core exit temperatures greater than 1200°F and increasing, THEN go to SACRG-1, SEVERE ACCIDENT CONTROL ROOM GUIDELINE INITIAL RESPONSE, step 1.

NOTE: Adverse CNMT conditions or loss of forced air cooling may result in failure of NIS detectors.

17 Verify Reactor Subcritical:

Perform the following:

- o Power range channels - LESS THAN 5%
- o Intermediate range channels - STABLE OR DECREASING
- o Intermediate range channels startup rate - NEGATIVE
- o Core exit T/Cs - STABLE

- a. Stabilize RCS temperature.
- b. Continue to inject boric acid.
- c. Perform actions of other FR procedures in effect which do NOT cooldown or otherwise add positive reactivity to the core.
- d. Direct RP to sample RCS and PRZR for boron concentration.
- e. Verify boron concentration greater than FIG-2.0, FIGURE SDM.

IF adequate shutdown margin verified, THEN go to Step 18.

IF NOT, THEN perform the following:

- a. Allow RCS to heat up.
- b. Perform actions of other FR procedures in effect which do NOT cooldown or otherwise add positive reactivity to the core.
- c. Return to Step 4.

EOP: FR-S.1	TITLE: RESPONSE TO REACTOR RESTART/ATWS	REV: 18 PAGE 13 of 13
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STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
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CAUTION

BORATION SHOULD CONTINUE TO OBTAIN ADEQUATE SHUTDOWN MARGIN DURING SUBSEQUENT ACTIONS.

18 Return to Procedure And Step
In Effect

-END-

EOP: FR-S.1	TITLE: RESPONSE TO REACTOR RESTART/ATWS	REV: 18 PAGE 1 of 1
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FR-S.1 APPENDIX LIST

TITLE

- 1) FIGURE SDM (FIG-2.0)
- 2) ATTACHMENT FAULTED S/G (ATT-10.0)
- 3) ATTACHMENT CI/CVI (ATT-3.0)
- 4) ATTACHMENT SAFW (ATT-5.1)
- 5) ATTACHMENT NO SW PUMPS (ATT-2.4)
- 6) FOLDOUT

EOP: FR-S.1	TITLE: RESPONSE TO REACTOR RESTART/ATWS	REV: 18 PAGE 1 of 1
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FOLDOUT PAGE

NOTE: This Foldout Page applies to all FR-S 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.

EOP: FR-Z.1	TITLE: RESPONSE TO HIGH CONTAINMENT PRESSURE	REV: 10 PAGE 1 of 7
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GINNA STATION

CONTROLLED COPY NUMBER 23

Robert Quinn
RESPONSIBLE MANAGER

12-15-2005
EFFECTIVE DATE

CATEGORY 1.0

REVIEWED BY: _____

EOP: FR-Z.1	TITLE: RESPONSE TO HIGH CONTAINMENT PRESSURE	REV: 10 PAGE 2 of 7
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A. PURPOSE - This procedure provides actions to respond to a high CNMT pressure.

B. ENTRY CONDITIONS/SYMPTOMS

1. ENTRY CONDITIONS - This procedure is entered from:

a. F-0.5, CONTAINMENT Critical Safety Function Status Tree, on a RED or ORANGE condition.

EOP: FR-Z.1	TITLE: RESPONSE TO HIGH CONTAINMENT PRESSURE	REV: 10 PAGE 3 of 7
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STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
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NOTE: FOLDOUT Page should be open and monitored periodically.

1 Verify All CI And CVI Valve
Status Lights - BRIGHT

IF flow path NOT required. THEN
manually close affected CI and CVI
valves.

IF valves can NOT be verified
closed by MCB indication. THEN
close alternate isolation valves.
(Refer to ATT-3.0, ATTACHMENT
CI/CVI).

EOP: FR-Z.1	TITLE: RESPONSE TO HIGH CONTAINMENT PRESSURE	REV: 10 PAGE 4 of 7
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STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
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CAUTION

- o IF ECA-1.1, LOSS OF EMERGENCY COOLANT RECIRCULATION, IS IN EFFECT, THEN CNMT SPRAY SHOULD BE OPERATED AS DIRECTED IN ECA-1.1, RATHER THAN STEP 2 BELOW.
- o IF E-1, LOSS OF REACTOR OR SECONDARY COOLANT, IS IN EFFECT, THEN CNMT SPRAY SHOULD BE OPERATED AS DIRECTED IN E-1, LOSS OF REACTOR OR SECONDARY COOLANT, RATHER THAN STEP 2 BELOW.

2 Verify CNMT Spray Actuated:

- | | |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p>a. Verify RWST outlet to SI and CNMT spray pumps - OPEN</p> <ul style="list-style-type: none"> • MOV-896A • MOV-896B | <p>a. <u>IF</u> in RHR recirculation mode, <u>THEN</u> perform the following:</p> <ul style="list-style-type: none"> 1) Operate SI pumps and one CNMT spray pump as directed in ES-1.3, TRANSFER TO COLD LEG RECIRCULATION, Step 15. 2) Go to Step 3. |
| <p>b. Verify CNMT spray pumps - RUNNING</p> | <p>b. Manually start pumps.</p> |
| <p>c. Verify NaOH flow (FI-930)</p> | <p>c. <u>IF</u> NaOH flow <u>NOT</u> indicated, <u>THEN</u> place switches for NaOH tank outlet valves to OPEN.</p> <ul style="list-style-type: none"> • AOV-836A • AOV-836B |
| <p>d. Verify CNMT spray pump discharge valves - OPEN</p> <ul style="list-style-type: none"> • MOV-860A • MOV-860B • MOV-860C • MOV-860D | <p>d. Ensure at least one in each set open.</p> <ul style="list-style-type: none"> • MOV-860A or MOV-860B • MOV-860C or MOV-860D |

EOP: FR-Z.1	TITLE: RESPONSE TO HIGH CONTAINMENT PRESSURE	REV: 10 PAGE 5 of 7
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STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
3	Verify CNMT RECIRC Fans Running:	
	a. All fans - RUNNING	a. Manually start fans.
	b. Charcoal filter dampers green status lights - EXTINGUISHED	b. Dispatch personnel to relay room with relay rack key to locally open dampers by pushing in trip relay plungers. <ul style="list-style-type: none"> • AUX RELAY RACK RA-2 for fan A • AUX RELAY RACK RA-3 for fan C
4	Verify MSIVs - CLOSED	Manually close valves.

EOP: FR-Z.1	TITLE: RESPONSE TO HIGH CONTAINMENT PRESSURE	REV: 10 PAGE 6 of 7
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STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
<p>*****</p> <p style="text-align: center;"><u>CAUTION</u></p> <p>o AT LEAST ONE S/G SHALL BE MAINTAINED AVAILABLE FOR RCS COOLDOWN.</p> <p>o IF BOTH S/GS ARE FAULTED, THEN AT LEAST 50 GPM FEED FLOW SHOULD BE MAINTAINED TO EACH S/G.</p> <p>*****</p>		
5	<p>Check If S/G Secondary Side Is Intact:</p> <ul style="list-style-type: none"> o Pressure in both S/Gs - STABLE OR INCREASING o Pressure in both S/Gs - GREATER THAN 110 PSIG 	<p>Isolate feed flow to faulted S/G:</p> <ul style="list-style-type: none"> a. Ensure faulted S/G MDAFW pump discharge valve closed. <ul style="list-style-type: none"> • S/G A, MOV-4007 • S/G B, MOV-4008 b. Ensure faulted S/G TDAFW flow control valve closed. <ul style="list-style-type: none"> • S/G A, AOV-4297 • S/G B, AOV-4298 c. Depress MANUAL pushbuttons for faulted S/G MFW regulating valve and bypass valve <u>AND</u> ensure valves closed. <ul style="list-style-type: none"> • S/G A, HCV-466 and HCV-480 • S/G B, HCV-476 and HCV-481 d. Ensure MFW pump discharge valves closed. <p><u>IF</u> valves can <u>NOT</u> be closed, <u>THEN</u> dispatch AO to locally close valves as necessary to isolate flow.</p>

EOP: FR-Z.1	TITLE: RESPONSE TO HIGH CONTAINMENT PRESSURE	REV: 10 PAGE 7 of 7
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STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
6	Return To Procedure And Step In Effect	
		-END-

EOP:

FR-Z.1

TITLE:

RESPONSE TO HIGH CONTAINMENT PRESSURE

REV: 10

PAGE 1 of 1

FR-Z.1 APPENDIX LIST

TITLE

- 1) ATTACHMENT CI/CVI (ATT-3.0)
- 2) ATTACHMENT NO SW PUMPS (ATT-2.4)
- 3) FOLDOUT

EOP: FR-Z.1	TITLE: RESPONSE TO HIGH CONTAINMENT PRESSURE	REV: 10 PAGE 1 of 1
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FOLDOUT PAGE

NOTE: This Foldout Page applies to all FR-Z 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.