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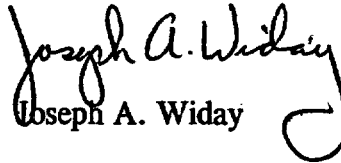
July 10, 2003

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

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

As requested, enclosed are Ginna Station Emergency Operating Procedures.

Very truly yours,

  
Joseph A. Widay

JAW/jdw

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

Ginna USNRC Senior Resident Inspector

Enclosure(s):

ECA Index  
ECA-0.0, Rev 26

A002

NPSP0200  
WRIGHTJ

GINNA Nuclear Power Plant  
PROCEDURE INDEX

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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	026	07/10/2003	03/24/2003	03/24/2008	EF
ECA-0.1	LOSS OF ALL AC POWER RECOVERY WITHOUT SI REQUIRED	022	05/30/2003	03/24/2003	03/24/2008	EF
ECA-0.2	LOSS OF ALL AC POWER RECOVERY WITH SI REQUIRED	015	05/30/2003	03/24/2003	03/24/2008	EF
ECA-1.1	LOSS OF EMERGENCY COOLANT RECIRCULATION	022	05/30/2003	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-2.1	UNCONTROLLED DEPRESSURIZATION OF BOTH STEAM GENERATORS	026	05/30/2003	03/24/2003	03/24/2008	EF
ECA-3.1	SGTR WITH LOSS OF REACTOR COOLANT SUBCOOLED RECOVERY DESIRED	026	05/30/2003	03/24/2003	03/24/2008	EF
ECA-3.2	SGTR WITH LOSS OF REACTOR COOLANT SATURATED RECOVERY DESIRED	027	05/30/2003	03/24/2003	03/24/2008	EF
ECA-3.3	SGTR WITHOUT PRESSURIZER PRESSURE CONTROL	029	05/30/2003	03/24/2003	03/24/2008	EF

PRECA TOTAL: 9

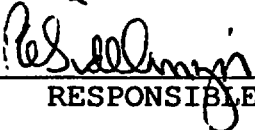
GRAND TOTAL: 9

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ROCHESTER GAS AND ELECTRIC CORPORATION

GINNA STATION

CONTROLLED COPY NUMBER 23

  
RESPONSIBLE MANAGER

7-10-2003  
EFFECTIVE DATE

CATEGORY 1.0

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

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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
<p>*****</p> <p style="text-align: center;"><u>CAUTION</u></p> <p>DUE TO POTENTIALLY EXTREME ENVIRONMENTAL CONDITIONS. CAUTION SHOULD BE USED WHEN ENTERING THE INTERMEDIATE BLDG FOR LOCAL ACTIONS.</p> <p>*****</p> <p><u>NOTE:</u>   o   CSFSTs should be monitored for information only.   FR procedures should not be implemented.</p> <p>          o   Local actions may require portable lighting and communication devices.</p>		
1	<p>Verify Reactor Trip:</p> <ul style="list-style-type: none"> <li>o At least one train of reactor trip breakers - OPEN</li> <li>o Neutron flux - DECREASING</li> <li>o MRPI indicates - ALL CONTROL AND SHUTDOWN RODS ON BOTTOM</li> </ul>	<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"> <li>a. Open Bus 13 and Bus 15 normal feed breakers.</li> <li>b. Verify rod drive MG sets tripped.</li> <li>c. Close Bus 13 and Bus 15 normal feed breakers.</li> <li>d. Reset lighting breakers.</li> </ul>
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>

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STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
	<p><u>NOTE:</u> FOLDOUT page should be open and monitored periodically.</p> <p>* 3 Adjust S/G ARVs To Control Tavg At Approximately 547°F</p> <p>4 Stop Both RCPs</p> <p><u>NOTE:</u> Adverse CNMT values should be used whenever CNMT pressure is greater than 4 psig or CNMT radiation is greater than 10<sup>+05</sup> R/hr.</p> <p>5 Check If RCS Is Isolated:</p> <div style="display: flex; justify-content: space-between;"> <div style="width: 45%;"> <p>a. PRZR PORVs - CLOSED</p> <p>b. Verify RCS isolation valves closed:</p> <ol style="list-style-type: none"> <li>1) Place letdown orifice valve switches to CLOSE <ul style="list-style-type: none"> <li>• AOV-200A</li> <li>• AOV-200B</li> <li>• AOV-202</li> </ul> </li> <li>2) Place letdown isolation valve switches to CLOSE <ul style="list-style-type: none"> <li>• AOV-371</li> <li>• AOV-427</li> </ul> </li> <li>3) Place excess letdown isolation valve switch to CLOSE (AOV-310)</li> </ol> </div> <div style="width: 45%;"> <p>a. <u>IF</u> PRZR pressure less than 2335 psig. <u>THEN</u> manually close PORVs.</p> </div> </div>	

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

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STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
	<p><b>NOTE:</b></p> <ul style="list-style-type: none"> <li>o Conditions should be evaluated for Site Contingency Reporting (Refer to EPIP-1.0, GINNA STATION EVENT EVALUATION AND CLASSIFICATION).</li> <li>o AO should increase surveillance of TDAFW pump until AC power is restored.</li> </ul>	
7	<p><b>Try To Restore Power to Any Train Of AC Emergency Busses:</b></p>	
	<p>a. Verify emergency D/G aligned for unit operation</p> <ul style="list-style-type: none"> <li>o Mode switch in UNIT</li> <li>o Voltage control selector in AUTO</li> </ul>	<p>a. Manually align switches on rear of MCB.</p>
	<p>b. Check emergency D/Gs - BOTH D/G RUNNING</p>	<p>b. <u>WHEN</u> non-running D/G available for starting. <u>THEN</u> perform the following:</p> <ol style="list-style-type: none"> <li>1) Depress D/G FIELD RESET pushbutton</li> <li>2) Depress D/G RESET pushbutton</li> <li>3) Start D/G</li> <li>4) <u>IF</u> D/G starts. <u>THEN</u> go to Step 7c.</li> <li>5) <u>IF</u> D/G will <u>NOT</u> start. <u>THEN</u> dispatch AO to locally start emergency D/Gs.</li> </ol> <p><u>IF</u> no emergency D/G available. <u>THEN</u> perform the following:</p> <ol style="list-style-type: none"> <li>a) Direct AO to attempt to restore emergency D/G (Refer to ER-D/G.1, RESTORING D/G)</li> <li>b) Go to Step 8.</li> </ol>
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	d. Manually energize busses and start SW Pumps.
	o Bus 17 and/or Bus 18 - ENERGIZED	<u>IF</u> adequate cooling can <u>NOT</u> be supplied to a running D/G. <u>THEN</u> perform the following:
	o One SW Pump running for each running D/G	1) Pull stop the D/G <u>AND</u> 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	e. Manually energize AC emergency busses.
	• Bus 14 and Bus 18	<u>IF</u> Bus 14 <u>AND</u> Bus 16 are deenergized. <u>THEN</u> go to Step 8.
	• Bus 16 and Bus 17	
f.	Return to procedure and step in effect	

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STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
<p>*****</p> <p style="text-align: center;"><u>CAUTION</u></p> <p>o WHEN POWER IS RESTORED TO BUS 14 AND/OR BUS 16, RECOVERY ACTIONS SHOULD CONTINUE STARTING WITH STEP 27.</p> <p>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.</p> <p>*****</p>		
8	<p>Establish The Following Equipment Alignment:</p> <p>a. Pull stop AC emergency bus loads</p> <ul style="list-style-type: none"> <li>• RHR pumps</li> <li>• CNMT RECIRC fans</li> <li>• CNMT spray pumps</li> <li>• SI pumps</li> <li>• CCW pumps</li> <li>• Charging pumps</li> <li>• MDAFW pumps</li> </ul> <p>b. Evaluate non-vital loads (Refer to ATT-8.3, ATTACHMENT NONVITAL)</p> <p>c. Place non-running SW pump switches to STOP, then return to AUTO</p> <p>d. Place switch for MOV-313, RCP seal return isolation valve, to CLOSE</p> <p>e. Momentarily place to CLOSE RCP CCW return valves</p> <ul style="list-style-type: none"> <li>• MOV-759A</li> <li>• MOV-759B</li> </ul>	

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STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
<p><b>NOTE:</b> 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.</p> <p><b>9 Try To Restore Offsite Power:</b></p> <div style="display: flex; justify-content: space-between;"> <div style="width: 48%;"> <p>a. Consult Power Control to determine if either normal offsite power supply - AVAILABLE</p> <ul style="list-style-type: none"> <li>o 12B transformer via breaker 76702</li> </ul> <p style="text-align: center;">-OR-</p> <ul style="list-style-type: none"> <li>o 12A transformer via breaker 75112</li> </ul> </div> <div style="width: 48%;"> <p>a. <u>IF</u> normal offsite power supply <u>NOT</u> readily available. <u>THEN</u> perform the following:</p> <ol style="list-style-type: none"> <li>1) Restore IA system using the Diesel Air Compressor (Refer to ATT-11.2. ATTACHMENT DIESEL AIR COMPRESSOR).</li> <li>2) Evaluate Main transformer backfeed for long term concerns (Refer to ER-ELEC.3. EMERGENCY OFFSITE BACKFEED VIA MAIN &amp; UNIT TRANSFORMER).</li> <li>3) Go to Step 10.</li> </ol> </div> </div> <p>b. Reset SI, if necessary</p> <p>c. Restore offsite power (Refer to ER-ELEC.1. RESTORATION OF OFFSITE POWER)</p>		

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STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
10	<p>Initiate Local Actions To Isolate RCS And To Provide Cooling To Vital Areas And Equipment</p> <p>a. Open all Reactor Protection and Control System rack doors in the Control Room.</p> <p>b. Direct Security personnel to open the following vital area doors to increase cooling:</p> <ul style="list-style-type: none"> <li>• Control Room Door S51</li> <li>• Intermediate Bldg Door S37 (AFW pump area)</li> <li>• Intermediate Bldg Door F36 (Automatic fire door, Rod Drive MG set area)</li> <li>• Intermediate Bldg Door S44 (Steam Header area)</li> </ul> <p>c. Dispatch AO To Locally Isolate RCP Seals and BASTs (Refer to ATT-21.0, ATTACHMENT RCS ISOLATION)</p> <p>d. Dispatch AO to align backup cooling water to TDAFW Pump (Refer to ATT-5.2, ATTACHMENT FIRE WATER COOLING TO TDAFW PUMP)</p>	

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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"> <li>• Makeup isolation V-4058</li> <li>• Reject isolation V-4055</li> </ul>
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. Manually close MFW flow control valves	
	<ul style="list-style-type: none"> <li>• MFW regulating valves</li> <li>• MFW bypass valves</li> </ul>	
	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"> <li>o Pressure in both S/Gs - STABLE OR INCREASING</li> <li>o Pressure in both S/Gs - GREATER THAN 110 PSIG</li> </ul>	<p>Perform the following:</p> <p>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:</p> <ol style="list-style-type: none"> <li>1) Close faulted S/G MDAFW pump discharge valve. <ul style="list-style-type: none"> <li>• S/G A. MOV-4007</li> <li>• S/G B. MOV-4008</li> </ul> </li> <li>2) Close faulted S/G TDAFW flow control valve. <ul style="list-style-type: none"> <li>• S/G A. AOV-4297</li> <li>• S/G B. AOV-4298</li> </ul> </li> <li>3) Verify faulted S/G ARV controller in MANUAL with output at 0%. <ul style="list-style-type: none"> <li>• S/G A. AOV-3411</li> <li>• S/G B. AOV-3410</li> </ul> </li> <li>4) Pull stop faulted S/G TDAFW pump steam supply valve. <ul style="list-style-type: none"> <li>• S/G A. MOV-3505A</li> <li>• S/G B. MOV-3504A</li> </ul> </li> </ol> <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> <p>b. Dispatch AO to complete faulted S/G isolation (Refer to ATT-10.0, ATTACHMENT FAULTED S/G).</p>

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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"> <li>o Dispatch RP tech or A0 to locally check steamline radiation - NORMAL</li> </ul>	<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> <ul style="list-style-type: none"> <li>a. Isolate ruptured S/G unless needed for RCS cooldown: <ul style="list-style-type: none"> <li>1) Close ruptured S/G MDAFW pump discharge valve. <ul style="list-style-type: none"> <li>• S/G A. MOV-4007</li> <li>• S/G B. MOV-4008</li> </ul> </li> <li>2) Pull stop ruptured S/G MDAFW pump.</li> <li>3) Close ruptured S/G TDAFW flow control valve. <ul style="list-style-type: none"> <li>• S/G A. AOV-4297</li> <li>• S/G B. AOV-4298</li> </ul> </li> <li>4) 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"> <li>• S/G A. AOV-3411</li> <li>• S/G B. AOV-3410</li> </ul> </li> <li>5) Pull stop ruptured S/G TDAFW pump steam supply valve. <ul style="list-style-type: none"> <li>• S/G A. MOV-3505A</li> <li>• S/G B. MOV-3504A</li> </ul> </li> </ul> <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> <ul style="list-style-type: none"> <li>b. Dispatch A0 to complete ruptured S/G isolation (Refer to ATT-16.0, ATTACHMENT RUPTURED S/G).</li> </ul> </li></ul>

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STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED		
<p>*****</p> <p style="text-align: center;"><u>CAUTION</u></p> <p>IF CST LEVEL DECREASES TO LESS THAN 5 FEET. THEN 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).</p> <p>*****</p> <p><u>NOTE:</u> TDAFW pump AOV flow control AOVs may drift open on loss of IA.</p> <p><b>*15 Monitor Intact S/G Levels:</b></p> <table><tr><td><p>a. Narrow range level - GREATER THAN 5% [25% adverse CNMT]</p><p>b. Control AFW flow by throttling TDAFW flow control valves</p><ul style="list-style-type: none"><li>• S/G A, AOV-4297</li><li>• S/G B, AOV-4298</li></ul><p>c. Control AFW flow to maintain narrow range level between 17% [25% adverse CNMT] and 50%</p></td><td><p>a. Maintain maximum AFW flow until narrow range level greater than 5% [25% adverse CNMT] in at least one S/G.</p><p>b. Control AFW flow by throttling TDAFP discharge MOV-3996.</p><p><u>IF</u> MOV-3996 can <u>NOT</u> be controlled, <u>THEN</u> dispatch AO to locally control AFW flow by throttling TDAFW flow control valves.</p><ul style="list-style-type: none"><li>• S/G A, AOV-4297</li><li>• S/G B, AOV-4298</li></ul><p><u>IF</u> valves can <u>NOT</u> be throttled, <u>THEN</u> control AFW flow by starting and stopping TDAFW pump.</p><p>c. <u>IF</u> narrow range level in any intact S/G continues to increase in an uncontrolled manner, <u>THEN</u> return to Step 14.</p></td></tr></table>			<p>a. Narrow range level - GREATER THAN 5% [25% adverse CNMT]</p> <p>b. Control AFW flow by throttling TDAFW flow control valves</p> <ul style="list-style-type: none"><li>• S/G A, AOV-4297</li><li>• S/G B, AOV-4298</li></ul> <p>c. Control AFW flow to maintain narrow range level between 17% [25% adverse CNMT] and 50%</p>	<p>a. Maintain maximum AFW flow until narrow range level greater than 5% [25% adverse CNMT] in at least one S/G.</p> <p>b. Control AFW flow by throttling TDAFP discharge MOV-3996.</p> <p><u>IF</u> MOV-3996 can <u>NOT</u> be controlled, <u>THEN</u> dispatch AO to locally control AFW flow by throttling TDAFW flow control valves.</p> <ul style="list-style-type: none"><li>• S/G A, AOV-4297</li><li>• S/G B, AOV-4298</li></ul> <p><u>IF</u> valves can <u>NOT</u> be throttled, <u>THEN</u> control AFW flow by starting and stopping TDAFW pump.</p> <p>c. <u>IF</u> narrow range level in any intact S/G continues to increase in an uncontrolled manner, <u>THEN</u> return to Step 14.</p>
<p>a. Narrow range level - GREATER THAN 5% [25% adverse CNMT]</p> <p>b. Control AFW flow by throttling TDAFW flow control valves</p> <ul style="list-style-type: none"><li>• S/G A, AOV-4297</li><li>• S/G B, AOV-4298</li></ul> <p>c. Control AFW flow to maintain narrow range level between 17% [25% adverse CNMT] and 50%</p>	<p>a. Maintain maximum AFW flow until narrow range level greater than 5% [25% adverse CNMT] in at least one S/G.</p> <p>b. Control AFW flow by throttling TDAFP discharge MOV-3996.</p> <p><u>IF</u> MOV-3996 can <u>NOT</u> be controlled, <u>THEN</u> dispatch AO to locally control AFW flow by throttling TDAFW flow control valves.</p> <ul style="list-style-type: none"><li>• S/G A, AOV-4297</li><li>• S/G B, AOV-4298</li></ul> <p><u>IF</u> valves can <u>NOT</u> be throttled, <u>THEN</u> control AFW flow by starting and stopping TDAFW pump.</p> <p>c. <u>IF</u> narrow range level in any intact S/G continues to increase in an uncontrolled manner, <u>THEN</u> return to Step 14.</p>			



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STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
<p><b>NOTE:</b> 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).</p>		
<p>16 Check DC Bus Loads:</p>		
<p>a. Place control switches for MFW pump AC oil pumps to OFF (allows timer to stop DC oil pumps)</p>		
<p>b. Stop all large non-essential DC loads</p>		
<p>1) Evaluate DC loads (Refer to ATT-8.0, ATTACHMENT DC LOADS).</p>		
<p>2) WHEN turbine is stopped, THEN perform the following:</p>		
<p>a) Locally close Turbine backup seal oil reg outlet valve V-5475J.</p>		
<p>b) Stop Turbine DC lube oil pump (within 1 hour).</p>		
<p>c. Check DC bus voltage - GREATER THAN 105 VOLTS DC</p>		
<ul style="list-style-type: none"> <li>• Bus A</li> <li>• Bus B</li> </ul>		
<p>d. Direct electricians to locally monitor DC power supply</p>		
<p>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.</p>		

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STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
17	Verify Source Range Detector(s) - ENERGIZED <ul style="list-style-type: none"> <li>• N-31</li> <li>• N-32</li> </ul>	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.
..... <div>CAUTION</div> 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
<p>*****</p> <p style="text-align: center;"><u>CAUTION</u></p> <p>o S/G PRESSURES SHOULD BE MAINTAINED GREATER THAN 200 PSIG TO PREVENT INJECTION OF SI ACCUM NITROGEN INTO THE RCS.</p> <p>o S/G NARROW RANGE LEVEL SHOULD BE MAINTAINED GREATER THAN 5% [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.</p> <p>*****</p> <p><u>NOTE:</u> o The S/Gs should be depressurized at maximum rate to minimize RCS inventory loss.</p> <p>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.</p> <p>o S/G ARV nitrogen pressure should be monitored and nitrogen supply bottles changed as necessary.</p> <p>19 Initiate Depressurization Of Intact S/Gs To 300 PSIG:</p> <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> <p>1) Maintain maximum AFW flow until narrow range level greater than 17% [25% adverse CNMT] in at least one S/G.</p> <p>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> <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
	<p><b>NOTE:</b></p> <ul style="list-style-type: none"> <li>o Adverse CNMT conditions or loss of forced air cooling may result in failure of NIS detectors.</li> <li>o <u>IF</u> Instrument Bus D deenergized, <u>THEN</u> NIS SUR meters will <u>NOT</u> be available.</li> </ul> <p><b>*20 Monitor Reactor For Subcriticality:</b></p>	
	<p>a. Verify Subcriticality using the following indications:</p> <ol style="list-style-type: none"> <li>1) Check source range(s). N-31     <u>AND</u> N-32 <ul style="list-style-type: none"> <li>o Indicator - ON SCALE</li> <li>o Power - STABLE OR DECREASING</li> </ul> </li> <li>2) Check intermediate range, N-35 <ul style="list-style-type: none"> <li>o Indicator - ON SCALE</li> <li>o Power - STABLE OR DECREASING</li> </ul> </li> <li>3) Check power range, N-41 and N-43 <ul style="list-style-type: none"> <li>o Indicators - LESS THAN 5%</li> <li>o Power - STABLE OR DECREASING</li> </ul> </li> </ol>	<p>a. <u>IF</u> unable to verify subcriticality using NIS, <u>THEN</u> perform the following:</p> <ul style="list-style-type: none"> <li>o Control S/G ARVs to stop S/G depressurization and allow RCS to heat up.</li> <li>o Direct RP to sample RCS and PRZR for boron concentration.</li> <li>o Request plant staff assistance in evaluating core reactivity status</li> </ul>

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STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
<p><b>NOTE:</b> 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><b>21 Check SI Signal Status:</b></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><b>22 Verify CI And CVI:</b></p>		
a.	CI and CVI annunciators - LIT <ul style="list-style-type: none"> <li>Annunciator A-26, CNMT ISOLATION</li> <li>Annunciator A-25, CONTAINMENT VENTILATION ISOLATION</li> </ul>	a. Depress manual CI pushbutton.
b.	Verify CI and CVI valve status lights - BRIGHT	b. Manually close CI and CVI valves. <u>IF</u> valves can <u>NOT</u> be verified closed by MCB indication, <u>THEN</u> dispatch AO to locally close valves (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"> <li>AOV-4561</li> <li>AOV-4562</li> </ul>	c. Dispatch AO to locally fail open valves.
d.	Verify RHR Pump Suction from CNMT Sump B valves - CLOSED <ul style="list-style-type: none"> <li>MOV-850A</li> <li>MOV-850B</li> </ul>	d. <u>IF</u> sump recirculation <u>NOT</u> in progress, <u>THEN</u> manually close valves.  <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	<p>Check If S/G Depressurization Should Be Stopped:</p> <ul style="list-style-type: none"> <li>a. Check RCS cold leg temperatures - GREATER THAN 315°F</li> <li>b. Check S/G pressures - LESS THAN 300 PSIG</li> <li>c. Check IA supply: <ul style="list-style-type: none"> <li>o Pressure - GREATER THAN 60 PSIG</li> <li>o Pressure - STABLE OR INCREASING</li> </ul> </li> <li>d. Control S/G ARVs to maintain S/G pressures at 300 psig IN AUTO</li> </ul>	<ul style="list-style-type: none"> <li>a. Perform the following: <ul style="list-style-type: none"> <li>1) Control S/G ARVs to stop S/G depressurization.</li> <li>2) Go to Step 24.</li> </ul> </li> <li>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.</li> <li>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.</li> <li>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.</li> </ul>

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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"> <li>o Annunciator A-27, CNMT SPRAY - EXTINGUISHED</li> <li>o CNMT pressure indicators - LESS THAN 28 PSIG</li> </ul>	<p><u>IF</u> CNMT pressure is less than 28 psi, <u>THEN</u> perform the following:</p> <ul style="list-style-type: none"> <li>a. Reset CNMT spray.</li> <li>b. Place CNMT spray pump discharge valve switches to CLOSE to deenergize open contactor.</li> </ul> <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 - BUSES 14 AND/OR 16 ENERGIZED</p>	<p>Continue to control RCS conditions and monitor plant status:</p> <ul style="list-style-type: none"> <li>a. Check status of desired actions: <ul style="list-style-type: none"> <li>o AC power restoration</li> <li>o ARV nitrogen pressure</li> <li>o Diesel air compressor to IA system</li> <li>o RCP seal isolation</li> <li>o DC power supply</li> </ul> </li> <li>b. Return to Step 13.</li> </ul>





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STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
	<p><u>NOTE:</u> SW isolation may occur when power is restored to AC emergency busses.</p> <p>28 Verify SW System Operation:</p> <p>a. Check Bus 17 and Bus 18 - AT LEAST ONE ENERGIZED</p> <p>b. Verify two SW pumps - RUNNING</p>	
		<p>a. Perform the following:</p> <ol style="list-style-type: none"> <li>1) Pull stop any D/G that is <u>NOT</u> supplied by alternate cooling. <u>AND</u> immediately depress associated VOLTAGE SHUTDOWN pushbutton.</li> <li>2) Refer to ATT-2.4, ATTACHMENT NO SW PUMPS.</li> <li>3) Go to Step 29.</li> </ol> <p>b. <u>IF</u> normal power available. <u>THEN</u> establish two SW pumps running.</p> <p><u>IF</u> normal power <u>NOT</u> available. <u>THEN</u> establish one SW pump running for each operating D/G.</p> <p><u>IF NO</u> SW pumps running. <u>THEN</u> perform the following:</p> <ol style="list-style-type: none"> <li>1) Pull stop any D/G that is <u>NOT</u> supplied by alternate cooling. <u>AND</u> immediately depress associated VOLTAGE SHUTDOWN pushbutton.</li> <li>2) Refer to ATT-2.4, ATTACHMENT NO SW PUMPS.</li> </ol> <p><u>IF</u> only one SW pump running. <u>THEN</u> perform the following:</p> <ol style="list-style-type: none"> <li>1) Manually perform SW isolation.</li> <li>2) Refer to AP-SW.2, LOSS OF SERVICE WATER.</li> </ol>

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STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
<p>*****</p> <p style="text-align: center;"><u>CAUTION</u></p> <p>THE LOADS PLACED ON THE ENERGIZED AC EMERGENCY BUS SHOULD NOT EXCEED THE CAPACITY OF THE POWER SOURCE.</p> <p>*****</p>		
29	<p>Verify Following Equipment Loaded On Available AC Emergency Busses:</p> <ul style="list-style-type: none"> <li>o 480 volt MCCs - ENERGIZED <ul style="list-style-type: none"> <li>• MCC C from Bus 14</li> <li>• MCC D from Bus 16</li> </ul> </li> <li>o Verify instrument busses - ENERGIZED <ul style="list-style-type: none"> <li>• Bus A from MCC C (A battery)</li> <li>• Bus B from MCC C</li> <li>• Bus C from MCC D (B battery)</li> </ul> </li> <li>o Dispatch personnel to verify proper operation of battery chargers</li> </ul>	<p>Manually load equipment as power supply permits.</p>

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STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
30 Select Recovery Procedure:		
a.	Check RCS subcooling based on core exit T/Cs - GREATER THAN 0°F USING FIG-1.0. FIGURE MIN SUBCOOLING	a. Go to ECA-0.2. LOSS OF ALL AC POWER RECOVERY WITH SI REQUIRED. Step 1.
b.	Check PRZR level - GREATER THAN 5% [30% adverse CNMT]	b. Go to ECA-0.2. LOSS OF ALL AC POWER RECOVERY WITH SI REQUIRED. Step 1.
c.	Check SI and RHR Pumps - NONE RUNNING	c. Go to ECA-0.2. LOSS OF ALL AC POWER RECOVERY WITH SI REQUIRED. Step 1.
d.	Go to ECA-0.1. LOSS OF ALL AC POWER RECOVERY WITHOUT SI REQUIRED, Step 1	
-END-		

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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

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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.