Entergy Nuclear Northeast	Procedure Use Is: Continuous Reference Information	Control Copy:
2-E	CA-0.0, Revision	: 7
LOS	S OF ALL AC PO	WER
Approved By: John Balletta M Procedure Sponsor, RPO/Desig	$\frac{4}{1+2/-1/}$	Aian Point
Team P Procedure Owner		

**EDITORIAL REVISION** 

Number:

## A. <u>PURPOSE</u>

This procedure provides actions to respond to a loss of all AC power.

## B. <u>SYMPTOMS OR ENTRY CONDITIONS</u>

- 1) The symptom of a loss of all AC power is the indication that all 480V busses are de-energized.
- 2) This procedure is entered from 2-E-O, REACTOR TRIP OR SAFETY INJECTION, Step 3, on the indication that all 480V busses are de-energized.

## C. ADVERSE CONTAINMENT CONDITIONS

EOP values for adverse containment should be used if either of the following conditions exist:

o Containment radiation levels greater than 1E5 R/hr.

- OR -

o Containment pressure greater than 4 psig.

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STEP A	CTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED	
o Ste o CSF <u>NO</u> T	<u>NOTE</u> ps 1 and 2 are IMMEDIATE ACTION s Status Trees should be monitored be implemented.	teps. for information only. F	RPs should
1. <u>Ver</u> of oN oR F R	<u>ify Reactor Trip:</u> eactor trip breakers – OPEN eutron flux – DECREASING od bottom lights – LIT od position indicators – ALL ODS LESS THAN 12.5 INCHES	Manually trip reactor.	
2. <u>Ver</u> a.	<u>ify Turbine Trip:</u> All turbine stop valves - CLOSED	a. Manually trip turbine turbine will <u>NOT</u> trip close MSIVs. <u>IF</u> MSIVs can <u>NOT</u> be c <u>THEN</u> manually run bac	. <u>IF</u> . <u>THEN</u> losed, k turbine.

2-ECA-0.0       LOSS OF ALL AC POWER       REV. 7         STEP       ACTION/EXPECTED RESPONSE       RESPONSE NOT OBTAINED         3.       Check If RCS Is Isolated:       a. Manually close valve.         a. Letdown isolation valves - CLOSED       a. Manually close valve.         o LCV-459       o 200A         o 200B       o 200C         b. PRZR PORVs - CLOSED       b. IE PRZR pressure less than 2335 psig, <u>JHEN</u> manually close PORVs.         c. Excess letdown isolation valve       c. Manually close valve.         o 213       c. Manually close valve.         a. Turbine-driven AFW pump - RUNNING       a. Manually open steam supply regulator valve: o PCV-1139         b. Manually align turbine-driven AFW pump FCVs as necessary       c. Adjust steam supply speed control valve as necessary: o HCV-1118	Number:	Title:		Revision Number:
STEP       ACTION/EXPECTED RESPONSE       RESPONSE NOT OBTAINED         3.       Check If RCS Is isolated:       a. Manually close valve.         a.       Letdown isolation valves - CLOSED       a. Manually close valve.         o       LCV-459       a. Manually close valve.         o       2006       b. IE PRZR pressure less than 2335 psig. IHEN manually close PORVs.         c.       Excess letdown isolation valve       c. Manually close valve.         o       CLOSED       b. IE PRZR pressure less than 2335 psig. IHEN manually close PORVs.         c.       Excess letdown isolation valve       c. Manually close valve.         o       CLOSED       a. Manually close valve.         o       CLOSED       c. Manually close valve.         o       CLOSED       a. Manually close valve.         o       CLOSED       a. Manually open steam supply regulator valve: o         o       PCV-1139       b. Manually align turbine-driven AFW pump FCVs as necessary: o         c.       Adjust steam supply speed control valve as necessary: o       HCV-1118	2-ECA-0.	0 LOSS 0	F ALL AC POWER	REV. 7
<ul> <li>3. <u>Check If RCS Is Isolated:</u> <ul> <li>a. Letdown isolation valves - CLOSED</li> <li>o LCV-459</li> <li>o 200A</li> <li>o 200C</li> </ul> </li> <li>b. <u>IF PRZR pressure less than 2335 psig. <u>IHEN manually close PORVs.</u></u></li> <li>c. Excess letdown isolation valve - CLOSED</li> <li>o 213</li> </ul> <li>4. <u>Verify AFW Flow - GREATER THAN 400 GPM:</u> <ul> <li>a. Turbine-driven AFW pump - RUNNING</li> <li>a. Turbine-driven AFW pump - AFW pump FCVs as necessary</li> <li>c. Adjust steam supply speed control valve as necessary: <ul> <li>o HCV-1118</li> </ul> </li> </ul></li>	STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED	D
<ul> <li>a. Letdown isolation valves - CLOSED</li> <li>a. Manually close valve.</li> <li>b. CLCY-459</li> <li>c. 2008</li> <li>c. 2008</li> <li>c. 2006</li> <li>b. PRZR PORVS - CLOSED</li> <li>b. <u>IF</u> PRZR pressure less than 2335 psig. <u>THEN</u> manually close PORVS.</li> <li>c. Excess letdown isolation valve</li> <li>c. CLOSED</li> <li>o 213</li> <li>c. Verify AFW Flow - GREATER THAN 400 GPM:</li> <li>a. Turbine-driven AFW pump - RUNNING</li> <li>b. Manually align turbine-driven AFW pump FCVs as necessary</li> <li>c. Adjust steam supply speed control valve as necessary:</li> <li>o HCV-1118</li> </ul>	3.	<u>Check If RCS Is Isolated:</u>		
<ul> <li>o LCV-459</li> <li>o 2008</li> <li>o 2006</li> <li>o 2006</li> <li>b. PRZR PORVS - CLOSED</li> <li>b. IF PRZR pressure less than 2335 psig, <u>THEN</u> manually close PORVs.</li> <li>c. Excess letdown isolation valve</li> <li>c. CLOSED</li> <li>o 213</li> <li>c. Verify AFW Flow - GREATER THAN 400 GPM:</li> <li>a. Turbine-driven AFW pump - RUNNING</li> <li>b. Manually align turbine-driven AFW pump FCVs as necessary</li> <li>c. Adjust steam supply speed control valve as necessary:</li> <li>o HCV-1118</li> </ul>		a. Letdown isolation valves - CLOSED	a. Manually close valu	/e.
<ul> <li>b. PRZR PORVs - CLOSED</li> <li>b. IF PRZR pressure less than 2335 psig. <u>THEN</u> manually close PORVs.</li> <li>c. Excess letdown isolation valve - CLOSED</li> <li>o 213</li> <li>4. <u>Verify AFW Flow - GREATER THAN</u> 400 GPM:</li> <li>a. Turbine-driven AFW pump - RUNNING</li> <li>b. Manually align turbine-driven AFW pump FCVs as necessary</li> <li>c. Adjust steam supply speed control valve as necessary:</li> <li>o HCV-1118</li> </ul>		o LCV-459 o 200A o 200B o 200C		
<ul> <li>c. Excess letdown isolation valve - CLOSED o 213 </li> <li>4. <u>Verify AFW Flow - GREATER THAN</u> <u>400 GPM:</u> <ul> <li>a. Turbine-driven AFW pump - RUNNING</li> <li>b. Manually align turbine-driven AFW pump FCVs as necessary</li> <li>c. Adjust steam supply speed control valve as necessary: o HCV-1118</li> </ul> </li> <li>c. Manually close valve. C. Manually close valve. Annually close valve. C. Manually close valve. C. Manually close valve. C. Manually close valve. C. Manually open steam supply regulator valve: C. Manually align turbine-driven C. Adjust steam supply speed C. Adjust steam supply speed C. MCV-1118</li> </ul>		b. PRZR PORVs ~ CLOSED	b. <u>IF</u> PRZR pressure le 2335 psig, <u>THEN</u> mar PORVs.	ess than nually close
o 213 4. <u>Verify AFW Flow - GREATER THAN</u> <u>400 GPM:</u> a. Turbine-driven AFW pump - RUNNING b. Manually align turbine-driven AFW pump FCVs as necessary c. Adjust steam supply speed control valve as necessary: o HCV-1118		c. Excess letdown isolation v - CLOSED	alve c. Manually close valv	/e.
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<ul> <li>a. Turbine-driven AFW pump - RUNNING</li> <li>b. Manually align turbine-driven AFW pump FCVs as necessary</li> <li>c. Adjust steam supply speed control valve as necessary:</li> <li>o HCV-1118</li> </ul>	4.	<u>Verify AFW Flow - GREATER THAN</u> <u>400 GPM:</u>	N	
o PCV-1139 b. Manually align turbine-driven AFW pump FCVs as necessary c. Adjust steam supply speed control valve as necessary: o HCV-1118		a. Turbine-driven AFW pump – RUNNING	a. Manually open steam regulator valve:	n supply
<ul> <li>b. Manually align turbine-driven AFW pump FCVs as necessary</li> <li>c. Adjust steam supply speed control valve as necessary:</li> <li>o HCV-1118</li> </ul>			o PCV-1139	
c. Adjust steam supply speed control valve as necessary: o HCV-1118		b. Manually align turbine-dri AFW pump FCVs as necessary	ven	
o HCV-1118		c. Adjust steam supply speed control valve as necessary	:	
		o HCV-1118		

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	CTION/EXPECTED RESPONSE	ESPONSE NOT OBTAINED	
• • • • • • • • • • • • • • • • 5. <u>Try</u> <u>Bus</u>	oad on the diesel generators should creased to 2000 KW for a maximum of 	remain less than 1650 2 hrs in any 24 hr per	* * * * * * * * * KW but may * *iod. * *
a.	Energize 480V bus with diesel generator: 1) Check diesel generator(s) – RUNNING	<ol> <li>Emergency start die generator(s):</li> <li>Appually actuate</li> </ol>	esel
	2) Verify 480V bus - AUTOMATICALLY ENERGIZED	<ol> <li>Manually energize 4 from running diesel generator.</li> </ol>	80V bus
This St	ep continued on the next page.		

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2-ECA-0.0	LOSS O	LOSS OF ALL AC POWER	
STEP AC	CTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED	]
		<u>IF</u> 480V bus can <u>N</u> energized from di generator(s), <u>THE</u> the following:	<u>OT</u> be esel <u>N</u> perform
		a) Locally trip r diesel generat	unning or(s).
		b) Contact Con Ed determine if 1 13.8KV power r available.	DO to 38KV or eadily
		c) <u>IF</u> outside pow readily availa perform the fo	er is <u>NOT</u> ble, <u>THEN</u> llowing:
		1. Dispatch NP IP2 Appendi	O to start x R DG per:
		O 2-SOP-27. APPENDIX GENERATOR	6, UNIT 2 R DIESEL OPERATION
		2. <u>IF</u> IP2 Appe is <u>NOT</u> avai <u>THEN</u> CONTAC to START IP Appendix R per 3-SOP-E APPENDIX R GENERATOR O	ndix R DG lable, T IP3 CCR 3 DG L-013, DIESEL PERATION.
		d) <u>IF</u> outside pow readily availa attempt to man energize 480V the following:	er is ble, <u>THEN</u> ually bus using
		o 2-AOP-138KV- POWER TO 6.9 <u>AND</u> /OR 6.	1, LOSS OF KV BUS 5
		o 2-AOP-480V-1 480V BUS.	. LOSS OF
This St	ep continued on the next p	bage.	

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STEP A	CTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED	
b.	Check 480V busses - AT LEAST ONE ENERGIZED:	b. Perform the following	
	o 2A <u>AND</u> 3A	<ol> <li>Open doors on all room cabinets.</li> </ol>	control
	- OR -	2) Dispatch NPO to op pump room roll-up (	en AFW Joor.
	o 5A - OR -	3) Go to Step 6. OBS CAUTION PRIOR TO S	ERVE TEP 6.
	о бА		
c.	Start one service water pump on the essential header to support running diesel generator		
d.	Check CCR & AFW pump room ventilation - RUNNING	d. Perform the following required:	as
		<ol> <li>Open doors on all room cabinets.</li> </ol>	control
		2) Dispatch NPO to op pump room roll-up o	en AFW 100r.
e.	Return to procedure and step in effect and implement FRPs		

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- STEP A o Whe cor o If pro loa o If sta o If equ pla 6. <u>Pla</u> Swi o C o S o F o M o C o S o F o M o S o S o F o M o S o S o F o F o F o F o F o F o F o F	CTION/EXPECTED RESPONSE RESPONSE RESPONSE NOT OBTAINED CAUTION en power is restored to any 480V bus, recovery actions sho itinue starting with Step 24. an SI signal exists or if an SI signal is actuated during icedure, it should be reset (refer to Step 18b) to permit ding of equipment on a 480V bus. a diesel generator is started, a service water pump shoul rted on the essential header to provide diesel generator a partial train (bus 2A or bus 3A) is energized, safeguar ipment on the energized bus including RCP seal cooling sh ced in PULLOUT or isolated. <u>ce Following Equipment</u> tches In PULLOUT Position: ontainment spray pumps I pumps CUs otor-driven AFW pumps urning gear oil pump earing oil pump urbine auxiliary oil pump CW pumps HR pumps	uld this manual d be cooling.

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STEP A	CTION/EXPECTED RESPONSE RESPONSE NOT OBTAINED	
* * * * * * Radia * prior * * * * * * * * * * * * * * * * * * *	<u>CAUTION</u> tion levels and harsh environment conditions should be eva to performing local actions. <u>patch Personnel To Locally</u> <u>tore AC Power:</u> Emergency diesel generator(s) per: 0 2-SOP-27.3.1.1, 21 EMERGENCY DIESEL GENERATOR MANUAL OPERATION 0 2-SOP-27.3.1.2, 22 EMERGENCY DIESEL GENERATOR MANUAL	* * * * * * * * aluated * *
	OPERATION o 2-SOP-27.3.1.3, 23 EMERGENCY DIESEL GENERATOR MANUAL OPERATION	
This St	ep continued on the next page.	

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TEP ACTI	ON/EXPECTED RESPONSE	RESPONSE NOT OBTAIN	IED
b. Che ENE	eck 13.8KV feeder 13W92 - ERGIZED	b. <u>IF</u> 13.8KV feeder be energized, <u>THE</u> following:	13W92 can <u>NOT</u> <u>N</u> perform the
		1) Contact Con Ed determine if I feeder 13W93 i	DO to P3 13.8KV s available.
		2) <u>IF</u> IP3 13.8KV available, <u>THE</u> restore power 52GT/BT per:	13W93 is <u>N</u> attempt to to 6.9KV via
		o 2-SOP-ESP-OO EQUIPMENT OP COMPENSATORY	1. LOCAL ERATION <u>AND</u> ACTIONS
		3) <u>IF</u> 13.8KV feed <u>NOT</u> available can <u>NOT</u> be clo start Appendix	er 13W93 is <u>OR</u> 52GT/BT sed, <u>THEN</u> R DG per:
		o 2-SOP-27.6, APPENDIX R D GENERATOR OP	UNIT 2 IESEL ERATION
		4) <u>IF</u> Appendix R started, <u>THEN</u> following as r	DG can <u>NOT</u> be perform the equired:
		a) Restore pow via IP3 Appendix R	er to ASSS DG per:
		o 2-AOI-27. PROVIDING POWER FRO	1.9.2, APPENDIX R M UNIT 3
		b) Contact Con available p alignment.	Ed DO for ower
		5) Continue with power source i <u>THEN</u> do Step 7	Step 8. <u>WHEN</u> s available, c.

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C.	Attempt to restore power to busses per the following while continuing with Step 8: o 2-SOP-27.1.3, OPERATION OF 13.8KV SYSTEM o 2-SOP-27.1.4, 6900 VOLT SYSTEM. o 2-AOP-138KV-1, LOSS OF POWER TO 6.9KV BUS 5 AND/OR 6. o 2-AOP-13.8KV-1, LOSS OF POWER TO ANY 13.8KV BUS o 2-AOP-480V-1, LOSS OF 480V	RESPONSE NOT OBTAINED	
8. <u>Dis</u> <u>Clo</u> Sea 0 R 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	BUS. <u>patch Personnel To Locally</u> <u>se Valves To Isolate RCP</u> <u>ls:</u> CP seal return isolation valve utside containment: MOV-222 CP seal injection isolation alves outside containment: MOV-250A MOV-250B MOV-250D CP thermal barrier CCW return solation valve outside ontainment: MOV-789		

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			[]
STEP A	CTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED	
9. <u>Che</u> <u>Hot</u>	eck If CST Is Isolated From well:		
a.	Verify condenser hotwell isolation valves - CLOSED: o LCV-1128 o LCV-1128A o LCV-1129 o CD-6 o CT-8	<ul> <li>a. <u>IF</u> valve(s) open or pornot known, <u>THEN</u> dispate personnel to locally or valve(s). <u>IF</u> valve(s) be closed, <u>THEN</u> locall associated isolation value(s) or CT-7 for LCV-1128 ar LCV-1128A.</li> <li>o CD-5 for LCV-1129.</li> </ul>	osition cch close can <u>NOT</u> y close valve(s): nd
b.	Place condenser hotwell isolation valve controllers in MANUAL:		
	o LCV-1128 o LCV-1128A o LCV-1129		
10. <u>Che</u> a.	e <u>ck SG Status:</u> MSIVs – CLOSED	Manually close valves. <u>J</u> can <u>NOT</u> be manually close locally close valves.	L <u>F</u> valves ed, <u>THEN</u>
b. c.	Main FW regulating and bypass valves – CLOSED Blowdown isolation valves – CLOSED	Locally close MSIVs as ne per 2-SOP-ESP-001, LOCAL EQUIPMENT OPERATION <u>AND</u> COMPENSATORY ACTIONS.	ecessary

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A fau	CTION/EXPECTED RESPONSE <u>CAUT</u> Ited or ruptured SG that is iso y to the turbine-driven AFW pum SG.	RESPONSE NOT OBTAINED	* * * * * * * * * * * * * * * * * * *
п. <u>спе</u> а.	Check pressures in all SGs - o ANY SG PRESSURE DECREASING IN AN UNCONTROLLED MANNER - OR - o ANY SG COMPLETELY DEPRESSURIZED	a. Go to Step 12.	
b.	<pre>Isolate faulted SG(s): o Isolate AFW flow o Dispatch NPO to close steam supply header valves to turbine-driven AFW pump from faulted SG(s): o MS-41 (SG 22) o MS-42 (SG 23) o Verify SG atmospheric steam dumps CLOSED</pre>	b. Manually close valves, valves can <u>NOT</u> be clos dispatch NPO to attemp locally close valves of associated block valve	s <u>IF</u> Sed, <u>THEN</u> of to or es.
	dumps – CLOSEÐ		

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12.	ACTION/EXPECTED RESPONSE Check If SG Tubes Are Intact: O Main steamline radiation recorder (R-28, R-29, R-30 and R-31) - NORMAL O Condenser air ejector radiation recorder (R-45) - NORMAL O SG blowdown radiation recorder (R-49) - NORMAL O NO SG LEVEL INCREASING IN AN UNCONTROLLED MANNER	<ul> <li>RESPONSE NOT OBTAINED</li> <li>Try to identify ruptured Continue with Step 13. (CAUTION PRIOR TO STEP 13) ruptured SG(s) identified isolate ruptured SG(s):</li> <li>o Isolate AFW flow.</li> <li>o Dispatch NPO to close s supply header valves to turbine-driven AFW pump ruptured SG(s):</li> <li>o MS-41 (SG 22) o MS-42 (SG 23)</li> <li>o Adjust ruptured SG(s) atmospheric steam dump controller setpoint to 1030 psig.</li> <li><u>WHEN</u> ruptured SG presses than 1030 psig, <u>THEN ver</u> ruptured SG atmospheric dump closed. <u>IF NOT</u> co <u>THEN</u> place controller and close valve. <u>IF var</u> <u>NOT</u> be closed, <u>THEN</u> loc isolate open valve.</li> </ul>	SG(s). DBSERVE <u>WHEN</u> 1, <u>THEN</u> steam o from 74%, 74%, 74%, are less erify c steam losed, in manual lve can cally

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STEP A	CTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED	
* * * * * City * than *	water for AFW pumps will be nece 2 ft.	• • • • • • • • • • • • • • • • • • •	* * * * * * * * * * * * * * * * * * *
⊛13. <u>Che</u>	eck Intact SG Levels:		
a.	Narrow range level – GREATER THAN 10% (27% FOR ADVERSE CONTAINMENT)	a. Maintain maximum AFW until narrow range le greater than 10% (27% ADVERSE CONTAINMENT) least one SG.	flow vel FOR in at
		o Preferentially REST level to 22 <u>OR</u> 23 S	ORE G
b.	Control AFW flow to maintain narrow range level between 10% (27% FOR ADVERSE CONTAINMENT) and 50%	b. <u>IF</u> narrow range level SG continues to incre uncontrolled manner, isolate ruptured SG(s	in any ase in an <u>THEN</u> ):
	o Preferentially RESTORE level	o Isolate AFW flow.	
	LU ZZ UK ZS SG	o Dispatch NPO to clo supply header valve turbine-driven AFW ruptured SG(s):	se steam s to pump from
		o MS-41 (SG 22) o MS-42 (SG 23)	
		o Adjust ruptured SG( atmospheric steam d controller setpoint 1030 psig.	s) ump to 74%,
		<u>WHEN</u> ruptured SG pr less than 1030 psig verify ruptured SG atmospheric steam d closed. <u>IF NOT</u> clo place controller in and close valve. <u>IF</u> can <u>NOT</u> be closed, locally isolate ope	essure , <u>THEN</u> ump sed, <u>THEN</u> manual valve <u>THEN</u> n valve.

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14.	<u>Check DC Bus Loads:</u>		
	a. Monitor DC power supply:		
	o Consult TSC and shed selected DC loads if necessary to extend battery life		
15.	Check CST Level - GREATER THAN	Switch to city water sup	pjy:
	<u> </u>	a. Open city water heade isolation valve:	r
		o FCV-1205A	
		b. Open AFW pump suction as necessary:	valves
		o PCV-1187 o PCV-1188 o PCV-1189	

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STEP AI	CTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED	
* * * *		<u> </u>	* * * * * * * *
* o SG * inj	pressures should <u>NOT</u> be decreased ection of accumulator nitrogen in	l to less than 200 psig t to the RCS.	to prevent *
* o SG * ADV * mai * res	narrow range level should be main ERSE CONTAINMENT) in at least one ntained, SG depressurization shou tored in at least one SG.	itained greater than 10% e intact SG. If level ca ild be stopped until leve	(27% FOR * an <u>NOT</u> be * el is *
* * * *		* * * * * * * * * * * *	*
	NOTE		
o PRZ due to	Idown rate in the RCS cold legs n inventory loss while cooling the R level may be lost and reactor v to depressurization of SGs. Dep prevent these occurrences.	ear 100°F/Hr. This will RCP seals in a control vessel upper head voiding pressurization should <u>NO</u>	minimize led manner. g may occur [ be stopped
16. <u>Dep</u> <u>300</u>	<u>ressurize Intact SGs To</u> _psig:		
a.	Check SG narrow range levels - GREATER THAN 10% (27% FOR ADVERSE CONTAINMENT) in at least one SG	<ul> <li>a. Perform the following</li> <li>1) Maintain maximum A until narrow range greater than 10% ADVERSE CONTAINMEL least one SG.</li> <li>o Preferentially A level to 22 <u>OR</u> 2</li> <li>2) Continue with Step <u>WHEN</u> narrow range</li> </ul>	9: AFW flow e level (27% FOR NT) in at RESTORE 23 SG p 17. level (27% FOR
Thia C+	en continued on the next page	greater than 10% ADVERSE CONTAINME least one SG, <u>THE</u> 16b through 16e.	NT) in at NG Steps

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STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED	
	b. Manually dump steam using SG atmospheric steam dumps to maintain cooldown rate in RCS cold legs – LESS THAN 100°F/HR	<ul> <li>b. Locally dump steam us atmospheric steam dum</li> <li>o Refer to 2-SOP-ESP- LOCAL EQUIPMENT OPE</li> <li><u>AND</u> COMPENSATORY AC local operation as</li> </ul>	ing SG ps: OO1, RATION TIONS for necessary.
	c. Check RCS cold leg temperatures – GREATER THAN 325°F	<ul> <li>c. Perform the following</li> <li>1) Control SG atmosph steam dumps to sto depressurization.</li> <li>2) Go to Step 17.</li> </ul>	: eric p SG
	d. Check SG pressures – LESS THAN 300 PSIG	d. Continue with Step 17 SG pressures decrease than 300 psig, <u>THEN</u> d Step 16e.	. <u>WHEN</u> to less o
	e. Manually control SG atmospheric steam dumps to maintain SG pressures at 300 psig	e. Locally control SG at steam dumps to mainta pressures at 300 psig o Refer to 2-SOP-ESP- LOCAL EQUIPMENT OPE <u>AND</u> COMPENSATORY AC local operation as	mospheric in SG : 001, RATION TIONS for necessary.
17.	<u>Check Reactor Subcritical:</u> o Intermediate range channels - O OR NEGATIVE STARTUP RATE o Source range channels - O OR NEGATIVE STARTUP RATE	Control SG atmospheric s dumps to stop SG depress and allow RCS to heat up	team urization

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	CTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED	
· · · ·	* * * * * * * * * * * * * * * * *		* * * * * * *
:	CAUT	ION	*
* Placi	ng key switches to DEFEAT will p	prevent auto SI actuation.	*
	<u>NO</u>	T <u>E</u>	
Depre to pe	ssurization of SGs will result rmit manual loading of equipment	in SI actuation. SI should t on 480V bus.	d be reset
18. Che	ck SI Signal Status:	nya dan seri ku sa kata kata seri kata s	ď
a.	SI - HAS BEEN ACTUATED	a. Go to Step 22. <u>WHEN</u> actuated, <u>THEN</u> do Ste 19, 20 and 21.	SI is ps 18b,
b.	Reset SI:		
	1) Check all CCW pumps – RUNNING	<ol> <li>Place non-running ( CCR control switch PULLOUT.</li> </ol>	CCW pumps es in
	<ol> <li>Place controls for main AND bypass feedwater regulating valves to CLOSE</li> </ol>		
	<ol> <li>Verify Automatic Safeguards Actuation key switches on Panel SB-2 in DEFEAT position:</li> </ol>		
	o Train A SIA-1		
	- AND -		
	o Train B SIA-2		
	<ol> <li>One at a time, depress Safety Injection reset buttons (Panel SB–2):</li> </ol>		
	o Train A o Train B		
	5) Verify Train A AND B – RESET	5) Verify Relays rese Safeguards Initiat 1–1 <u>AND</u> 2–1):	t (Top of ion Racks
		o SIA-1 o SIM-1 o SIA-2 o SIM-2	

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L				<u></u>
STEP	ACTION/EXPECTED RES	PONSE	RESPONSE NOT OBTAINED	
			[	
		NOTE	<u> </u>	
	ATTACHMENT 1 provides	a list of Phase	A valves.	
19.	<u>Verify Containment I</u> Phase A:	solation		
	a. Phase A - ACTUATE	)	a. Manually actuate phase	e A.
	o Train A master (above rack E)	relay CAl		
	o Train B master (above rack F)	relay CA2		
	b. Phase A valves -	CLOSED	b. Manually close valves valves can <u>NOT</u> be manu closed, <u>THEN</u> locally valves.	. <u>IF</u> ually close
	c. IVSW valves - OPE	۷:	c. Manually open valves.	
	o 1410 o 1413 o SOV-3518 o SOV-3519			
	d. WCP valves - OPEN	:	d. Manually open valves.	
	o PCV 1238 o PCV 1239 o PCV 1240 o PCV 1241			
	e. Place personnel Al hatch solenoid con switches to INCID panel	ND equipment ntrol ENT on SM		

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- STEP A 20. <u>Ver</u> Iso	CTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED	
a.	Containment purge valves – CLOSED: o FCV-1170 o FCV-1171 o FCV-1172 o FCV-1173	<ul> <li>a. Manually close valves</li> <li><u>IF</u> valves can <u>NOT</u> be <u>THEN</u> close valves fro room.</li> <li><u>IF</u> valves can <u>NOT</u> be <u>THEN</u> dispatch operato personnel to close ou valves by isolating i air:</li> <li>o FCV-1171, IA-780 o FCV-1173, IA-779</li> </ul>	m fan closed, r and HP tside nstrument
þ.	Containment pressure relief valves - CLOSED: o PCV-1190 o PCV-1191 o PCV-1192	<ul> <li>b. Manually close valves IF valves can NOT be THEN close valves fro room. IF valves can NOT be THEN dispatch operator personnel to close ou valves by isolating i air: o PCV-1191. IA-777 o PCV-1192, IA-778 IF containment pressu can NOT be isolated, locally close the fol valves (Fan House 88' inside Pressure Relie Plenum); o UH-1013, Pressure R Inlet Stop o UH-1014, Pressure R  Outlet stop</li></ul>	<pre>closed, m fan closed, r <u>AND</u> HP tside nstrument re relief <u>THEN</u> lowing elev., f Fan elief Fan elief Fan</pre>

Number:	little:		Revision Number:
2-ECA-0.0	LOSS OF ALL	AC POWER	REV. /
STEP A	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED	
ATTA	<u>NO</u> CHMENT 1 provides a list of Phas	TE e B valves.	
21. <u>Chu</u> <u>RE</u>	<u>eck Containment Pressure - HAS</u> <u>MAINED LESS THAN 24 PSIG</u>	<ul> <li>Perform the following:</li> <li>a. Verify containment spinsional actuated. IF Manually actuate.</li> <li>b. Verify containment ison Phase B valves closed.</li> <li>IF NOT, THEN manually valves.</li> <li>IF valves can NOT be miclosed. THEN locally of valves.</li> <li>c. Verify IVSW isolation open (98'PAB MCC26AA/8 o S0V-7865 o S0V-7866 o S0V-7867</li> <li>d. One at a time, depress Containment Spray Reset Train o Spray SYS Reset Train o Spray SYS Reset Train o Spray SYS Reset Train</li> </ul>	ray NOT, <u>THEN</u> plation close manually close valves 3B Room):
22. <u>Chu</u> <u>12</u> 0	<u>eck Core Exit TCs - LESS THAN</u> <u>00°F</u>	<u>IF</u> Core Exit temperatures than 1200°F and increasir go to SACRG-1, SEVERE ACC CONTROL ROOM GUIDELINE IN RESPONSE, Step 1.	s greater ng, <u>IHEN</u> CIDENT NITIAL

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Number: Title:	Revision Number:
2-ECA-0.0 LOSS OF ALL	AC POWER REV. 7
2-ECA-0.0 STEP ACTION/EXPECTED RESPONSE 23. Check If AC Power Is Restored: a. Check 480V busses - AT LEAST ONE ENERGIZED o 2A AND 3A - OR - o 5A - OR - o 6A	AC POWER REV. 7 RESPONSE NOT OBTAINED a. Continue to control RCS conditions and monitor plant status: 1) Check status of local actions: o AC power restoration. o RCP seal isolation. o DC power supply. 2) Check status of auxiliary boration systems: o BAST temperature greater than 155°F.
	<pre>If temperature less than 155°F, request TSC to provide emergency power supply for boric acid heat trace to prevent crystallization.</pre> 3) Check status of spent fuel cooling: <ul> <li>o Spent fuel pit level greater than low level alarm.</li> </ul> <li>IF level less than low level alarm, THEN dispatch NPO to makeup to the spent fuel pit as necessary.</li> <li>A Return to Step 11. OBSERVE CAUTION PRIOR TO STEP 11.</li>

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STEP A	CTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED	]
24. <u>Sta</u>	bilize SG Pressures:	<u></u>	
a.	Manually control SG atmospheric steam dumps	a. Locally control SG steam dumps:	atmospheric
		o Refer to 2-SOP-ES LOCAL EQUIPMENT O <u>AND</u> COMPENSATORY local operation a	P-001, PERATION ACTIONS for s necessary.
* * * *	* * * * * * * * * * * * * *	CAUTION	* * * * * * *
* The l * of th	oads placed on the energiz e power source.	ed 480V bus should <u>NOT</u> exceed	the capacity *
* * * * *			• • • • • • • • •
		NOTE	<u> </u>
ATTAC	HMENT 2 provides a list of	480V equipment load ratings.	
25. <u>Ver</u> Ope	ify Service Water System ration:		
đ.	Verify at least one pump – RUNNING ON ESSENTIAL HEADE	a. Manually start pump R	
b.	Service water valves from diesel generator - OPEN	b. Locally open valves necessary.	as

Number:	Title:		Revision Number:
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L			
STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED	
26.	Verify Following Equipment Loaded On Energized 480V Bus:	Manually load equipment necessary.	as
	o Bus 5A:		
	a. MCCs:		
	o MCC 26A o MCC 29A		
	b. 21 Battery Charger in service		
	c. 21 Static Inverter on alternate power supply per 2-SOP-27.1.6, INSTRUMENT BUS, DC DISTRIBUTION SYSTEM AND PA SYSTEM INVERTER		
	d. 23 Static Inverter on alternate power supply per 2-SOP-27.1.6		
	o Bus 2A:		
	a. MCCs:		
	o MCC 24 o MCC 24A		
	b. 22 Battery Charger in service		
	c. 22 Static Inverter on alternate power supply per 2-SOP-27.1.6		
	d. PA System Inverter on alternate power supply per 2–SOP–27.1.6		
Thi.	Step continued on the next page.		

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2-ECA-0.0	0 LOSS OF ALL AC POWER	REV. 7
STEP	ACTION/EXPECTED RESPONSE RESPONSE NOT OBTAINED	
	o Bus 3A:	
	a. MCCs:	
	0 MCC 26C 0 MCC 211	
	b. 23 Battery Charger in service	
	o Bus 6A:	
	a. MCCs:	
	O MCC 26B O MCC 27A	
	b. 24 Battery Charger in service	
	c. 24 Static Inverter on alternate power supply per 2-SOP-27.1.6	

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STEP	ACTION/EXPECTE	D RESPONSE	R	ESPONSE NOT OBTAINED	
If R seal subs	RCP seal coolin s will be esta sequent procedu	<u>N</u> ng was previously ablished by natura ures.	<u>OTE</u> isola 1 cire	ted, further cooling o culation cooldown as d	f the RCP irected in
27. <u>Se</u> a.	elect Recovery Check RCS sul core exit TC VALUE OBTAIN	Procedure: pcooling based on s - GREATER THAN ED FROM TABLE:	a.	Go to 2-ECA-0.2, LOSS AC POWER RECOVERY WITH REQUIRED, Step 1.	OF ALL 1 SI
WR	RCS PRESSURE (PSIG) 0 - 400 401 - 800 801 - 1200 201 - 2500	RCS SUBCOOLING (ADVERSE CONTAINM 52 (83) 36 (49) 23 (30) 19 (26)	°F ENT)		
b.	Check PRZR 10 THAN 14% (33 CONTAINMENT)	≥vel - GREATER & FOR ADVERSE	b.	Go to 2-ECA-0.2, LOSS AC POWER RECOVERY WIT REQUIRED, Step 1.	OF ALL H SI
c.	Check if SI ( ACTUATED WITH INJECTION FLO RESTORATION	equipment - H RESULTANT DW UPON AC POWER	c.	Go to 2-ECA-0.1, LOSS AC POWER RECOVERY WIT REQUIRED, Step 1.	OF ALL HOUT SI
d.	Go to 2-ECA-0 AC POWER RECO REQUIRED, Sto	D.2. LOSS OF ALL DVERY WITH SI ap 1			
		- EN	D -		

Number:

2-ECA-0.0

<u>ATTACHMENT 1</u> CONTAINMENT ISOLATION VALVES	(Attachment page
	•
The following valves will close on Phase A iso	ation:
VALVE NAME	VALVE NUMBER(s)
CCW from excess letdown Hx	796, 793
CCW to excess letdown Hx	798, 791
Vent header from RCDT	1786, 1787
Gas analyzer PRT	548, 549
Gas analyzer RCDT	1788, 1789
Letdown from regenerative HX	201, 202
Letdown oriface control stop valves	200A, 200B, 200C
Make-up to PRT	519, 552
Containment sump pumps to WDS - hold-up tank	1723, 1728
Instrument air to containment	PCV-1228
RCDT to WDS – hold-up tank	1702, 1705
SG blowdown and sampling system	PCV-1214, 1214A
	PCV-1215, 1215A
	PCV-1216, 1216A
	PCV-1217, 1217A
Radiation monitor return to containment	PCV-1234, 1235
	PCV-1236, 1237
Accumulator samples	956G, 956H
Sample – pressurizer steam	956A, 956B
Sample – pressurizer liquid	956C, 956D
Sample – RCS loops	21, 22, 23
	MOV-956E, 956F
SJAE to containment	1229, 1230
Hi-Rad sample system return to containment sump	MOV-4399, 5132
Recirculation pump discharge sample line	MOV-990A, 990B
Accumulator N2 Supply Line Stop	863

2. The following valves will close on Phase B isolation:

VALVE NAME	VALVE NUMBER(s)
Component cooling to RCS pumps	MOV-769, 797
Component cooling from RCS thermal barrier return	MOV-789, FCV-625
Component cooling from RCS motor bearing return	MOV-786, 784
Seal water return containment isolation valve	MOV-222

- END -

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	ATTACHMENT 2 480V FOULDMENT LOAD PATINGS			(Attachment page 1 of 1)	
	480V EQUIPMENT LUAD RATINGS				
1.	Use the following table	to deterr	nine 480V equipment	<u>t load ratings:</u>	
1		21 00	22 DC	22.00	
	FOLITPMENT	RUS 54	RIIS 24 BIIS 34		
		000 JA		100	
	21 SERVICE WATER PUMP	282 KW		<b>1</b>	
	22 SERVICE WATER PUMP		282 KW OR 282 KW		
	23 SERVICE WATER PUMP			282 KW	
	24 SERVICE WATER PUMP	282 KW			
	25 SERVICE WATER PUMP		282 KW OR 282 KW		
	26 SERVICE WATER PUMP			282 KW	
	21 DDZD DH NEATEDS		55 <b>7</b> VU	277 KW	
	21 PRZK DU HEATERS 22 DD70 BIL HEATERS		195 KW 334 KW		
	23 PR7R BIL HEATERS	485 KW	703 KM		
	21 AFW PUMP		384 KW		
	23 AFW PUMP			384 KW	
	21 FAN COOLER UNIT	250 KW			
	22 FAN COOLER UNIT	250 KW			
	23 FAN COOLER UNIT		250 KW		
	24 FAN COOLER UNIT		250 KW		
	25 FAN COOLER UNIT			250 KW	
	21 SI PUMP	316 KW			
	22 SI PUMP		316 KW 316 KW		
	23 SI PUMP 21 SDDAV DUMD	250 84		345 KW	
	22 SPRAT PUMP 22 SDDAV DIIMD	320 KW		350 KW	
	21 RHR PHMP		303 KW	330 KW	
	22 RHR PUMP		505 KM	303 KW	
	21 CHARGING PUMP	150 KW			
	22 CHARGING PUMP		150 KW		
	23 CHARGING PUMP			150 KW	
	21 RECIRC PUMP	299 KW			
	22 RECIRC PUMP			299 KW	
	21 CCW PUMP	228 KW			
	22 CCW PUMP		228 KW		
	23 CCW PUMP			228 KW	
	21 LIGHTING TRANSFURMER		100 KW (N)	IDU KW (E)	
	22 LIGHTING TRANSFORMER	225 VW	225 KW		
	TURBINE ANX OTI PIMP	LLJ NN		112 KW	
	STATION AIR COMPRESSOR	93 KW			
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