

**OPERATOR TRAINING PROGRAM
JOB PERFORMANCE MEASURE**

STATION:	SALEM		
SYSTEM:	Electrical Systems (SF 6) - AC Distribution		
TASK:	Start and load a EDG during Loss of All Off-Site Power IAW EOP-LOPA-1		
TASK NUMBER:	N0640010101		
JPM NUMBER:	17-01 NRC Sim-g		
ALTERNATE PATH:	<input type="checkbox"/>	K/A NUMBER:	064 A4.06
APPLICABILITY:	IMPORTANCE FACTOR:		
EO <input type="checkbox"/>	RO <input checked="" type="checkbox"/>	STA <input type="checkbox"/>	SRO <input checked="" type="checkbox"/>
			3.9 3.9
			RO SRO
EVALUATION SETTING/METHOD:	Simulator / Perform		
REFERENCES:	2-EOP-LOPA-1, Rev 31 (checked 9-14-18)		
TOOLS AND EQUIPMENT:	None		
VALIDATED JPM COMPLETION TIME:	8 min		
TIME PERIOD IDENTIFIED FOR TIME CRITICAL STEPS:	N/A		
Developed By:	R. Chan <i>Rudolph Chan</i> Instructor	Date: 12-5-18	
Validated By:	Bell / Raymond / Bates (Rev. 0) SME or Instructor	Date: 9-14-18	
Approved By:	<i>[Signature]</i> Training Department	Date: 12/11/18	
Approved By:	<i>[Signature]</i> Operations Department	Date: 12/7/18	
ACTUAL JPM COMPLETION TIME:			
ACTUAL TIME CRITICAL COMPLETION TIME:			
PERFORMED BY:			
GRADE:	<input type="checkbox"/> SAT	<input type="checkbox"/> UNSAT	
REASON, IF UNSATISFACTORY:			
EVALUATOR'S SIGNATURE:			DATE:

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REVISION HISTORY

JPM NUMBER: 17-01 NRC Sim-g

Rev #	Date	Description	Validation Required
00	9-14-18	Added revision history and simulator setup pages. Editorial comments from IP 71111.11 FASA.	Yes
01	12-5-18	Incorporated NRC Prep week comments. Corrected System description on various pages. This is an editorial change and no re-validation is required.	No

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SIMULATOR SETUP INSTRUCTIONS

SYSTEM: Electrical Systems (SF 6) - AC Distribution

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TASK NUMBER: N0640010101

SIMULATOR IC: IC-237 [9-14-18]

MALFUNCTIONS:

1. Reset the simulator to the above IC #.
2. Verify the following events on the Summary/ET Trigger Lists:

MALF ID #	Description	Delay Time	Initial Value	Ramp Time	Trigger	Severity
01	EL0161, 2A EMERG DIESEL GEN TRIP	N/A	N/A	N/A	N/A	TRUE
02	EL0134, LOSS OF ALL 500KV OFF-SITE POWER	N/A	N/A	N/A	N/A	TRUE
03	EL0145, LOSS OF 2B 4160V VITAL BUS	N/A	N/A	N/A	N/A	TRUE

3. These malfunctions will simulate a loss of all off-site power (LOPA) with 2A EDG tripping following Rx Trip and 2B 4 KV bus locked out on Bus Differential. 2C EDG was C/T for scheduled maintenance prior to the event. The crew entered EOP-LOPA-1 and has performed all actions thru step 12. CRS reports that 2C EDG is restored from maintenance and is ready for start. The CRS will direct the operator to perform Step 14 to start 2C EDG, then continue on with the procedure. The JPM will terminate when loads are started in Step 17.

OVERRIDES / REMOTES:

ID #	Description	Delay Time	Initial Value	Ramp Time	Trigger	Condition/Severity
1	DG01D, DEENERGIZE A SEC CABINET	N/A	N/A	N/A	N/A	YES
2	DG02D, DEENERGIZE B SEC CABINET	N/A	N/A	N/A	N/A	YES
3	DG03D, DEENERGIZE C SEC CABINET	N/A	N/A	N/A	N/A	YES
4	AF25D, 22 AFW pump Control Power	N/A	N/A	N/A	N/A	OFF
5	AJ04 L AO, 21 RCP Seal Inlet Temp	N/A	N/A	N/A	N/A	200
6	AJ04 R AO, 21 RCP Seal Outlet Temp	N/A	N/A	N/A	N/A	200
7	AK04 L AO, 22 RCP Seal Inlet Temp	N/A	N/A	N/A	N/A	200
8	AK04 R AO, 22 RCP Seal Outlet Temp	N/A	N/A	N/A	N/A	200
9	AL04 L AO, 23 RCP Seal Inlet Temp	N/A	N/A	N/A	N/A	200
10	AL04 R AO, 23 RCP Seal Outlet Temp	N/A	N/A	N/A	N/A	200
11	AM04 L AO, 24 RCP Seal Inlet Temp	N/A	N/A	N/A	N/A	200
12	AM04 R AO, 24 Seal Outlet Temp	N/A	N/A	N/A	N/A	200

EVENT TRIGGERS:

ET#	Description	Command
	None	

SPECIAL INSTRUCTIONS: None

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NAME: _____

DATE: _____

SYSTEM: Electrical Systems (SF 6) - AC Distribution

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TASK NUMBER: N0640010101

INITIAL CONDITIONS:

- Unit 2 experienced a Reactor Trip following a total loss of off-site power.
- The crew is implementing 2-EOP-LOPA-1 with all actions completed through Step 12.
- The following is a status of AC Power:
 - ❖ 2A EDG tripped shortly after the reactor was tripped and is being investigated by Maintenance.
 - ❖ 2B EDG was secured (stopped) by the crew due to the bus being locked out on Bus Differential.
 - ❖ 2C EDG was C/T for scheduled maintenance prior to this event.

INITIATING CUE:

- You are the Plant Operator.
- WCC Supervisor reports that 2C EDG has been restored from maintenance and tags are fully released.
- The CRS directs you to start and load 2C EDG starting at Step 13 of EOP-LOPA-1.
- Your evaluator will respond to all other alarms not related to your task.

Successful Completion Criteria:

1. All critical steps completed.
2. All sequential steps completed in order.
3. All time-critical steps completed within allotted time.
4. JPM completed within validated time. Completion time may exceed the validated time if satisfactory progress is being made (and NRC concurrence is obtained).

Task Standard for Successful Completion:

1. **Starts 2C EDG and one SW pump for that bus, and closes 23SW20 valve.**
2. **Starts all directed C bus loads IAW Table C of EOP-LOPA-1.**

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* #	STEP NO.	STEP (Shaded area denotes Critical Step) (* Critical Step)	STANDARD (Bolded area identifies Task Standard)	EVAL S/U	COMMENTS (Required for UNSAT evaluation)
		Simulator Operator: Ensure 2-EOP-LOPA-1 is marked up to <u>Step 12</u> .			
	CUE	Fill in the JPM Start Time when the student acknowledges the Initiating Cue. START TIME: _____			
		2-EOP-LOPA-1			
	13	CAUTION 4 KV VITAL BUS LOADING SHOULD NOT EXCEED POWER SUPPLY CAPACITY AS FOLLOWS: <ul style="list-style-type: none"> • GAS TURBINE – INSTALLED POWER TRUM CURVE • DG – 2000-HR LIMIT – 2750 KW • DG – 2-HR LIMIT – 2860 KW • DG – HALF-HR LIMIT – 3100 KW 	Operator reviews CAUTION and continues on.		

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* #	14	<p>RESTORE POWER TO DE-ENERGIZED 4 KV VITAL BUSES AS FOLLOWS:</p> <ul style="list-style-type: none"> • START DGs • CLOSE DG OUTPUT BKRS 	<p>Operator starts 2C EDG by depressing the DIESEL GEN START PB and verifying FREQUENCY is \approx 60 Hz and VOLTS is \approx 4.15 KV.</p> <p>In order to close the Output Breaker, the operator depresses the MIMIC PB for 2C DG 4KV BKR 2CDD and verifies <u>both</u> the MIMIC PB illuminates Yellow and the BUS INTLK CLOSE SELECTION Bezel is illuminated Yellow.</p> <p>Operator closes the 2C EDG output breaker by depressing the 2C BREAKER CLOSE PB.</p>		
			<p>Evaluator's Note: 2C TROUBLE console alarm will be illuminated due to loss of bus voltage.</p> <p>CUE: If asked why the console alarm is illuminated THEN state: <i>local alarm panel shows no alarms up, it may be from the loss of power.</i></p>		

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*	14.1	<p><u>WHEN ANY 4 KV VITAL BUS IS ENERGIZED, THEN:</u></p> <ol style="list-style-type: none"> 1. START <u>ONLY ONE</u> SW PUMP ON THAT BUS 2. CLOSE ASSOCIATED TURBINE AREA SW STOP VALVE 	<p>Operator depresses START PB for either 25 or 26 SW pump on 2CC1 and verifies associated amps are increasing.</p> <p>Operator checks loading on 2C EDG by observing KW meter on bezel.</p> <p>Operator depresses CLOSED PB for 23SW20 on 2CC1 and verifies PB illuminates.</p>		
	15	SEND OPERATORS TO START NON-OPERATING DGs AND TO MONITOR OPERATING DGs.	CUE: CRS will dispatch operator to monitor 2C DG, CRS directs you to continue on with the procedure		
	16	IS <u>ANY</u> 4 KV VITAL BUS ENERGIZED	YES: Operator determines that 2C 4 KV Vital bus is energized.		
	17	IS SI ACTUATED	NO: Operator determines SI has not actuated.		
	17 Contd.	IS SI REQUIRED	NO: Operator determines SI is not required.		

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*	17 Contd.	START LOADS IN TABLE C AS REQUIRED	<p>CUE: <u>When</u> operator reaches this step, <u>THEN</u> state: CRS directs the following loads to be started:</p> <ul style="list-style-type: none"> • 22 Charging Pump • 23 CCW Pump • #2 ECAC <p>Operator starts the required loads by depressing the START PBs and verifying PB illuminates followed by amps increasing. Operator should also be monitoring EDG loading during starting loads.</p>		
	CUE:	Operator notifies CRS Step 17 is complete	CUE: JPM is complete		
	CUE:	<p>JPM is complete when the task is complete OR at the direction from the Lead Evaluator.</p> <p>RECORD the STOP TIME.</p> <p>STOP TIME: _____</p>	Terminate the JPM when the operator completes loading in Step 17.		

OPERATIONS DEPARTMENT
JOB PERFORMANCE MEASURE

TQ-AA-106-0303

JPM: 17-01 NRC Sim-g

JOB PERFORMANCE MEASURE VALIDATION CHECKLIST

NOTE: All steps of this checklist should be performed upon initial validation. Prior to JPM usage, revalidate JPM using steps 8 and 11 below.

- R 12-5-18*
- NA 1. Task description and number, JPM description and number are identified.
- _____ 2. Knowledge and Abilities (K/A) references are included.
- _____ 3. Performance location specified. (in-plant, control room, or simulator)
- _____ 4. Initial setup conditions are identified.
- _____ 5. Initiating and terminating Cues are properly identified.
- _____ 6. Task standards identified and verified by SME review.
- _____ 7. Critical steps meet the criteria for critical steps and are identified with an asterisk (*).
- _____ 8. Verify the procedure referenced by this JPM matches the most current revision of that procedure: Procedure Rev. _____ Date _____
- _____ 9. Pilot test the JPM:
a. verify Cues both verbal and visual are free of conflict, and
b. ensure performance time is accurate.
- _____ 10. If the JPM cannot be performed as written with proper responses, then revise the JPM.
- NA 11. When JPM is revalidated, SME or Instructor sign and date JPM cover page.

SME/Instructor: NA R 12-5-18

Date: _____

SME/Instructor: _____

Date: _____

SME/Instructor: _____

Date: _____

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