TASK TITLE: **Under Voltage Simulated Start of 2A AF Pump Surveillance**

JPM No.: **IP-209** REV: **NRC2006301**
TPO No.: 4C.EF-01 K&A No.: 013000A3.02
TASK No.: R-EF-001, Monitor the ESFAS K&A IMP: 4.1/4.2

TRAINEE: _____ SRO

EVALUATOR: _____ DATE: _____

The Trainee: PASSED _____ this JPM. TIME STARTED: _____

FAILED _____ TIME FINISHED: _____

JPM TIME: _____ MINUTES

CRITICAL ELEMENTS: **(*) 5, 7, 9** APPROX COMPLETION TIME: **30 MINUTES**

CRITICAL TIME: **NA**

EVALUATION METHOD:
_____ PERFORM
__X__ SIMULATE

LOCATION:
__X__ IN PLANT
_____ SIMULATOR

GENERAL REFERENCES:

1. 2BwOSR 3.3.2.3, Rev. 2, Unit Two Undervoltage Simulated Start of 2A Auxiliary Feedwater Pump Surveillance.
2. Tech Spec 3.3.2, Table 3.3.2-1, Function 6.d.

MATERIALS:

1. Copy of 2BwOSR 3.3.2.3.
2. Digital Voltmeter.
3. Key to 2PA13J.

TASK STANDARDS:

1. Perform undervoltage simulated start of 2A AF pump.

TASK CONDITIONS:

1. You are an extra NSO.
2. Unit 2 is at full power.
3. 2BwOSR 3.3.5.1-1, Bus 241 Undervoltage Protection Monthly Surveillance, will NOT be performed in conjunction with 2BwOSR 3.3.2.3.

INITIATING CUES:

1. The US has directed you to perform 2BwOSR 3.3.2.3, Unit Two Undervoltage Simulated Start of 2A Auxiliary Feedwater Pump Surveillance. (**CUE: Hand examinee copy of surveillance**)
2. Inform the US when you have completed the surveillance.

RECORD START TIME _____

	PERFORMANCE STEP	STANDARD	Circle applicable
1.	Review 2BwOSR 3.3.2.3 **CUE: All prerequisites have been met.**	Perform the following • Verify all prerequisites, precautions, and limitations and actions are met. • Sign work started block of predefine data package cover sheet	SAT UNSAT N/A **Comments:**
2.	Obtain a Digital Voltmeter (DVM) and record the instrument calibration data (step F.1.1)	Obtain a Digital Voltmeter (DVM) and record the following: • QA number • Calibration date • Calibration due date	SAT UNSAT N/A **Comments:**
3.	Obtain keys **CUE: As NSO and US, acknowledge surveillance performance.**	Perform the following: • Inform Unit 2 NSO and Unit 2 US of surveillance performance • Obtain key for 2PA13J	SAT UNSAT N/A **Comments:**
4.	Record pretest data. (steps F.1.2 & F.1.3) **CUE: 2A AF pump C/S is as shown (NAT).** **CUE: Date and time are current date and time.**	Perform the following: • Circle as found position of 2A AF pump C/s • Record date and time	SAT UNSAT N/A **Comments:**
***5.**	**Prevent 2A AF pump auto start during surveillance performance. (steps F.1.4 & F.1.5)** **CUE: As US, acknowledge LCO entry. US will track LCO.** **CUE: 2A AF pump C/S is in pull to lock.**	Perform the following: • Inform US to enter LCO 3.7.5 • PLACE 2A AF Pump to PULL TO LOCK	SAT UNSAT N/A **Comments:**

	PERFORMANCE STEP	STANDARD	Circle applicable
Examiners note: All actions in 2PA13J will be simulated by examinee. Examinee may use laser pointer to identify components inside 2PA13J such that the plane of the cabinet is not broken.			
6.	Verify 2PA13J pretest panel alignment. (steps F.1.4-F.1.9) **CUE: As NSO, acknowledge 2PA13J entry and MCR annunciator.** **CUE: Test switch CS2A is as shown (NORMAL).** **CUE: Test switch CS1A is as shown (POSITION 12).** **CUE: Not in test light is as shown (LIT).** **CUE: Voltage available no SI light is as shown (LIT).**	At 2PA13J perform the following: o Examinee should contact Unit 2 MCR to warn of impending MCR annunciator when the 2PA13J door is opened • VERIFY test switch CS2A is in NORMAL • VERIFY test switch CS1A is in position 12 • VERIFY the NOT IN TEST green light is LIT • VERIFY the VOLTAGE AVAILABLE NO SI green light is LIT	SAT UNSAT N/A **Comments:**
***7.**	**Place test switch CS1A clockwise to position 1 at 2PA13J. (step F.1.10)** **CUE: CS1A has been rotated clockwise and indicates position 1.**	At 2PA13J perform the following: • Rotate CS1A clockwise from position 12 to position 1.	SAT UNSAT N/A **Comments:**
8.	Check proper light indication at 2PA13J (step F.1.11) **CUE: VOLTAGE AVAILABLE NO SI light is as shown (LIT).** **CUE: NOT IN TEST light is dark (NOT LIT).** **CUE: IN TEST light is illuminated (LIT).**	At 2PA13J perform the following: • VERIFY the green VOLTAGE AVAILABLE NO SI light is LIT • VERIFY the green NOT IN TEST light is NOT LIT • VERIFY the red IN TEST light is LIT	SAT UNSAT N/A **Comments:**

	PERFORMANCE STEP	STANDARD	Circle applicable
*9.	**Perform simulated undervoltage start of 2A AF pump. (steps F.1.12-F.1.17)** **CUE: CS1A has been rotated clockwise and indicates position 9.** **CUE: CS2A has been rotated and indicates TEST SHUT.** **CUE: 35 seconds have elapsed.** **Note: R8A relay is located in rear of 2PA13J.** **CUE: Contact 1-2 = 1 ohm.** **CUE: Contact 7-8 = 500 kilo-ohms.** **CUE: CS2A has been rotated and indicates NORMAL.** **CUE: CS1A has been rotated clockwise and indicates position 11.**	At 2PA13J perform the following: • Rotate CS1A clockwise from position 1 to position 9. • Rotate CS2A from NORMAL to TEST SHUT • Wait 35 seconds after CS2A placed in test shut • Measure <10 ohms across relay R8A contacts 1 & 2(wire numbers TB 37 and TB 38) • Measure >100 kilo-ohms across relay R8A contacts 7 & 8 (wire numbers TB 3-12 and TB 3-11) • Rotate CS2A from TEST SHUT to NORMAL • Rotate CS1A clockwise from position 9 to position 11.	SAT UNSAT N/A **Comments:**
10.	Check proper light indication at 2PA13J (step F.1.18) **CUE: VOLTAGE AVAILABLE NO SI light is as shown (LIT).** **CUE: NOT IN TEST light is as shown (LIT).** **CUE: ABNORMAL CONDITION (TEST ABORT) light is illuminated (LIT.)** **CUE: IN TEST light is as shown (NOT LIT).**	At 2PA13J perform the following: • VERIFY the green VOLTAGE AVAILABLE NO SI light is LIT • VERIFY the green NOT IN TEST light is LIT • VERIFY the amber ABNORMAL CONDITION (TEST ABORT) light is LIT • VERIFY the red IN TEST light is NOT LIT	SAT UNSAT N/A **Comments:**

	PERFORMANCE STEP	STANDARD	Circle applicable
11.	Perform system restoration. (steps F.1.19-F.1.24) **CUE: CS1A has been rotated clockwise and indicates position 12.** **CUE: ABNORMAL CONDITION (TEST ABORT) light is as shown (NOT LIT).** **CUE: 2A AF pump C/S is as shown (NAT).** **CUE: As US, acknowledge LCO exit.** **CUE: Date and time are current date and time.**	Perform the following: • At 2PA13J, rotate CS2A clockwise from position 11 to position 12 • At 2PA13J, verify amber ABNORMAL CONDITION (TEST ABORT) light is NOT LIT • At 2PM06J, place 2A AF Pump C/S to AFTER TRIP • Notify US to exit LCO 3.7.5 • Record time and date • Record time difference between steps 1.3 and 1.23 • Verify time difference ≤72 hours	SAT UNSAT N/A **Comments:**

CUE: THIS COMPLETES THIS JPM.

RECORD STOP TIME _____

COMMENTS:

TASK CONDITIONS:

1. You are an extra NSO.
2. Unit 2 is at full power.
3. 2BwOSR 3.3.5.1-1, Bus 241 Undervoltage Protection Monthly Surveillance, will NOT be performed in conjunction with 2BwOSR 3.3.2.3.

INITIATING CUES:

1. The US has directed you to perform 2BwOSR 3.3.2.3, Unit Two Undervoltage Simulated Start of 2A Auxiliary Feedwater Pump Surveillance.
2. Inform the US when you have completed the surveillance.

SIMULATOR SETUP GUIDE:

- N/A – in plant

COMMENTS:

- Provide copy of 2BwOSR 3.3.2.3, Rev. 2

TASK TITLE: **Energize an Instrument Bus from the CVT, and Shutdown the Inverter.**

JPM No.:	**IP-604**	REV:	**NRC2006301**
TPO No.:	4D.OA-22	K&A No.:	000057AA1.01
TASK No.:	R-OA-006: Respond to a loss of vital AC electrical instrument bus	K&A IMP:	3.7/3.7

TRAINEE: _____ SRO

EVALUATOR: _____ DATE: _____

The Trainee: PASSED _____ this JPM. TIME STARTED: _____

FAILED _____ TIME FINISHED: _____

JPM TIME: _____ MINUTES

CRITICAL ELEMENTS: **(*) 2, 3, 6** APPROX COMPLETION TIME: **45 MINUTES**

CRITICAL TIME: **NA**

EVALUATION METHOD:

_____ PERFORM
__X__ SIMULATE

LOCATION:

__X__ IN PLANT
_____ SIMULATOR

GENERAL REFERENCES:

1. 2BwOA ELEC-2, Rev. 100, Loss of Instrument Bus Unit 2.
2. BwOP IP-2, Rev. 11, Transferring an Instrument Bus from the Inverter to the Constant Voltage Transformer.

MATERIALS:

1. BwOP IP-2, Rev. 11, Transferring an Instrument Bus from the Inverter to the Constant Voltage Transformer.

TASK STANDARDS:

1. Transfer Instrument Bus 211 from the 211 Instrument Inverter to the 211 Constant Voltage Transformer per BwOP IP-2
2. Shutdown the 211 Instrument Inverter per BwOP IP-2.

TASK CONDITIONS:

1. You are an extra NSO and will perform all actions outside the main control room (MCR).
2. Both units are at full power.
3. Unit 2 has experienced a loss of Instrument Bus 211 and the control room operators are performing 2BwOA ELEC-2 (Loss of an Instrument Bus Unit 2).
4. Maintenance has informed the control room that Inverter 211 has failed.

INITIATING CUES:

1. The Unit Supervisor has directed you to energize Instrument Bus 211 from the Constant Voltage Transformer and shutdown Inverter 211 in accordance with BwOP IP-2.
2. An NSO is standing by in the Unit 2 MCR to perform MCR actions.
3. Inform the Unit Supervisor when you have completed energizing Instrument Bus 211 from the CVT.

RECORD START TIME _____

	PERFORMANCE STEP	STANDARD	Circle applicable
1.	Refer to BwOP IP-2. **CUE: After examinee locates procedure, provide a copy.** **CUE: All applicable prerequisites, have been met.** **CUE: If examinee locates BwOP IP-2T1, provide a copy.** **CUE: A briefing has been performed for production risk task performance.** **CUE: The control room is aware of the upcoming steps and all required people are staged for task performance.**	Perform the following: • Locate and open BwOP IP-2. • Verify prerequisites, precautions, and limitations and actions	SAT UNSAT N/A **Comments:**
***2.**	Prepare Instrument Bus 211 to receive power from the CVT. **CUE: Rod control in manual** **CUE: Normal AC feed breaker is OFF** **CUE: Interlock bar is in desired position** **CUE: Reserve AC feed breaker is ON**	Perform the following at Instrument Bus 211: (451' AEER) o Notify MCR to PLACE rod control in MANUAL o PLACE the NORMAL AC feed breaker to the OFF position. o PLACE the NORMAL/RESERVE feed breaker interlock bar in a position to allow for operation of the RESERVE AC feed breaker. • PLACE the RESERVE feed breaker to the ON position.	SAT UNSAT N/A **Comments:**
***3.**	**Energize Instrument Bus 211 from the CVT.** **CUE: Bus 211 transformer Input Breaker is in the ON/UP position.** **CUE: Rod control in auto**	At Constant Voltage Transformer, 2IP01E, (451' MEER) energize Instrument Bus 211 from the CVT as follows: • PLACE the Instrument Bus 211 Constant Voltage Transformer AC power switch to the ON position. o Notify MCR to PLACE rod control in AUTO	SAT UNSAT N/A **Comments:**

	PERFORMANCE STEP	STANDARD	Circle applicable
4.	**Shutdown Inverter 211.** **CUE: 4CB is in the DOWN/OFF position.** **CUE: 3CB is in the DOWN/OFF position.** **CUE: 1CB is in the DOWN/OFF position.** **CUE: 2CB is in the DOWN/OFF position.**	At Inverter 211, 2IP05E, (451' MEER) perform the following: • OPEN AC Output Breaker 4CB. • OPEN DC Input Breaker 3CB. • OPEN Rectifier AC Input Breaker 1CB. • OPEN Battery Input Breaker 2CB.	SAT UNSAT N/A **Comments:**
5.	De-energize the AC feed to Inverter 211. **Note: MCC 231X2 is located at 414', S-24 Aux Bdg** **CUE: MCC 231X2 Cub C2 is DOWN/OPEN position.**	De-energize Inverter 211 as follows: • OPEN Inverter 2IP05E AC feed breaker at MCC 231X2 Cub C2. (Aux Bldg 414' S-24)	SAT UNSAT N/A **Comments:**
***6.**	**De-energize the DC feed to Inverter 211.** **CUE: Inverter 211 DC feed breaker is in the OFF/LEFT position.**	At 125 volt DC Bus 211 BF1 distribution panel, 2DC05E, (451' MEER) de-energize the DC feed to the inverter by performing the following: • OPEN Inverter 211 DC Feed Breaker, 125VDC panel 211, BF1 CKT 1.	SAT UNSAT N/A **Comments:**
7.	Stop the Inverter 211 cooling fan, 2IP09E. **CUE: 2IP09E, Inverter 211 cooling fan, is in the DOWN/OFF position.**	Stop 2IP09E, Inverter 211 cooling fan as follows: • PLACE cooling fan control switch in OFF position.	SAT UNSAT N/A **Comments:**
8	Inform US transfer of Instrument Bus 111 to the CVT is complete **CUE: Acknowledge report.**	Inform US transfer of Instrument Bus 111 to the CVT is complete.	SAT UNSAT N/A **Comments:**

CUE: THIS COMPLETES THIS JPM.

RECORD STOP TIME _____

COMMENTS:

TASK CONDITIONS:

1. You are an extra NSO.
2. Both units are at full power.
3. Unit 2 has experienced a loss of Instrument Bus 211 and the control room operators are performing 2BwOA ELEC-2 (Loss of an Instrument Bus Unit 2).
4. Maintenance has informed the control room that Inverter 211 has failed.

INITIATING CUES:

1. The Unit Supervisor has directed you to energize Instrument Bus 211 from the Constant Voltage Transformer and shutdown Inverter 211 in accordance with BwOP IP-2.
2. An NSO is standing by in the Unit 2 MCR to perform MCR actions.
3. Inform the Unit Supervisor when you have completed energizing Instrument Bus 211 from the CVT.

SIMULATOR SETUP GUIDE:

- N/A – in plant

COMMENTS:

- Provide copy of BwOP IP-2, Rev. 11

TASK TITLE: **Operate the Fire Detection/Alarm Equipment**

JPM No.: **IP-804** REV: **NRC2006301**
TPO No.: 4C.FP-02 K&A No.: 08600A2.04
TASK No.: R-FP-002, Operate fire detection/alarm equipment. K&A IMP: 3.3/3.9

TRAINEE: _____ SRO

EVALUATOR: _____ DATE: _____

The Trainee: PASSED _____ this JPM. TIME STARTED: _____

FAILED _____ TIME FINISHED: _____

JPM TIME: _____ MINUTES

CRITICAL ELEMENTS: **(*) 3, 5** APPROX COMPLETION TIME: **25 MINUTES**

CRITICAL TIME: **NA**

EVALUATION METHOD:
_____ PERFORM
__X__ SIMULATE

LOCATION:
__X__ IN PLANT
_____ SIMULATOR

GENERAL REFERENCES:

1. BwOP CO-5, Rev. 2, Manual Actuation of the Carbon Dioxide Fire Suppression Systems.
2. BwOP CO-5T2, Rev. 1, Manual Actuation of the Unit 2 Carbon Dioxide Fire Suppression Systems Table 2.

MATERIALS:

1. BwOP CO-5, Rev. 2.
2. BwOP CO-5T2, Rev. 1.

TASK STANDARDS:

1. Determine Carbon Dioxide system manual alignment required to actuate system.
2. Perform actions to manually initiate the Carbon Dioxide suppression system to the 2B Aux Feedwater Pump Room.

TASK CONDITIONS:

1. You are an extra NSO.
2. The Unit is at full power.
3. A fire exists in the 2B Aux Feedwater Pump Room.
4. The automatic CO_2 actuating circuits have failed to operate.

INITIATING CUES:

1. The Shift Manager has instructed you to manually initiate CO_2 to the 2B Aux Feedwater Pump Room.
2. Inform the Shift Manager when CO_2 has been initiated to the 2B Aux Feedwater Pump Room.

RECORD START TIME _____

	PERFORMANCE STEP	STANDARD	Circle applicable
1.	Refer to BwOP CO-5 and BwOP CO-5T2 **CUE: After examinee locates correct procedures, provide copies.** **CUE: All applicable prerequisites, precautions, limitations and actions have been met.**	Locate and Open the following: • BwOP CO-5 • BwOP CO-5T2	SAT UNSAT N/A **Comments:**
2.	**Determine and locate the appropriate Pushbutton Station for the 2B AF Pump Room** **Note: 2HS-CO032 is located on the wall to the right of 2B AF pump room door, 383' M-19.** **Note: 2HS-CO033 is located on the wall to the left of 2B AF pump room door, 383' M-19.**	DETERMINE and LOCATE Pushbuttons Stations for 2B AF Pump Room from page 2 of BwOP CO-5T2 as follows: o Pushbutton #1 (2HS-CO032) is at Aux Bldg 383' M-19 o Pushbutton #2 (2HS-CO033) is at Aux Bldg 383' M-19	SAT UNSAT N/A **Comments:**

	PERFORMANCE STEP	STANDARD	Circle applicable
Examiners note: The examinee may attempt to actuate CO_2 from both pushbuttons in the following step. Depressing both pushbuttons is NOT required since they are redundant functions.			
***3.**	**Actuate CO2 system from local pushbuttons** **CUE: Pushbutton Station Cover is pulled down.** **CUE: Pushbutton has been depressed.** **Wait 3-5 secs, provide cue 3-5 secs have elapsed.** **CUE: Pushbutton has been released.** **CUE: Pre-discharge alarm has sounded.** **CUE: Pre-discharge alarm is stopped.** **Note: Provide the following cue <u>after</u> the examinee has checked for CO_2 flow.** **CUE: No sound of CO_2 flowing.** **CUE: CO_2 discharge piping is NOT frosted.**	Perform the following at each pushbutton location to attempt to actuate CO2 system from local pushbuttons: (Step may be performed twice, once at 2HS-CO032 and once at 2HS-CO033) • PULL DOWN the cover on the Pushbutton Station • DEPRESS the Pushbutton for 3-5 secs • VERIFY the pre-discharge alarm sounds • After pre-discharge alarm stops, VERIFY CO_2 discharge by sound and frosting of piping above 2CO14JB. • Determines CO_2 system did not actuate o Attempt to actuate CO_2 using alternate pushbutton (following first attempt)(N/A if not performed) • Proceed to step F.3 (following second attempt)	SAT UNSAT N/A **<u>Comments:</u>**

	PERFORMANCE STEP	STANDARD	Circle applicable
	Note: Alternate path begins here		
4.	Determine and locate the 2B AF Pump Room Damper Control Cabinet and determine power is available **Note: 2CO18J is located on the wall to the left of 2B AF pump room door, 383' M-20.** **Note: When correct cabinet is located, and power light is checked, provide the following cue.** **CUE: The power available light (RED) is lit.**	DETERMINE and LOCATE Damper Control Cabinet from BwOP CO-5T2 page 2 as follows: • Damper Control Cabinet (2CO18J) for 2B AF Pump Room is at Aux Bldg 383' M-20 • VERIFY power at the Damper Control Cabinet • Power available light lit	SAT UNSAT N/A **Comments:**
***5.**	**Actuate CO_2 from Selector EMPC valve** **Note: 2CO14JB is located on the wall to the right of 2B AF pump room door, 383' M-19.** **CUE: Selector EMPC glass is broken.** **CUE: Selector EMPC is rotated 90° to OPEN position.** **CUE: Sound of CO_2 flowing is heard and frosting of piping is evident.** **CUE: 79 seconds have elapsed.** **CUE: Selector EMPC is in CLOSE position.** **Note: After examinee closes the selector EMPC valve provide the following cue.** **CUE: Unit supervisor informs you another operator will complete BwOP CO-5.**	Perform the following to actuate CO_2 system from the Selector EMPC valve: • DETERMINE and LOCATE the SELECTOR EMPC (2CO14JB) at Aux Bldg 383' M-19 • BREAK the SELECTOR EMPC cabinet glass • PLACE SELECTOR EMPC actuator lever in the OPEN position • VERIFY CO_2 discharge by sound and frosting of piping • Maintain Selector EMPC in open position for >79 seconds • Place the Selector EMPC actuator lever in the CLOSED positon.	SAT UNSAT N/A **Comments:**

CUE: THIS COMPLETES THIS JPM.

RECORD STOP TIME _____

COMMENTS:

TASK CONDITIONS:

1. You are an extra NSO.
2. The Unit is at full power.
3. A fire exists in the 2B Aux Feedwater Pump Room.
4. The automatic CO_2 actuating circuits have failed to operate.

INITIATING CUES:

1. The Shift Manager has instructed you to manually initiate CO_2 deluge to the 2B Aux Feedwater Pump Room.
2. Inform the Shift Manager when CO_2 has been initiated to the 2B Aux Feedwater Pump Room.

SIMULATOR SETUP GUIDE:

- N/A – in plant

COMMENTS:

- Provide copy of BwOP CO-5, Rev. 2.
- Provide copy of BwOP CO-5T2, Rev. 1.