DUANE ARNOLD ENERGY CENTER

JOB PERFORMANCE MEASURE

2007 NRC IN PLANT JPM P-1

TITLE: Perform Required Actions for Placing RHR in Torus Cooling from 1C388

	JOB PERFORMANCE MEASURE (JPM)

SITE: DAEC

JPM TITLE: Perform required actions for placing RHR in torus cooling from 1C388

JPM NUMBER: 295016-04 **REV.** 11

RELATED PRA INFORMATION:

TASK NUMBER(S) / TASK TITLE(S): 94.31 / Initiate torus cooling from outside the control room

K/A NUMBERS AND VALUES: 295016 AK2.01 (4.4/4.5) AA2.04 (3.9/4.1)

Justification (FOR K/A VALUES <3.0):

APPLICABLE METHOD OF TESTING: ☐ **RO** ☐ **SRO** ☐ **STA** ☐ **NSPEO** ☐ **SRO CERT**

Simulate/walkthrough: [X] Perform: [ ]

EVALUATION LOCATION: In-Plant: [X] Control Room: [ ]

Simulator: [ ] Other: [ ]

Lab: [ ]

Time for Completion: 10 Minutes Time Critical: NO

Alternate Path / Faulted: NO

TASK APPLICABILITY: RO/SRO

Developed by:	Instructor	Date
Validated by:	Validation Instructor	Date
Reviewed by:	Plant Reviewer	Date
Approved by:	Training Supervisor	Date

295016-04, Placing RHR in torus cooling from 1C388, Rev. 11

JOB PERFORMANCE MEASURE VALIDATION CHECKLIST

ALL STEPS IN THIS CHECKLIST ARE TO BE PERFORMED PRIOR TO USE.

REVIEW STATEMENTS	YES	NO	N/A
1. Are all items on the signature page filled in correctly?	☐	☐	☐
2. Has the JPM been reviewed and validated by SMEs?	☐	☐	☐
3. Can the required conditions for the JPM be appropriately established in the simulator if required?	☐	☐	☐
4. Does the performance steps accurately reflect trainee's actions in accordance with plant procedures?	☐	☐	☐
5. Is the standard for each performance item specific as to what controls, indications and ranges are required to evaluate if the trainee properly performed the step?	☐	☐	☐
6. Has the completion time been established based on validation data or incumbent experience?	☐	☐	☐
7. If the task is time critical, is the time critical portion based upon actual task performance requirements?	☐	☐	☐
8. Is the Licensee level appropriate for the task being evaluated if required?	☐	☐	☐
9. Is the K/A appropriate to the task and to the licensee level if required?	☐	☐	☐
10. Is justification provided for tasks with K/A values less than 3.0?	☐	☐	☐
11. Have the performance steps been identified and typed (Critical / Sequence / Time Critical) appropriately?	☐	☐	☐
12. Have all special tools and equipment needed to perform the task been identified and made available to the trainee?	☐	☐	☐
13. Are all references identified, current, accurate, and available to the trainee?	☐	☐	☐
14. Have all required cues (as anticipated) been identified for the evaluator to assist task completion?	☐	☐	☐
15. Are all critical steps clearly identified by procedural guidance? If licensing, EP or other groups were needed to determine correct actions, then the answer should be NO. (ACE 1729)	☐	☐	☐
16. If the JPM is to be administered for initial qualification, has the required knowledge been taught to the individual prior to administering the JPM? TPE does not have to be completed, but the JPM evaluation may not be valid if they have not been taught the required knowledge. (ACE 1729)	☐	☐	☐

All questions/statements must be answered "YES" or the JPM is not valid for use. If all questions/statements are answered "YES" then the JPM is considered valid and can be performed as written. The individual(s) performing the validation shall sign and date this form.

_____ _____

Validation Personnel /Date Validation Personnel/Date

_____ _____

Validation Personnel /Date Validation Personnel/Date

295016-04, Placing RHR in torus cooling from 1C388, Rev. 11

SIMULATOR SET UP: (*Modify table as necessary) (Only required for simulator JPMs)*

1. Establish control of 1C388, Remote Shutdown Panel, (RSP), with the exception of:
   - On the panel line up DO NOT reposition the MSIV hand switch.
   - DO NOT reposition the four (4) MSIV Key Lock Override switches when establishing control of 1C388.
2. Per the 1C388 panel line up, Open MO-1913 and MO-1921.

SIMULATOR MALFUNCTIONS:

None

SIMULATOR OVERRIDES:

TIME	OVERRIDE ID.	OVERRIDE DESCRIPTION	ET	DELAY	VALUE	RAMP
Setup	AO_PC_TI-4325A	1C388 Torus Temperature Meter (makes it read 97F)			0.395	

SIMULATOR REMOTE FUNCTIONS:

None

Required Materials: AOP 915

General References: AOP 915

Task Standards:
1. Start RHRSW pumps
2. Throttle RHRSW outlet valve MO-1947 to establish flow
3. Start RHR pumps
4. Open MO-1932, RHR Torus Spray Isolation valve
5. Throttle RHR full flow test, MO-1934
6. Close MO-1940, Hx bypass valve

TURNOVER SHEET

INITIAL CONDITIONS:

1. Entry into AOP 915 has occurred, the Control Room has been evacuated, and control at the Remote Shutdown Panel has been established.

2. Reactor pressure control through the use of SRVs has caused torus water temperature to rise to 97°F.

3. The essential buses are being powered from the startup transformer.

INITIATING CUES:

The CRS directs you to maximize Torus Cooling with the B loop of RHR.

This task is not time critical.

Inform the evaluator when you have completed the task.

I will explain the initial conditions, which step(s) to simulate or discuss, and provide initiating cues. When you complete the task successfully, the objective for this job performance measure will be satisfied.

DURING THE JPM, ENSURE PROPER SAFETY PRECAUTIONS, FME, AND/OR RADIOLOGICAL CONCERNS AS APPLICABLE ARE FOLLOWED.

INITIAL CONDITIONS:

1. Entry into AOP 915 has occurred, the Control Room has been evacuated, and control at the Remote Shutdown Panel has been established.

2. Reactor pressure control through the use of SRVs has caused torus water temperature to rise to 97°F.

3. The essential buses are being powered from the startup transformer.

INITIATING CUES:

The CRS directs you to maximize Torus Cooling with the B loop of RHR.

This task is not time critical.

Inform the evaluator when you have completed the task.

JPM PERFORMANCE INFORMATION

Start Time: _____

NOTE: When providing "Evaluator Cues" to the examinee, care must be exercised to avoid prompting the examinee. Typically cues are only provided when the examinee's actions warrant receiving the information (i.e. the examinee looks or asks for the indication).

NOTE: Critical steps are marked with a "Y" below the performance step number. Failure to meet the standard for any critical step shall result in failure of this JPM.

Performance Step: **Critical**	Verify River Water Supply Pump 1P-117B(D) is/are running
Standard:	The operator verifies that the RWS pump, P-117B(D) is/are running by observing that the pumps red indicating light is on, and that proper flow is indicated
Performance:	**SATISFACTORY** _____ **UNSATISFACTORY** _____
Comments:	

Performance Step: **Critical**	Verify the following valve positions at Panel 1C388. • RHR Torus suction MO-1989 OPEN • RHR Shutdown Cooling Suction MO-1912 and MO 1920 CLOSED • RHR Pump torus suction MO-1913 and MO-1921 OPEN • RHR Heat exchanger bypass MO-1940 OPEN
Standard:	The operator verifies that the above listed valves indicate as required by observing the proper red/green indicating light is on.
Performance:	**SATISFACTORY** _____ **UNSATISFACTORY** _____
Comments:	

Performance Step: **Critical**	Verify 1P-99B Emergency Service Water Pump is running
Standard:	The operator verifies Pump 1P-99B is running
Performance:	**SATISFACTORY** _____ **UNSATISFACTORY** _____
Comments:	

Performance Step: **Critical Y**	Start 1P-22B and/or 1P-22D RHR Service Water Pumps using HS-4925F (HS 4925G).
Standard:	The operator starts the RHRSW Pump, 1P-22B and 1P-22D using handswitches HS-4925F (HS 4925G)
Performance:	**SATISFACTORY** _____ **UNSATISFACTORY** _____
Comments:	

Performance Step: **Critical Y**	Throttle open MO 1947, RHR HX SERVICE WTR OUTLET THROTTLE, using HS 1947A to obtain between 2000 GPM and 2600 GPM per running RHRSW pump as desired.
Standard:	The operator locates the RHRSW outlet throttle valve MO-1947, HS-1947A, and repositions it until the proper flowrate is indicated on the RHRSW flow indicator (>4000 gpm <5200 gpm)
Performance:	**SATISFACTORY** _____ **UNSATISFACTORY** _____
Comments:	

Performance Step: **Critical**	Verify MO-1939, B RHR Heat Exchanger Inlet Valve is open.
Standard:	The operator verifies that the RHR Heat Exchanger Inlet Valve, MO-1939 is open.
Performance:	**SATISFACTORY** _____ **UNSATISFACTORY** _____
Comments:	

Performance Step: **Critical**	Verify MO-1941, B RHR Heat Exchanger Inlet Valve, is open
Standard:	The operator verifies that the RHR Heat Exchanger Inlet Valve, MO-1941 is open.
Performance:	**SATISFACTORY** _____ **UNSATISFACTORY** _____
Comments:	

Performance Step: **Critical Y**	Start 1P 229B and/or 1P 229D RHR PUMP(s) HS 1915 [HS 1923A].
Standard:	The operator starts the RHR Pumps, P-229B and 1P-229D using handswitches HS 1915 [HS 1923A].
Performance:	**SATISFACTORY** _____ **UNSATISFACTORY** _____
Comments:	

Performance Step:	Verify RHR Min Flow MO 1935 opens as needed
Critical Y	
Standard:	Operator verifies MO-1932 opens as necessary.
Performance:	**SATISFACTORY** _____ **UNSATISFACTORY** _____
Comments:	

Performance Step:	Open MO 1932, B RHR LOOP TORUS CLG/SPRAY, using HS 1932B.
Critical Y	
Standard:	Operator opens MO-1934 using HS 1932B.
Performance:	**SATISFACTORY** _____ **UNSATISFACTORY** _____
Comments:	

EXAMINER NOTE: The following procedure note precedes the next step.

NOTE

When RHR flow reaches **2000 gpm**, minimum flow valve MO-1935 automatically closes.

Performance Step:	Throttle open MO 1934, B RHR LOOP TORUS CLG/TEST THROTTLE, using HS1934B to achieve approximately 4800 gpm for one pump or 9600 gpm for two pumps.
Critical Y	
Standard:	Throttles open MO 1934, B RHR LOOP TORUS CLG/TEST THROTTLE, using HS1934B to achieve approximately 9600 gpm
Performance:	**SATISFACTORY** _____ **UNSATISFACTORY** _____
Comments:	

Performance Step:	When RHR flow is greater than 2000 gpm, verify that MO 1935 RHR MIN FLOW BYPASS valve closes.
Critical	
Standard:	Verifies MO 1935 RHR MIN FLOW BYPASS valve closes.
Performance:	**SATISFACTORY** _____ **UNSATISFACTORY** _____
Comments:	

Performance Step: **Critical Y**	Close MO 1940, RHR HEAT EXCH BYPASS THROTTLE, using HS1940B.
Standard:	Operator throttles closed MO-1940
Performance:	**SATISFACTORY** _____ **UNSATISFACTORY** _____
Comments:	

Performance Step: **Critical**	1. Continue Torus cooling until Torus temperature is less than **95°F** as indicated by TI-4325A **OR** The RHR System is required for Shutdown Cooling. **OR** The RHR system is required for LPCI injection. **OR** As directed by the CRS.
Standard:	N/A
Performance:	**SATISFACTORY** _____ **UNSATISFACTORY** _____
Comments:	**EXAMINER CUE:** **Once Bypass valve is closed and flow has been established the JPM is complete**

Terminating Cues: Indication of proper flow through the RHR Heat Exchanger and the bypass valve shut

NOTE: Ensure the turnover sheet that was given to the examinee is returned to the evaluator. (CA 46394)

Stop Time: _____

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Examinee: _____ **Evaluator:** _____

☐ **RO** ☐ **SRO** ☐ **STA** ☐ **NSPEO** ☐ **SRO CERT** **Date:** _____

PERFORMANCE RESULTS: **SAT:** ☐ **UNSAT:** ☐

Remediation required: **YES** ☐ **NO:** ☐ **YES:** ☐

COMMENTS/FEEDBACK: (Comments shall be made for any steps graded unsatisfactory).

EVALUATOR'S SIGNATURE: _____

NOTE: Only this page needs to be retained in examinee's record if completed satisfactorily. If unsatisfactory performance is demonstrated, the entire JPM should be retained.

DUANE ARNOLD ENERGY CENTER

JOB PERFORMANCE MEASURE

2007 NRC JPM P-2

TITLE: Return the SBDG to a Standby Readiness Condition
(Alternate Path = Starting Diesel Air Compressor)

	JOB PERFORMANCE MEASURE (JPM)

SITE: DAEC

JPM TITLE: Return the SBDG to a Standby Readiness Condition (Alternate Path = Starting Diesel Air Compressor)

JPM NUMBER: 264000-08 **REV.** 4

RELATED PRA INFORMATION:

TASK NUMBER(S) / TASK TITLE(S): 26.05 / Assist with diesel generator operability test.

K/A NUMBERS AND VALUES: 264000 2.1.30 (3.9/3.4)

Justification (FOR K/A VALUES <3.0):

APPLICABLE METHOD OF TESTING: ☒ **RO** ☒ **SRO** ☐ **STA** ☐ **NSPEO** ☒ **SRO CERT**

Simulate/walkthrough: [X] Perform: [ ]

EVALUATION LOCATION: In-Plant: [X] Control Room: [ ]

Simulator: [ ] Other: [ ]

Lab: [ ]

Time for Completion: 15 Minutes Time Critical: NO

Alternate Path / Faulted: YES

TASK APPLICABILITY: RO/SRO

Developed by:	Instructor	Date
Validated by:	Validation Instructor	Date
Reviewed by:	Plant Reviewer	Date
Approved by:	Training Supervisor	Date

264000-08, Return the SBDG to a standby readiness condition, Rev. 4

JOB PERFORMANCE MEASURE VALIDATION CHECKLIST

ALL STEPS IN THIS CHECKLIST ARE TO BE PERFORMED PRIOR TO USE.

REVIEW STATEMENTS	YES	NO	N/A
1. Are all items on the signature page filled in correctly?	☐	☐	☐
2. Has the JPM been reviewed and validated by SMEs?	☐	☐	☐
3. Can the required conditions for the JPM be appropriately established in the simulator if required?	☐	☐	☐
4. Does the performance steps accurately reflect trainee's actions in accordance with plant procedures?	☐	☐	☐
5. Is the standard for each performance item specific as to what controls, indications and ranges are required to evaluate if the trainee properly performed the step?	☐	☐	☐
6. Has the completion time been established based on validation data or incumbent experience?	☐	☐	☐
7. If the task is time critical, is the time critical portion based upon actual task performance requirements?	☐	☐	☐
8. Is the Licensee level appropriate for the task being evaluated if required?	☐	☐	☐
9. Is the K/A appropriate to the task and to the licensee level if required?	☐	☐	☐
10. Is justification provided for tasks with K/A values less than 3.0?	☐	☐	☐
11. Have the performance steps been identified and typed (Critical / Sequence / Time Critical) appropriately?	☐	☐	☐
12. Have all special tools and equipment needed to perform the task been identified and made available to the trainee?	☐	☐	☐
13. Are all references identified, current, accurate, and available to the trainee?	☐	☐	☐
14. Have all required cues (as anticipated) been identified for the evaluator to assist task completion?	☐	☐	☐
15. Are all critical steps clearly identified by procedural guidance? If licensing, EP or other groups were needed to determine correct actions, then the answer should be NO. (ACE 1729)	☐	☐	☐
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All questions/statements must be answered "YES" or the JPM is not valid for use. If all questions/statements are answered "YES" then the JPM is considered valid and can be performed as written. The individual(s) performing the validation shall sign and date this form.

_____ _____

Validation Personnel /Date Validation Personnel/Date

_____ _____

Validation Personnel /Date Validation Personnel/Date

264000-08, Return the SBDG to a standby readiness condition, Rev. 4

SIMULATOR SET UP: (*Modify table as necessary) (Only required for simulator JPMs)*
1. None

SIMULATOR MALFUNCTIONS:
None

SIMULATOR OVERRIDES:
None

SIMULATOR REMOTE FUNCTIONS:
None

Required Materials: OI 324
ARP 1C94, C-2

General References: OI 324
ARP 1C94, C-2

Task Standards:
1. Overspeed trip lever tripped (simulated).
2. Operator verifies annunciator alarming
3. Close V-32-0109 (simulated).
4. Override SV-3262B and admit starting air to 1G-21 (simulated).
5. Open V-32-110 (simulated).
6. Close V-32-110 (simulated).
7. Open V-32-0109 (simulated).
8. Reset overspeed trip lever (simulated).
9. Confirms engine overspeed annunciator is reset at 1C94.
10. Reset alarms on 1C94 (simulated).
11. All parameters checked for start of Starting Air Compressor.
12. Starts 1K-10D compressor
13. The operator simulates observing PI-3256B or PI-3223B pressure increasing and verifies that 1K-10D trips

TURNOVER SHEET

INITIAL CONDITIONS:

1. 1G-21 SBDG was shutdown 45 minutes ago following an auto start due to a lightning strike at DAEC.

2. You are an additional Licensed Operator assigned to the Work Control Center.

INITIATING CUES:

The CRS directs you to return 1G-21 to the standby readiness condition IAW OI 324 in the SBDG room.

This task is not time critical.

Inform the evaluator when you have completed the task.

I will explain the initial conditions, which step(s) to simulate or discuss, and provide initiating cues. When you complete the task successfully, the objective for this job performance measure will be satisfied.

DURING THE JPM, ENSURE PROPER SAFETY PRECAUTIONS, FME, AND/OR RADIOLOGICAL CONCERNS AS APPLICABLE ARE FOLLOWED.

INITIAL CONDITIONS:

1. 1G-21 SBDG was shutdown 45 minutes ago following an auto start due to a lightning strike at DAEC.

2. You are an additional Licensed Operator assigned to the Work Control Center.

INITIATING CUES:

The CRS directs you to return 1G-21 to the standby readiness condition IAW OI 324 in the SBDG room.

This task is not time critical.

Inform the evaluator when you have completed the task.

JPM PERFORMANCE INFORMATION

Start Time: _____

NOTE: When providing "Evaluator Cues" to the examinee, care must be exercised to avoid prompting the examinee. Typically cues are only provided when the examinee's actions warrant receiving the information (i.e. the examinee looks or asks for the indication).

NOTE: Critical steps are marked with a "Y" below the performance step number. Failure to meet the standard for any critical step shall result in failure of this JPM.

Performance Step: 1 **Critical N**	Place the GOVERNOR MODE SWITCH (DROOP) HS 3234B on 1C94 in the UNIT position
Standard:	Operator simulates placing droop switch on Panel 1C-94 in UNIT position
Performance:	**SATISFACTORY** _____ **UNSATISFACTORY** _____
Comments:	**NOTE:** No action should be required since the SBDG auto started and droop switch was not repositioned.

Performance Step: 2 **Critical N**	If the Emergency Service Water pumps are not required to support other plant operations, stop them in accordance with OI 454.
Standard:	Operator simulates requesting the control room to secure "B" ESW pump 1P-99B.
Performance:	**SATISFACTORY** _____ **UNSATISFACTORY** _____
Comments:	**Cue:** Acknowledge request from operator and report back when complete.

EXAMINER NOTE: The next step is not required since the SBDG was not slow started. The operator may verify the correct settings.

Performance Step: 3 **Critical N**	If a slow manual start of the diesel generator was performed, adjust the Woodward Governor for automatic operation as follows: (a) Droop Setting at 0 (b) Fuel Control at MAX (c) Speed Control at "18.25"
Standard:	Not Required
Performance:	**SATISFACTORY** _____ **UNSATISFACTORY** _____
Comments:	

Performance Step: 4 **Critical N**	Rotate the Diesel Generator with air per Section 7.6
Standard:	Operator refers to Section 7.6
Performance:	**SATISFACTORY** _____ **UNSATISFACTORY** _____
Comments:	

EXAMINER NOTE: Candidate continues at section 7.6, the notes below precede the next performance step at section 7.6

CONTINUOUS RECHECK STATEMENT

IF standby lube oil temperature falls below 105°F **and** the standby lube oil pump 1G021/LOP is running,	**THEN** rotate the engine one revolution every 15 minutes until lube oil temperature is greater than 125°F. (ref. P&L #2)

NOTE

Depressing the Emergency Stop Pushbutton (Overspeed Trip) renders the associated Diesel Generator INOPERABLE per DAEC Tech Specs.

Performance Step: 5 **Critical N**	Wait until after the diesel engine has been shut down greater than 30 minutes but less than 4 hours, then rotate the engine to remove oil from the overpiston areas
Standard:	Examinee recognizes that the initial conditions stated that it has been 45 minutes since the shut down.
Performance:	**SATISFACTORY** _____ **UNSATISFACTORY** _____
Comments:	

Performance Step: 6 **Critical N**	Verify SBDG LCO has been entered if applicable.
Standard:	Contacts control room to verify LCO has been entered.
Performance:	**SATISFACTORY** _____ **UNSATISFACTORY** _____
Comments:	**CUE:** Inform operator that the applicable LCO has been entered.

Performance Step: 7 **Critical Y**	Trip injection pump control racks by depressing the Emergency Stop Pushbutton (overspeed trip) at the engine.
Standard:	Operator simulates depressing the emergency stop pushbutton (overspeed trip).
Performance:	**SATISFACTORY** _____ **UNSATISFACTORY** _____
Comments:	**Cue:** Inform the operator that he hears a "clunk" as the fuel racks move forward (towards generator end) when the emergency stop pushbutton was depressed.

Performance Step: 8 **Critical Y**	At 1C94, confirm annunciator ENGINE OVERSPEED (1C94, A 1) is activated.
Standard:	Operator verifies annunciator alarming
Performance:	**SATISFACTORY** _____ **UNSATISFACTORY** _____
Comments:	**Cue:** Inform the operator that annunciator 1C94, A-1, engine overspeed annunciator is flashing.

Performance Step: 9 **Critical Y**	Close V 32 109, AIR ISOLATION TO OIL BOOSTER TANKS. This is located on the northwest end of the engine near inspection cover 13.
Standard:	Operator closing the air isolation to oil booster tanks valve V-32-0109.
Performance:	**SATISFACTORY** _____ **UNSATISFACTORY** _____
Comments:	**Cue:** Inform the operator that the valve handle is perpendicular to the air line.

264000-08, Return the SBDG to a Standby Readiness Condition, Rev. 4

EXAMINER NOTE: The following procedure note is prior to the next step.

NOTE

More than one revolution may cause the oil to pump back to the upper crank and could cause a hydraulic lock condition on restart. (Ref. P&L #1)

Performance Step: 10 **Critical Y**	Using the manual override of the emergency air start solenoid SV3262A, or the normal air start solenoid SV 3262B, admit starting air to B DIESEL GENERATOR 1G 21 for 1 to 3 seconds (sufficient to cause one full revolution of the engine crankshaft).
Standard:	Operator simulates overriding of the emergency air start solenoid SV3262A, or the normal air start solenoid SV 3262B, admitting starting air to "B" diesel generator 1G-21 for 1 to 3 seconds.
Performance:	**SATISFACTORY** _____ **UNSATISFACTORY** _____
Comments:	Note: The candidate will have to climb under the grating. **EXAMINER NOTE:** If the candidate asks which air start solenoid to use, state that there is no preference and either may be used. Candidate may state that they would hear the sound of air being admitted to DG. **CUE:** Inform the operator 1G-21 has rotated one revolution after they simulate overriding the solenoid.

EXAMINER NOTE: The following procedure note is prior to the next step.

NOTE

The air start header vent cap has a hole installed to permit venting

Performance Step: 11 **Critical Y**	Open V 32 110, "B" SBDG AIR START HEADER VENT, to vent the air off of the line to the bearing oil booster Tanks. The valve is located on the northwest end of the engine near inspection cover 13.
Standard:	Operator simulates venting air on the line to the bearing oil boosters by opening the "B" SBDG air start header vent V-32-110.
Performance:	**SATISFACTORY** _____ **UNSATISFACTORY** _____
Comments:	**CUE:** Inform the candidate that he hears air initially venting and then no air venting is heard.

Performance Step: 12 **Critical Y**	After the line is vented, close V 32-110
Standard:	Operator simulates closing V32-110
Performance:	**SATISFACTORY** _____ **UNSATISFACTORY** _____
Comments:	**CUE:** Valve is closed

Performance Step: 13 **Critical Y**	Open the air isolation to oil booster tanks valve V-32-109
Standard:	Operator simulates opening the air isolation to oil booster tanks valve V-32-109
Performance:	**SATISFACTORY** _____ **UNSATISFACTORY** _____
Comments:	**CUE:** Inform the operator that the valve handle is in line with the air line.

Performance Step: 14 **Critical Y**	Reset the overspeed trip using the reset lever as follows: 1. Take the reset lever to the reset position, i.e., opposite of generator end (feel the latch drop in place, hear a click). 2. Slowly take the reset lever to the reset position to verify the latch is holding the plunger.
Standard:	Operator simulates resetting the overspeed trip using the reset lever as follows: 1. Take the reset lever to the reset position, i.e., opposite of generator end (feel the latch drop in place, hear a click). 2. Slowly take the reset lever to the reset position to verify the latch is holding the plunger.
Performance:	**SATISFACTORY** _____ **UNSATISFACTORY** _____
Comments:	**CUE:** Inform the operator that the Overspeed Trip lever is reset.

Performance Step: 15 **Critical**	On 1C92, depress pushbutton HS 3253B ALARM RESET to clear the Shutdown Relay Signal.
Standard:	Operator simulates depressing alarm reset pushbutton on 1C-92.
Performance:	**SATISFACTORY** _____ **UNSATISFACTORY** _____
Comments:	**CUE:** Alarm pushbutton moves in.

Performance Step: 16 **Critical Y**	At 1C1C94, confirm annunciator ENGINE OVERSPEED (1C94, A 1) is reset.
Standard:	Operator confirms engine overspeed annunciator is reset at 1C94 A-1.
Performance:	**SATISFACTORY** _____ **UNSATISFACTORY** _____
Comments:	**CUE:** Inform the operator the engine overspeed annunciator 1C94, A-1, is reset, if asked about other annunciators inform the operator C-2 and D-4 are flashing fast.

Performance Step: 17 **Critical**	If rotating with air to restore lube oil temperature and lube oil is > 125 F, perform the Standby readiness checklist or run the SBDG to declare operable, otherwise, N/A this step.
Standard:	N/A's this step.
Performance:	**SATISFACTORY** _____ **UNSATISFACTORY** _____
Comments:	**CUE:** Inform the operator that this will performed by another operator and to continue.

EXAMINER NOTE: The examinee now returns to section 7.4, step (5)

Performance Step: 18 **Critical Y**	Reset the annunciator alarms on 1C94 (GENERATOR UNDERVOLTAGE OR SINGLE PHASING (1C94, D 4) will not clear).
Standard:	Operator simulates resetting all annunciator alarms on 1C94.
Performance:	**SATISFACTORY** _____ **UNSATISFACTORY** _____
Comments:	**CUE:** Inform the operator that annunciator window C-2 **DID NOT RESET**.

EXAMINER NOTE: The examinee now refers to ARP 1C94 C-2 "SBDG 1G 21 STARTING AIR PRESSURE LOW" and takes the actions listed

A discrepancy has been noted in the ARP during validation of this JPM. The ARP refers the operator to the wrong section of OI 324. This will be addressed after the exam.

For this JPM **INFORM** the candidate that section 7.8 of OI 324 should be referred to for follow-up actions.

Performance Step: 19 **Critical**	Operator goes to 1C92 to verify air pressures
Standard:	Operator confirms the low pressure for the 1K-10D diesel air compressor.
Performance:	**SATISFACTORY** _____ **UNSATISFACTORY** _____
Comments:	**Cue:** Inform the operator that PI-3253B (AC air comp) indicates as you see it and PI-3256B (diesel air comp) indicates 175 psig.

Performance Step: 20 **Critical**	Operator notifies the control room of the low air pressure and the affected system
Standard:	Operator simulates using a radio or goes to a page system and notifies the control room of the low pressure.
Performance:	**SATISFACTORY** _____ **UNSATISFACTORY** _____
Comments:	**CUE:** Acknowledge communications as the control room operator.

EXAMINER NOTE: The examinee now refers back to OI 324, Section 7.8 to charge the diesel driven starting air flask.

Performance Step: 21 **Critical Y**	Verify the following for the diesel driven Starting Air Compressor 1K 10D: (a) Diesel engine lube oil level between the F and L marks on the local dipstick. (b) Compressor lube oil is between the two marks on the local dipstick. (c) Add diesel fuel to fuel tank 1T-478, if necessary.
Standard:	All parameters checked for start
Performance:	**SATISFACTORY** _____ **UNSATISFACTORY** _____
Comments:	**CUE:** Inform operator that all parameters are SAT

Performance Step: 22 **Critical Y**	Operator starts 1K-10D as follows:
Standard:	a) Ensuring clutch is disengaged. b) Depress and hold down TATTLETALE BUTTON. Press down START SWITCH and release when engine starts. c) When engine is running, release TATTLETALE BUTTON. d) Engage clutch to start compressor.
Performance:	**SATISFACTORY** _____ **UNSATISFACTORY** _____
Comments:	**CUE:** When the START SWITCH has been simulated released, inform the operator that the diesel air compressor has started and is running OK. Ensure engaging the clutch has been demonstrated or the following steps won't work

Performance Step: 23 **Critical Y**	The operator verifies that 1K10D trips at ≈225 to 240 psig.
Standard:	The operator simulates observing PI-3256B or PI-3223B pressure increasing and verifies that 1K-10D trips.
Performance:	**SATISFACTORY** _____ **UNSATISFACTORY** _____
Comments:	**CUE:** Inform the candidate that pressure is increasing, a 20 minute time lapse has occurred and the air compressor tripped at 232 psig. **Inform the candidate that any additional actions will be taken by another operator and the JPM is complete.**

Terminating Cues: 1K10D tripped at 232 psig.

NOTE: Ensure the turnover sheet that was given to the examinee is returned to the evaluator. (CA 46394)

Stop Time: _____

264000-08, Return the SBDG to a Standby Readiness Condition, Rev. 4

Examinee: _____ **Evaluator:** _____

☐ **RO** ☐ **SRO** ☐ **STA** ☐ **NSPEO** ☐ **SRO CERT** **Date:** _____

PERFORMANCE RESULTS: **SAT:** ☐ **UNSAT:** ☐

Remediation required: **YES** ☐ **NO:** ☐ **YES:** ☐

COMMENTS/FEEDBACK: (Comments shall be made for any steps graded unsatisfactory).

EVALUATOR'S SIGNATURE: _____

NOTE: Only this page needs to be retained in examinee's record if completed satisfactorily. If unsatisfactory performance is demonstrated, the entire JPM should be retained.

DUANE ARNOLD ENERGY CENTER

JOB PERFORMANCE MEASURE

2007 NRC JPM P-3

TITLE: Manual Start Of The Diesel Fire Pump 1P-49

	JOB PERFORMANCE MEASURE (JPM)

SITE: DAEC

JPM TITLE:

JPM NUMBER: **REV.** 7

RELATED PRA INFORMATION:

TASK NUMBER(S) / TASK TITLE(S): /

K/A NUMBERS AND VALUES:

Justification (FOR K/A VALUES <3.0):

APPLICABLE METHOD OF TESTING: ☒ **RO** ☒ **SRO** ☐ **STA** ☒ **NSPEO** ☒ **SRO CERT**

Simulate/walkthrough: [X] Perform: [ ]

EVALUATION LOCATION: In-Plant: [X] Control Room: [ ]

Simulator: [ ] Other: [ ]

Lab: [ ]

Time for Completion: 15 Minutes Time Critical: NO

Alternate Path / Faulted: YES

TASK APPLICABILITY: _____

Developed by:	Instructor	Date
Validated by:	Validation Instructor	Date
Reviewed by:	Plant Reviewer	Date
Approved by:	Training Supervisor	Date

286000-02, Manual Start of the Diesel Fire Pump 1P-49, Rev. 7

JOB PERFORMANCE MEASURE VALIDATION CHECKLIST

ALL STEPS IN THIS CHECKLIST ARE TO BE PERFORMED PRIOR TO USE.

REVIEW STATEMENTS	YES	NO	N/A
1. Are all items on the signature page filled in correctly?	☐	☐	☐
2. Has the JPM been reviewed and validated by SMEs?	☐	☐	☐
3. Can the required conditions for the JPM be appropriately established in the simulator if required?	☐	☐	☐
4. Does the performance steps accurately reflect trainee's actions in accordance with plant procedures?	☐	☐	☐
5. Is the standard for each performance item specific as to what controls, indications and ranges are required to evaluate if the trainee properly performed the step?	☐	☐	☐
6. Has the completion time been established based on validation data or incumbent experience?	☐	☐	☐
7. If the task is time critical, is the time critical portion based upon actual task performance requirements?	☐	☐	☐
8. Is the Licensee level appropriate for the task being evaluated if required?	☐	☐	☐
9. Is the K/A appropriate to the task and to the licensee level if required?	☐	☐	☐
10. Is justification provided for tasks with K/A values less than 3.0?	☐	☐	☐
11. Have the performance steps been identified and typed (Critical / Sequence / Time Critical) appropriately?	☐	☐	☐
12. Have all special tools and equipment needed to perform the task been identified and made available to the trainee?	☐	☐	☐
13. Are all references identified, current, accurate, and available to the trainee?	☐	☐	☐
14. Have all required cues (as anticipated) been identified for the evaluator to assist task completion?	☐	☐	☐
15. Are all critical steps clearly identified by procedural guidance? If licensing, EP or other groups were needed to determine correct actions, then the answer should be NO. (ACE 1729)	☐	☐	☐
16. If the JPM is to be administered for initial qualification, has the required knowledge been taught to the individual prior to administering the JPM? TPE does not have to be completed, but the JPM evaluation may not be valid if they have not been taught the required knowledge. (ACE 1729)	☐	☐	☐

All questions/statements must be answered "YES" or the JPM is not valid for use. If all questions/statements are answered "YES" then the JPM is considered valid and can be performed as written. The individual(s) performing the validation shall sign and date this form.

_____ _____

Validation Personnel /Date Validation Personnel/Date

_____ _____

Validation Personnel /Date Validation Personnel/Date

286000-02, Manual Start of the Diesel Fire Pump 1P-49, Rev. 7

SIMULATOR SET UP: (*Modify table as necessary) (Only required for simulator JPMs)*

Simulator Setup Instructions:
1. None

SIMULATOR MALFUNCTIONS:
1. None

SIMULATOR OVERRIDES:
1. None

SIMULATOR REMOTE FUNCTIONS:
1. None

Required Materials: OI 513, Fire Protection

General References: OI 513, Rev. 85

Task Standards:
1. Operator selects either MAN A or MAN B using HS-3300A and depresses the START pushbutton HS-3300C
2. Operator turns HS-3300A from AUTO to TEST
3. Override the electric fuel solenoid control by turning the knurled knob on top of the fuel pump assembly fully in a clockwise direction
4. Engage the starter by raising the manual start lever on either one of the two manually operated starting contactors
5. Disengage the starter after diesel engine start by releasing the previously operated starting contactor

TURNOVER SHEET

INITIAL CONDITIONS:

- An emergency has occurred.

INITIATING CUES:

- The CRS directs you to start the Diesel Fire Pump from the Pump House in accordance with OI-513.
- This task is not time critical.
- Inform the evaluator when you have completed the task.

I will explain the initial conditions, which step(s) to simulate or discuss, and provide initiating cues. When you complete the task successfully, the objective for this job performance measure will be satisfied.

DURING THE JPM, ENSURE PROPER SAFETY PRECAUTIONS, FME, AND/OR RADIOLOGICAL CONCERNS AS APPLICABLE ARE FOLLOWED.

INITIAL CONDITIONS:

- An emergency has occurred.

INITIATING CUES:

- The CRS directs you to start the Diesel Fire Pump from the Pump House in accordance with OI-513.
- This task is not time critical.
- Inform the evaluator when you have completed the task.

JPM PERFORMANCE INFORMATION

Start Time: _____

NOTE: When providing "Evaluator Cues" to the examinee, care must be exercised to avoid prompting the examinee. Typically cues are only provided when the examinee's actions warrant receiving the information (i.e. the examinee looks or asks for the indication).

NOTE: Critical steps are marked with a "Y" below the performance step number. Failure to meet the standard for any critical step shall result in failure of this JPM.

Performance Step: **Critical N**	Depress pushbutton HS-3300B DIESEL FIRE PUMP 1P-49 on panel 1C40 in the Control Room, otherwise NA.
Standard:	Operator marks this step as NA.
Performance:	**SATISFACTORY** _____ **UNSATISFACTORY** _____
Comments:	

Performance Step: **Critical Y**	In the Diesel Fire Pump Room, open the door to Panel 1C116 and turn switch HS-3300A from AUTO to either MAN A or MAN B (for Battery Rack A[B], respectively), and then depress the START pushbutton HS-3300C.
Standard:	Operator selects either MAN A or MAN B using HS-3300A and depresses the START pushbutton HS-3300C.
Performance:	**SATISFACTORY** _____ **UNSATISFACTORY** _____
Comments:	**NOTE**: The operator may elect to take HS-3300A to the test position to start the Diesel Fire Pump (the pump will not start with the switch in the test position). **Cue**: When asked, tell the operator that the Diesel Fire Pump did **NOT** start (did not crank).

Performance Step: **Critical Y**	Turn Control Switch HS-3300A from AUTO to TEST on Panel 1C116.
Standard:	Operator turns HS-3300A from AUTO to TEST.
Performance:	**SATISFACTORY** _____ **UNSATISFACTORY** _____
Comments:	**Cue**: When asked, tell the operator that the Diesel Fire Pump did **NOT** start (did not crank).

Performance Step: **Critical N**	Emergency Local Manual Startup of Diesel Fire Pump 1P-49: Verify that at least <u>one set</u> of batteries are charged and usable to crank the engine.
Standard:	Verify that both A & B Battery lights are lit (available).
Performance:	**SATISFACTORY** _____ **UNSATISFACTORY** _____
Comments:	**CUE**: When asked about the status of lights on panel 1C116, inform the operator that the blue lights for both A & B Battery are lit.

Performance Step: **Critical N**	Emergency Local Manual Startup of Diesel Fire Pump 1P-49: CAUTION Overriding the Electric Fuel Solenoid Control will disable the Diesel Fire Pump trips.
Standard:	Operator reads CAUTION.
Performance:	**SATISFACTORY** _____ **UNSATISFACTORY** _____
Comments:	

Performance Step: **Critical Y**	Emergency Local Manual Startup of Diesel Fire Pump 1P-49: Override the electric fuel solenoid control by turning the knurled knob on top of the fuel pump assembly fully in a clockwise direction.
Standard:	Knurled knob is turned fully clockwise.
Performance:	**SATISFACTORY** _____ **UNSATISFACTORY** _____
Comments:	**Cue**: Knurled knob is full clockwise.

Performance Step: **Critical N**	Emergency Local Manual Startup of Diesel Fire Pump 1P-49: CONTINUOUS RECHECK STATEMENT IF at any time during the Manual Startup of Diesel Fire Pump 1P-49 (with the pump trips disabled), should it become necessary to STOP 1P-49 and should it fail to STOP, THEN shutdown 1P-49 per Section 7.2, Steps (3) through (7). (Otherwise, mark this step N/A).
Standard:	Operator reads this step and checks this step.
Performance:	**SATISFACTORY** _____ **UNSATISFACTORY** _____
Comments:	

Performance Step: **Critical Y**	Emergency Local Manual Startup of Diesel Fire Pump 1P-49: Engage the starter by raising the manual start lever on either one of the two manually operated starting contactors.
Standard:	One of the manual start levers is raised to the point of making up the starter contactors.
Performance:	**SATISFACTORY** _____ **UNSATISFACTORY** _____
Comments:	**Cue**: Inform the operator that the Diesel Fire Pump has started.

Performance Step: **Critical Y**	Emergency Local Manual Startup of Diesel Fire Pump 1P-49: Disengage the starter after diesel engine start by releasing the previously operated starting contactor.
Standard:	Starting contactor lever released.
Performance:	**SATISFACTORY** _____ **UNSATISFACTORY** _____
Comments:	**Cue**: If asked, inform the operator that the starter has disengaged.

Performance Step: **Critical N**	Acknowledge annunciator DIESEL FIRE PUMP 1P-49 RUNNING (1C40, J-1).
Standard:	Operator verifies that control room annunciator 1C40, J-1 is in.
Performance:	**SATISFACTORY** _____ **UNSATISFACTORY** _____
Comments:	**Cue**: If the operator calls the Control Room, act as the NSOE in the Control Room and confirm that the annunciator is in and has been acknowledged.

Performance Step: **Critical N**	Verify proper Diesel Fire Pump operation: Verify Lube Oil Pressure on PI-3303, reads between 30-79 psig.
Standard:	After allowing the engine to warm to normal operating temperatures, the operator verifies that lube oil pressure is in the band of 30-79 psig (located on the side of the diesel).
Performance:	**SATISFACTORY** _____ **UNSATISFACTORY** _____
Comments:	**Cue**: If the operator looks at Jacket Water Temperature on the side of the diesel to determine if the engine has warmed, inform the operator that the reading is 135°F and rising slowly and after approximately 2 minutes, temperature is 165ºF and steady. Provide appropriate temperature cues based on time the operator looks at the indications. **Cue**: When lube oil pressure is checked, inform the operator that the reading is 79 psig and steady.

Performance Step: **Critical N**	Verify proper Diesel Fire Pump operation: Observing Jacket Water Temperature on TI-3300 has stabilized below Red Band.
Standard:	Operator verifies that Jacket Water Temperature on TI-3300 has stabilized below Red Band.
Performance:	**SATISFACTORY** _____ **UNSATISFACTORY** _____
Comments:	**Cue**: Depending on when this indication is checked, inform the operator that the reading is 135°F just after start and rising slowly and after approximately 2 minutes of running, temperature is 165ºF and steady.

Performance Step: **Critical N**	Verify proper Diesel Fire Pump operation: Verify engine speed as indicated on local rpm gauge, reads 2175 ± 100 rpm.
Standard:	Operator verifies that engine speed is 2175 ± 100 rpm (located on the side of the diesel).
Performance:	**SATISFACTORY** _____ **UNSATISFACTORY** _____
Comments:	**Cue**: When this indication is checked, inform the operator that the reading is ≈2200 rpm.

Performance Step: **Critical N**	Verify proper Diesel Fire Pump operation: Verify Cooling water strainer pressure drop is less than 40 psid by comparing pressure indicators PI-3345 and PI-3346 (strainer inlet and outlet pressures) in the Diesel Fire Pump Room.
Standard:	Operator verifies that strainer pressure drop is less than 40 psid.
Performance:	**SATISFACTORY** _____ **UNSATISFACTORY** _____
Comments:	**Cue**: When this indication is checked, inform the operator that PI-3345 is reading **80 psig** and PI -3346 is reading **54 psig**.

Terminating Cues: The operator informs the evaluator that the task is complete (DIESEL FIRE PUMP 1P-49 is running normally).

NOTE: Ensure the turnover sheet that was given to the examinee is returned to the evaluator. (CA 46394)

Stop Time: _____

286000-02, Manual Start of the Diesel Fire Pump 1P-49, Rev. 7

Examinee: _____ **Evaluator:** _____

☐ **RO** ☐ **SRO** ☐ **STA** ☐ **NSPEO** ☐ **SRO CERT** **Date:** _____

PERFORMANCE RESULTS: **SAT:** ☐ **UNSAT:** ☐

Remediation required: **YES** ☐ **NO:** ☐ **YES:** ☐

COMMENTS/FEEDBACK: (Comments shall be made for any steps graded unsatisfactory).

EVALUATOR'S SIGNATURE: _____

NOTE: Only this page needs to be retained in examinee's record if completed satisfactorily. If unsatisfactory performance is demonstrated, the entire JPM should be retained.