

Facility: <u>Millstone Unit 2</u>		Date of Examination: <u>12/16/02</u>	
Exam Level (circle one): <u>(RO / SRO(I))</u> / SRO(U)		Operating Test No.: <u>1</u>	
<b>B.1 Control Room Systems</b>			
System / JPM Title		Type Code*	Safety Function
a. Reactor Protection System/Respond to Failed Tc Instrument		N,S	7
b. Containment Cooling System/Shifting Containment Air Recirculation and Cooling Units		M,A,S	5
c. Emergency Diesel Generators/"A" DG Operability Test		M,A,S	6
d. Main Feedwater System/Start a Second Main Feedwater Pump		N,S,L	4(S)
e. Emergency Core Cooling System/HPSI Pump Operability Test		D,A,S	3
f. Reactor Coolant Pump System/Respond to RCP Seal Problems		D,A,S	4(P)
g. Chemical and Volume Control System/Manual Makeup to the VCT		D,A,S	1
h. (SPARE)Circulating Water System/Respond to Circulating Water Malfuction		N,A,S	8
i. (SPARE)A.C. Electrical Distribution/Cross-Tying 480 Volt Buses		D, S	6
<b>B.2 Facility Walk-Through</b>			
a. Rod Control Drive System/Startup and Parallel CEDM MG Sets		D	1
b. Instrument Air System/Supplying Emergency Backup Air to 2-CH-192		D,L,R	8
c. Containment System/Establish Manual Control of Hydrogen Purge Valve		D,R	5
d. (SPARE) Waste Gas Disposal System/Shift from "A" to "B" Waste Gas Decay Tank		N,R	9
*Type Codes: (D)irect from bank, (M)odified from bank, (N)ew, (A)lternate path, (C)ontrol room, (S)imulator, (L)ow-Power, (R)CA			

## JOB PERFORMANCE MEASURE APPROVAL SHEET

I JPM Title: Respond to Failed Tc Instrument

ID Number: JPM-220

Revision: 0

II. Initiated:

R. J. Ashley  
Developer

8/13/02  
Date

III. Reviewed:

R. M. Brown  
Technical Reviewer

9/4/02  
Date

IV. Approved:

N/A  
User Department Supervisor

Date

M. J. F. L.  
Nuclear Training Supervisor

9/5/02  
Date

## JOB PERFORMANCE MEASURE WORKSHEET

Facility: MP-2                      Examinee: \_\_\_\_\_

JPM Number: JPM-220                      Rev. 0

Task Title: **Respond to Failed Tc Instrument**

System: RPS

Time Critical Task:    Yes \_\_\_\_\_ No X

Validated Time (minutes): 15

Task No.(s): NUTIMS # 012-01-006

Applicable To:            SRO X            RO X            PEO \_\_\_\_\_

K/A No. 012 A4.03            K/A Rating 3.6/3.6

Method of Testing:

Simulated Performance: \_\_\_\_\_            Actual Performance: X

Location:

Classroom: \_\_\_\_\_            Simulator: X            In-Plant: \_\_\_\_\_

Task Standards:

At the completion of this JPM, the examinee has responded to the failure of the Tc instrument, to include bypassing the appropriate RPS channel and recommending entry into the appropriate Technical Specification Action Statement.

Required Materials  
(procedures,  
equipment):

- ARP 2590C, DA-3, Rev. 004-10
- Unit 2 Technical Specifications
- RPS bypass keys for TM/LP, High Power, and Local Power Density trip bistables.

General References:

- ARP 2590C, DA-3, Rev 004-08
- Unit 2 Technical Specifications

**\*\*\*\* READ TO THE EXAMINEE \*\*\*\***

*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. You may use any approved reference materials normally available in the Control Room, including logs. Make all written reports, oral reports, alarm acknowledgments, and log entries as if the evolution was actually being performed.*

## JOB PERFORMANCE MEASURE WORKSHEET

JPM Number: JPM-220

Rev. 0

- Initiating Cues:
- You are the PPO.
  - Respond to changing parameters and alarms by reporting your observations and conclusions.
  - The examiner will act as the Unit Supervisor, participate in the communication process, and give direction for any required action.
  - Make recommendations and perform actions as directed by the US.

- Initial Conditions:
- All operating conditions are normal.

Simulator Requirements: Initialize in any at power IC with NOP/NOT. Ensure all bypass keys are removed from RPS, Channel "C"

When examinee is in position, enter malfunction RP12C at a severity of 67%.

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### **\*\*\*\* NOTES TO EXAMINER \*\*\*\***

1. Critical steps for this JPM are indicated with an "X". For the examinee to achieve a satisfactory grade, **ALL** critical steps must be completed correctly.
2. When examinee states what his/her simulated action/observation would be, read the appropriate "Cue".
3. If necessary, question examinee for details of simulated actions / observations (i.e. "What are you looking at?" or "What are you observing?").
4. This JPM may be done concurrently with JPM-221 and JPM-223.

## PERFORMANCE INFORMATION

JPM ID NUMBER: JPM-220

TITLE: Respond to Failed Tc Instrument

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START TIME:           

STEP 1        X   Performance Steps: Observe the following annunciators:

- TM-LP TRIP CH C (DA\_3 on C-04)
- RPS PRE TRIP (AA-7 on C-04)
- RX POWER T CH DEVIATION (AA-8 on C-04)

GRADE           X   Standards: *Examinee observes and reports to the US/SM the following annunciators:*

- *TM-LP TRIP CH C (DA-3 on C-04)*
- *RPS PRE TRIP (AA-7 on C-04)*
- *RX POWER  $\Delta$ T CH DEVIATION (AA-8 on C-04)*

Cue: **The US/SM acknowledges the report.**

Comments: The examinee may respond to the annunciators in any order; however, this JPM assumes that DA-3 on C-04 will be the first priority based on the red annunciator.

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STEP 2        X   Performance Steps: Observe Channel "C" pressurizer pressure indication and TM-LP setpoint and compare to other safety channel indications.

GRADE           X   Standards:

- *Examinee observe Channel "C" pressurizer pressure indication and TM-LP setpoint and compares to other safety channel indications on C-03.*
- *Examinee determines that Channel "C" pressurizer pressure indications are equivalent to all other indications.*

Cue: **If necessary, ask what the examinee is observing and his conclusions.**

Comments: Examinee may also compare Channel "C" indications on the PPC and ESAS.

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**PERFORMANCE INFORMATION**

JPM ID NUMBER: JPM-220

TITLE: Respond to Failed Tc Instrument

STEP 3    ~~X~~    Performance Steps:    Observe Channel "C" Th and Tc are indication properly for present conditions. ing  
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\_\_\_\_ Standards:    *Examinee compares all Th and Tc instruments and determines that T-112CC is reading significantly higher than all other cold leg temperatures, which are normal.*

Cue:    **If necessary, ask what the examinee is observing.**

Comments:    T-112CC is reading approximately 565°F. All other channels are reading approximately 550°F.

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STEP 4    X    Performance Steps:    Obtain necessary keys and requests permission to bypass the following Channel "C" RPS trip units:

- TM-LP
- High Power
- Local Power Density

GRADE \_\_\_\_    X    Standards:    *Examinee obtains the appropriate keys and requests permission/recommends bypassing the following Channel "C" RPS trip units:*

- TM-LP
- High Power
- Local Power Density

Cue:    **US/SM directs the examinee to bypass the requested channels.**

Comments:

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## PERFORMANCE INFORMATION

JPM ID NUMBER: JPM-220

TITLE: Respond to Failed Tc Instrument

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STEP 5     X     Performance Steps:     Inform the US/SM that the following Channel "C" RPS trip units are bypassed and that Technical Specification LCO 3.3.1.1, Table 3.3-1, and 3.3.2.1, Table 3.3-3 should be referenced:

- TM-LP
- High Power
- Local Power Density

GRADE \_\_\_\_     X     Standards:     *Examinee informs the US/SM that the following Channel "C" RPS trip units are bypassed and that Technical Specification LCO 3.3.1.1, Table 3.3-1, and 3.3.2.1, Table 3.3-3 need to be referenced:*

- *TM-LP*
- *High Power*
- *Local Power Density*

Cue:     **US/SM acknowledges the inoperable channel and the required Technical Specification LCO.**

Comments:     Technical Specification LCO 3.3.2.1 is NOT applicable for this event.

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Comments:     **After this step is completed, the JPM is considered complete.**

STOP TIME: \_\_\_\_\_

### VERIFICATION OF JPM COMPLETION

Job Performance Measure No. JPM-220

Rev. 0

Date Performed: \_\_\_\_\_

Operator: \_\_\_\_\_

Evaluator(s): \_\_\_\_\_

For examinee to achieve a satisfactory grade, **ALL** critical steps must be completed correctly.  
If task is Time Critical, it **MUST** be completed within the specified time to achieve a satisfactory grade.

Time Critical Task? Yes \_\_\_\_\_ No X

Validated Time (minutes): 15

Actual Time to Complete (minutes): \_\_\_\_\_

Result of JPM: \_\_\_\_\_ (Denote by an S for satisfactory or a U for unsatisfactory)

Areas for Improvement:



## EXAMINEE HANDOUT

JPM ID Number: JPM-220

### Initiating Cues:

- You are the PPO.
- Respond to changing parameters and alarms by reporting your observations and conclusions.
- The examiner will act as the Unit Supervisor, participate in the communication process, and give direction for any required action.
- Make recommendations and perform actions as directed by the US.

### Initial Conditions:

- All operating conditions are normal.

## JOB PERFORMANCE MEASURE APPROVAL SHEET

I. JPM Title: "A" DG Operability Test

ID Number: JPM-223

Revision: 0

II. Initiated:

R. J. Ashe  
Developer

8/13/02  
Date

III. Reviewed:

R. J. Ashe  
Technical Reviewer

9/4/02  
Date

IV. Approved:

N/A  
User Department Supervisor

Date

M. J. Ashe  
Nuclear Training Supervisor

9/5/02  
Date

### JOB PERFORMANCE MEASURE WORKSHEET

Facility: MP-2 Examinee: \_\_\_\_\_

JPM Number: JPM-223 Rev. 0

Task Title: "A" DG Operability Test

System: Electrical

Time Critical Task: Yes \_\_\_\_\_ No X

Validated Time (minutes): 20 min

Task No.(s): NUTIMS # 064-01-120

Applicable To: SRO X RO X PEO \_\_\_\_\_

K/A No.: 064 A4.06 K/A Rating: 3.9/3.9

Method of Testing:

Simulated Performance: \_\_\_\_\_ Actual Performance: X

Location:

Classroom: \_\_\_\_\_ Simulator: X In-Plant: \_\_\_\_\_

Task Standards: Examinee performs the Facility 1 Diesel Generator Operability Test on the 'A' D/G to the point of starting the D/G per SP 2613A, recognizes the failure to start, and notifies the US/SM of the diesel failure to start.

Required Materials  
(procedures, equipment): Stop watch  
Authorized OPS Form 2613A-001, Rev. 019-04  
SP 2613A, Diesel Generator Operability Tests, Facility 1, Rev. 020-04

General References: SP 2613A, Diesel Generator Operability Tests, Facility 1, Rev. 020-04

\*\*\*\* READ TO THE EXAMINEE \*\*\*\*

*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. You may use any approved reference materials normally available in the Control Room, including logs. Make all written reports, oral reports, alarm acknowledgments, and log entries as if the evolution was actually being performed.*

## JOB PERFORMANCE MEASURE WORKSHEET

JPM Number: JPM-223

Rev. 0

Initiating Cues:

- You are the SPO.
- The US has directed you to perform the Periodic 'A' D/G Operability Test (Fast Start, Loaded Run) per SP 2613A
- I will act as the US, PEO, etc.

Initial Conditions:

- All plant conditions are normal.
- NO other surveillances are being performed.
- SP 2613A-001 has been authorized for release.
- Valve Alignment Check, OPS Form 2613A-002 was performed two weeks ago
- NO maintenance has been performed on the "A" DG in the last two weeks.
- The 'A' D/G pre-start check list, 2346A-002, has been completed.
- A PEO has been briefed and is standing by at the 'A' D/G gage board. He will complete the D/G Data Sheet, 2346A-004.
- The applicable portions of SP 2619G, AC Electrical Sources Inoperability, were completed 5 minutes ago.
- There are NO Ozone alerts in affect.
- "B" D/G is OPERABLE.

Simulator Requirements:

Initialize at a normal 100% power IC and enter malfunction EG13A to prevent the "A" DG from starting.

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\*\*\*\*\* NOTES TO EXAMINER \*\*\*\*\*

1. Critical steps for this JPM are indicated with an "X". For the examinee to achieve a satisfactory grade, **ALL** critical steps must be completed correctly.
2. When examinee states what his/her simulated action/observation would be, read the appropriate "Cue".
3. If necessary, question examinee for details of simulated actions / observations (i.e. "What are you looking at?" or "What are you observing?").
4. This JPM may be performed bin conjunction with JPM-220 and JPM 221.

## PERFORMANCE INFORMATION

JPM ID NUMBER: JPM-223

**TITLE: "A" DG Operability Test**

START TIME: 08:00

STEP 1      \_\_\_\_ Performance Steps: Observe "A Service Water header flow and ensure minimum flow of at least 3,000 gpm is maintained after engine start.

GRADE \_\_\_\_ Standards: *Examinee observes "A" Service Water header flow indication on C-06 or the PPC and states that flow will be maintained at least 3,000 gpm.*

Cue: \_\_\_\_\_

Comments: When the D/G is started, the service water valves will change position resulting in approximately 700 gpm less header flow.

STEP 2      \_\_\_\_ Performance Steps: Check Diesel Day Tank level by the following:

- Observe "A" diesel day tank level gage, LG-7003 and record.
- Check level greater than 134 inches and initial form.
- Check Diesel Gen 12U Supply Tank Hi/Lo alarm NOT lit and initial form.

GRADE \_\_\_\_ Standards:

- *Examinee dispatches a PEO to observe "A" diesel day tank level gage, LG7003, in "A" diesel day tank room and records results on OPS Form 2613A-001.*
- *Examinee checks level is greater than 134 inches and initials OPS Form 2613A-001.*
- *Examinee checks DIESEL GEN SUPPLY TANK HI/LO alarm window on C-08 is NOT lit and initials OPS Form 2613A-001.*

Cue: **When asked, report "A" diesel day tank level greater than 134 inches.**

Comments:

**PERFORMANCE INFORMATION**

JPM ID NUMBER: JPM-223

TITLE: **"A" DG Operability Test**

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STEP 3      \_\_\_\_ Performance Steps: Check "B" D/G is OPERABLE and DG B FDR BKR, 15G-13U-2 is open.

GRADE \_\_\_\_      Standards:      *Examinee ensures the "B" D/G is aligned for automatic operation and the "B" D/G feeder breaker, 15G-13U-2 is open.*

Cue: 

Comments:      Initial conditions state that the "B" D/G is OPERABLE.

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STEP 4      \_\_\_\_ Performance Steps: Ensure DIESEL GEN 12U TROUBLE annunciator is *not* lit.

GRADE \_\_\_\_      Standards:      *Examinee ensures DIESEL GEN 12U TROUBLE annunciator, A-36 on C-08 is NOT lit.*

Cue: 

Comments:

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STEP 5      \_\_\_\_ Performance Steps: Obtain stop watches for the operator at C-08 (and the operator at "A" D/G gage board for local operation).

GRADE \_\_\_\_      Standards:      *Examinee ensures a stop watch is available at C-08.*

Cue: 

Comments:      The time for prelubing will be monitored by the operator at C-08; therefore only the operator at C-08 is required to have a stop watch.

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**PERFORMANCE INFORMATION**

JPM ID NUMBER: JPM-223

TITLE: **"A" DG Operability Test**

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STEP 6     \_\_\_ Performance Steps: Station an operator at the "A" D/G gage board and establish communications.

GRADE   \_\_\_   \_\_\_ Standards:     *Examinee will verify a PEO is stations at the "A" D/G gage board and that communications are established.*

Cue: **Report that communications are established with the operator at the "A" D/G gage board.**

Comments:

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STEP 7     \_\_\_ Performance Steps: Prior to engine start, ensure fuel rack position is at MINIMUM position.

GRADE   \_\_\_   \_\_\_ Standards:     *Examinee will determine from the PEO whether the fuel rack position is at MINIMUM.*

Cue: **Report that fuel rack position is at minimum.**

Comments:

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## PERFORMANCE INFORMATION

JPM ID NUMBER: JPM-223

TITLE: "A" DG Operability Test

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STEP 8      \_\_\_\_ Performance Steps: Record or initial on OPS Form 2613A-001 the following:

- Engine hour reading prior to the run.
- Fuel rack position at MINIMUM.

GRADE \_\_\_\_      Standards: *Examinee will direct the PEO to record or initial on OPS Form 2346A-004 the following:*

- Engine hour reading prior to the run (Local)
- Fuel rack position at MINIMUM (Local)

Cue: **Inform examinee that the appropriate information has been recorded on OPS Form 2346A-004.**

Comments:

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STEP 9      \_\_\_\_ Performance Steps: Refer to Technical Specification LCO 3.8.1.1 and SP 2619G, AC Electrical Sources Inoperability, and determine applicability.

GRADE \_\_\_\_      Standards: *Examinee informs the US/SM of the need to log into TSAS 3.8.1.1b and the need to perform SP 2619G.*

Cue: **Inform the examinee that you have entered TSAS 3.8.1.1b and that SP 2619G has been performed.**

Comments: Initial conditions state that SP 2619G has been performed.

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## PERFORMANCE INFORMATION

JPM ID NUMBER: JPM-223

TITLE: "A" DG Operability Test

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STEP 10    \_\_\_ Performance Steps: Install chart recorder.

GRADE    \_\_\_    Standards:    *Examinee directs the installation of the chart recorder:*

- *Connect the voltage signal cables to the generator voltage terminals.*
- *Connect the governor shaft position and speed/frequency cable to the Diagnostic Enclosure, T4037.*

Cue: **When requested, report that the chart recorder is installed.**

Comments:

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STEP 11    \_\_\_ Performance Steps: Ensure the following parameters upon starting:

- Fuel oil pressure at minimum of 5 psig at filter
- Nominal starting air pressure of greater than 150 psig.
- Fuel rack is at 1/8 to 1/4 position with engine at rated speed.
- Service Water flow to "A" D/G is greater than 559 gpm.

When the D/G starts, initial OPS Form 2346A-004 for the above listed items.

GRADE    \_\_\_    Standards:    *Examinee will direct the PEO to observe the following information during the D/G start:*

- *Fuel oil pressure is at a minimum of 5 psig at the filter*
- *Nominal starting air pressure is greater than 150 psig.*
- *Fuel rack is at 1/8 to 1/4 position with engine at rated speed.*
- *Service Water flow to "A" D/G is greater than 559 gpm.*

*Examinee will direct the PEO to initial OPS Form 2346A-004 for the above listed items.*

Cue: **Acknowledge the requirement to initial for the above listed parameters on the OPS Form.**

Comments:

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PERFORMANCE INFORMATION

JPM ID NUMBER: JPM-223

TITLE: "A" DG Operability Test

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STEP 12           Performance Steps: If D/G prelube time exceeds 12 minutes and D/G is *not* started, then perform applicable steps to rotate the D/G with air.

GRADE               Standards:    *Examinee states that the prelube time should NOT exceed 12 minutes.*

Cue: 

Comments:

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STEP 13      X   Performance Steps: Place Prelube Pump switch in START and start prelube timing.

GRADE          X   Standards:    

- *Examinee places Prelube Pump switch in the START position and starts the stop watch.*
- *Examinee stops the stop watch when 9.5 to 12 minutes has elapsed.*

Cue:  **At the discretion of the examiner, inform the examinee that 9 minutes has elapsed**

Comments:    The 9 minute mark allows the examinee time to review the next set of steps.

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## PERFORMANCE INFORMATION

JPM ID NUMBER: JPM-223

TITLE: "A" DG Operability Test

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STEP 14    X Performance Steps: When 9½ to 12 minutes has elapsed, perform the following:

- Start the chart recorder
- Simultaneously place the "A" DG Manual Start-Stop switch in START and start the stop watch.

GRADE    X Standards:

- *When 9½ to 12 minutes has elapsed, examinee informs the PEO to start the chart recorder*
- *Examinee simultaneously places the "A" DG Manual Start-Stop switch in START and starts the stop watch.*

Cue: **Inform examinee that the chart recorder is running.**

Comments:

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STEP 15    X Performance Steps: When diesel Ready To Load alarm is lit, stop the stop watch.

GRADE    X Standards:    *After approximately 12 seconds, the examinee observes the DIESEL GEN 12U DISABLED and DIESEL GEN 12U TROUBLE annunciators are lit.*

Cue:

Comments:

- The diesel has failed to start. The DIESEL GEN 12U READY TO LOAD annunciator will NOT be lit as expected. The examinee may or may NOT stop the stop watch.
- The examinee may or may NOT place the Prelube Pump switch in the OFF position at this time.
- The examinee may or may NOT refer to the Alarm Response Procedure for the given annunciators.

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**PERFORMANCE INFORMATION**

JPM ID NUMBER: JPM-223

TITLE: **"A" DG Operability Test**

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STEP 16      X   Performance Steps: Notify the US/SM of the "A" diesel failure to start.

GRADE      X   Standards:    *Examinee informs the US/SM of the "A" D/G failure to start and/or the "A" diesel in inoperable.*

Cue: **US/SM acknowledges the report.**

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STEP 17      X   Performance Steps: Stop the prelube pump.

GRADE      X   Standards:    *Examinee places the Prelube Pump switch in STOP.*

Cue: **Direct the examinee to stop the prelube pump.**

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Comments:    **After this step is completed, the JPM is considered complete.**

STOP TIME:

### VERIFICATION OF JPM COMPLETION

Job Performance Measure No. JPM-223

Rev. 0

Date Performed: \_\_\_\_\_

Operator: \_\_\_\_\_

Evaluator(s): \_\_\_\_\_

For examinee to achieve a satisfactory grade, **ALL** critical steps must be completed correctly. If task is Time Critical, it **MUST** be completed within the specified time to achieve a satisfactory grade.

Time Critical Task? Yes \_\_\_\_\_ No X

Validated Time (minutes): 20 minutes

Actual Time to Complete (minutes): \_\_\_\_\_

Result of JPM: \_\_\_\_\_ (Denote by an S for satisfactory or a U for unsatisfactory)

Areas for Improvement:

## EXAMINEE HANDOUT

JPM ID Number: JPM-223

### Initiating Cues:

- You are the SPO.
- The US has directed you to perform the Periodic 'A' D/G Operability Test (Fast Start, Loaded Run) per SP 2613A
- I will act as the US, PEO, etc.

### Initial Conditions:

- All plant conditions are normal.
- NO other surveillances are being performed.
- SP 2613A-001 has been authorized for release.
- Valve Alignment Check, OPS Form 2613A-002 was performed two weeks ago
- NO maintenance has been performed on the "A" DG in the last two weeks.
- The 'A' D/G pre-start check list, 2346A-002, has been completed.
- A PEO has been briefed and is standing by at the 'A' D/G gage board. He will complete the D/G Data Sheet, 2346A-004.
- The applicable portions of SP 2619G, AC Electrical Sources Inoperability, were completed 5 minutes ago.
- There are NO Ozone alerts in affect.
- "B" D/G is OPERABLE.

## JOB PERFORMANCE MEASURE APPROVAL SHEET

I. JPM Title: **Start a Second Main Feedwater Pump**

ID Number: JPM-222

Revision: 0

II. Initiated:

R. J. Ashley  
Developer

4/5/02  
Date

III. Reviewed:

[Signature]  
Technical Reviewer

9/4/02  
Date

IV. Approved:

N/A  
User Department Supervisor

Date

[Signature]  
Nuclear Training Supervisor

9/5/02  
Date

### JOB PERFORMANCE MEASURE WORKSHEET

Facility: MP-2                      Examinee: \_\_\_\_\_

JPM Number: JPM-222                      Rev. 0

Task Title: **Start a Second Main Feedwater Pump**

System: Main Feedwater System

Time Critical Task: Yes \_\_\_\_\_ No X

Validated Time (minutes): 20

Task No.(s): NUTIMS # 059-01-069

Applicable To:      SRO X      RO X      PEO \_\_\_\_\_

K/A No.: 059 A4.03      K/A Rating: 2.9\*/2.9

Method of Testing:

Simulated Performance: \_\_\_\_\_      Actual Performance: X

Location:

Classroom: \_\_\_\_\_      Simulator: X      In-Plant: \_\_\_\_\_

Task Standards:      *At the completion of this JPM, the examinee will have placed a second main feed pump in operation.*

Required Materials      OP 2321, Main Feedwater System, Rev. 017-00  
(procedures,equipment):

General References:      OP 2321, Main Feedwater System, Rev. 017-00

**\*\*\* READ TO THE EXAMINEE \*\*\***

*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. You may use any approved reference materials normally available in the Control Room, including logs. Make all written reports, oral reports, alarm acknowledgments, and log entries as if the evolution was actually being performed.*



## JOB PERFORMANCE MEASURE WORKSHEET

JPM Number: JPM-222

Rev. 0

Initiating Cues:

- You are the SPO.
- The US has directed you to place the "B" Main Feed Pump in automatic operation in preparation for raising power to 100%.

Initial Conditions:

- Power is at approximately 55%
- "B" SGFP Overspeed Test keyswitch is "OFF".
- "B" SGFP Valve Limiter Override Permissive keyswitch is "NORMAL".
- Five Condensate Demineralizers are in service.
- "B" SGFP lube oil temperature is 100°F.

Simulator Requirements: Set to any IC at 55-60% power with only the "A" SGFP running.

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\*\*\*\*\* NOTES TO EXAMINER \*\*\*\*\*

1. Critical steps for this JPM are indicated with an "X". For the examinee to achieve a satisfactory grade, **ALL** critical steps must be completed correctly.
2. When examinee states what his/her simulated action/observation would be, read the appropriate "Cue".
3. If necessary, question examinee for details of simulated actions / observations (i.e. "What are you looking at?" or "What are you observing?").
4. Under **NO** circumstances must the examinee be allowed to manipulate any devices during the performance of this JPM (in-plant only).

## PERFORMANCE INFORMATION

JPM ID NUMBER: JPM-222

TITLE: **Start a Second Main Feedwater Pump**

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START TIME:                     

STEP 1           Performance Steps: Ensure Condensate header pressure is greater than 400 psig and that at least 5 condensate demins are in service.

GRADE           Standards: *Examinee observes P-5224 to ensure condensate header pressure is greater than 400 psig.*

Cue: **If necessary, question what the examinee is observing.**

Comments: Initial Conditions state that 5 condensate demineralizers are in service.

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STEP 2           Performance Steps: Set "B" SGFP lube oil temperature controller, TIC-6339, to 110°F.

GRADE           Standards: *Examinee dispatches a PEO to adjust the "B" SGFP lube oil temperature controller, TIC-6339, to 110°F.*

Cue: **As the PEO, report that the "B" SGFP lube oil controller temperature has been set to 110°F.**

Comments: No action is required to set the lube oil temperature controller.

### PERFORMANCE INFORMATION

JPM ID NUMBER: JPM-222

TITLE: **Start a Second Main Feedwater Pump**

---

STEP 3     X     Performance Steps:     Open the following SGFP STM DRNS:

- HP SPLY, MS 100E/238
- EXT SPLY, MS 100A/B
- TB 1<sup>st</sup> STAGE, MS 184B
- HP BELOW SEAT, MS 186A
- HP ABOVE SEAT, MS 186B
- EXT BELOW SEAT, MS 185A
- EXT ABOVE SEAT, MS 185B

GRADE        X     Standards:

*Examinee presses the 'open' push button for the following valves and ensures the green 'open' light is lit.:*

- HP SPLY, MS 100E/238
- EXT SPLY, MS 100A/B
- TB 1<sup>st</sup> STAGE, MS 184B
- HP BELOW SEAT, MS 186A
- HP ABOVE SEAT, MS 186B
- EXT BELOW SEAT, MS 185A
- EXT ABOVE SEAT, MS 185B

Cue:

Comments:

~~~~~

STEP 4            Performance Steps:     Station an operator at "B" SGFP to locally monitor start.

GRADE               Standards:

*Examinee dispatches a PEO to the "B" SGFP to look for abnormal conditions; e.g., high vibration, leaks, etc.*

Cue:     **Report that a PEO is stationed at the "B" SGFP.**

Comments:

~~~~~

**PERFORMANCE INFORMATION**

JPM ID NUMBER: JPM-222

TITLE: **Start a Second Main Feedwater Pump**

---

STEP **5**      X Performance Steps: Open "B" SGFP DIS VLV, FW-38B.

GRADE \_\_\_\_ X Standards:      *Examinee momentarily places the "B" SGFP DIS VLV, FW-38B, to the open position and observes only the red 'open' light is lit.*

Cue: 

Comments:

~~~~~

STEP **6**      X Performance Steps: Press 'SEL' on the "B" SGFP MIN FLOW RECIRC, FIC-5240, controller until the cursor appears above the controller output.

GRADE \_\_\_\_ X Standards:      *The examinee presses the 'SEL' button on the "B" SGFP MIN FLOW RECIRC, FIC-5240, controller until the cursor appears above the controller output (right hand bar graph).*

Cue: 

Comments:

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### PERFORMANCE INFORMATION

JPM ID NUMBER: JPM-222

TITLE: **Start a Second Main Feedwater Pump**

---

STEP 7     X   Performance Steps: Set "B" SGFP MIN FLOW RECIRC, FIC-5240, controller to 65-70% open signal in manual control.

GRADE         X   Standards:     *Examinee presses the 'up arrow' on "B" SGFP MIN FLOW RECIRC, FIC-5240, controller to obtain a 65-70% output signal.*

Cue: **If necessary, ask the examinee what he/she is observing.**

Comments:     As the minimum flow recirc valve is opened, the feed pump turbine will roll off the turning gear.

~~~~~

STEP 8           Performance Steps:     When "B" SGFP turning gear disengages, place "B" SGFP TURN GEAR CNTL to STOP.

GRADE               Standards:     *Examinee observes feed pump turbine roll off the turning gear and places the "B" SGFP TURN GEAR CNTL switch in the STOP position..*

Cue: **~~~~~**

Comments:     

- If this step is NOT performed within 5 seconds, then the examinee will be required to reset the TGX relay on the rear of C-05 by pressing the PB-TGX/SGFPT B RESET TURNING GEAR LOCKOUT.
- Failure to perform this step within 5 seconds does NOT constitute a failure of this JPM.

~~~~~

## PERFORMANCE INFORMATION

JPM ID NUMBER: JPM-222

TITLE: **Start a Second Main Feedwater Pump**

---

STEP 9          Performance Steps: Press "B" SGFP alarm ACK and RESET buttons and ensure the "B" SGFP TRIP alarm is reset.

GRADE           Standards:     *The examinee presses the "B" SGFP alarm ACK and RESET buttons on the SGFP insert and ensures the "B" SGFP TRIP alarm is reset.*

Cue:  

Comments:

~~~~~

STEP 10     X Performance Steps: Press the "B" SGFP RESET button on C-05 and ensure the following:

- HP STM STOP, MS-67B and EXT STM STOP, MS 66B are open
- SGFP B TURBINE TRIP alarm is NOT lit.

GRADE      X Standards:     *Examinee presses the "B" SGFP RESET button on C-05 and observes the following:*

- HP STM STOP, MS-67B and EXT STM STOP, MS 66B are open
- SGFP B TURBINE TRIP alarm is NOT lit.

Cue: If necessary, ask the examinee what he/she is observing.

Comments: The examinee may press "B" SGFP alarm ACK and RESET buttons to clear the SGFP Trouble alarm and the trip alarm on the insert at any time during this JPM.

~~~~~

### PERFORMANCE INFORMATION

JPM ID NUMBER: JPM-222

TITLE: **Start a Second Main Feedwater Pump**

---

STEP 11    X    Performance Steps: Place the "A" SGFP in MANUAL.

GRADE           X    Standards:    *Examinee presses the MANUAL push button for the "A" SGFP and ensures the 'manual' button light is lit.*

Cue: 

Comments:    If left in automatic, the "A" SGFP speed will lower when "B" SGFP speed is raised above 3,000 rpm.

~~~~~

STEP 12    X    Performance Steps: Press "B" SGFP control START push button

GRADE           X    Standards:    *Examinee presses the "B" SGFP control START push button and observes a rise in speed.*

Cue: 

Comments:    When this step is performed:

- The controller will open the valve limiter to 20% at the 'Valve Limiter Rate of 5%/sec.
- The speed setpoint will ramp from zero to the minimum controlling speed setting (1,000 rpm) at 20 rpm/min.

~~~~~

PERFORMANCE INFORMATION

JPM ID NUMBER: JPM-222

TITLE: **Start a Second Main Feedwater Pump**

---

STEP 13         Performance Steps: Locally check the "B" SGFP.

GRADE           Standards:    *Examinee will instruct the PEO at the "B" SGFP to check for:*

- *SGFP seal leakage and proper operation of TCVs*
- *Bearing lube oil supply temperature being maintained between 100 and 130°F.*
- *Rubs, squeaks, or unusual noises.*

Cue: **As the PEO, report that all conditions are normal.**

Comments:

~~~~~

STEP 14    X Performance Steps: Check SGFP at 1,000 RPM

GRADE      X Standards:    *Examinee will observe "B" SGFP speed between 970 and 1030 rpm.*

Cue: **If necessary, ask examinee what he/she is observing.**

Comments:

~~~~~



## PERFORMANCE INFORMATION

JPM ID NUMBER: JPM-222

TITLE: **Start a Second Main Feedwater Pump**

---

- STEP **15**     X   Performance Steps: Press the "B" SGFP TRIP button and check the following:
- HP STM STOP, MS-67B and EXT STM STOP, MS 66B indicate closed
  - "B" SGFP speed lowers.
  - SGFP B TURBINE TRIP alarm is lit.

- GRADE         X   Standards:     *Examinee presses the "B" SGFP TRIP button on C-05 and observes the following:*
- *HP STM STOP, MS-67B and EXT STM STOP, MS 66B green closed lights are lit.*
  - *"B" SGFP speed is lowering.*
  - *SGFP B TURBINE TRIP alarm is lit.*

Cue: **If necessary, ask examinee what he/she is observing.**

Comments:

~~~~~

- STEP **16**           Performance Steps: Press "B" SGFP alarm ACK and RESET buttons and ensure the "B" SGFP TRIP alarm is reset.

- GRADE               Standards:     *The examinee presses the "B" SGFP alarm ACK and RESET buttons on the SGFP insert and ensures the "B" SGFP TRIP alarm light is NOT lit.*

Cue:

Comments:

~~~~~

## PERFORMANCE INFORMATION

JPM ID NUMBER: JPM-222

TITLE: **Start a Second Main Feedwater Pump**

---

STEP 17     X Performance Steps: Press the "B" SGFP RESET button on C-05 and ensure the following:

- HP STM STOP, MS-67B and EXT STM STOP, MS 66B are open
- SGFP B TURBINE TRIP alarm is NOT lit.

GRADE \_\_\_\_ X Standards: *Examinee presses the "B" SGFP RESET button on C-05 and observes the following:*

- *HP STM STOP, MS-67B and EXT STM STOP, MS 66B are open*
- *SGFP B TURBINE TRIP alarm is NOT lit.*

Cue: **If necessary, ask the examinee what he/she is observing.**

Comments: The examinee may press "B" SGFP alarm ACK and RESET buttons to clear the SGFP Trouble alarm and the Trip alarm on the insert at any time during this JPM.

~~~~~

STEP 18     X Performance Steps: Press "B" SGFP control START push button

GRADE \_\_\_\_ X Standards: *Examinee presses the "B" SGFP control START push button and observes SGFP speed rising.*

Cue:

Comments: When this step is performed:

- The controller will open the valve limiter to 20% at the 'Valve Limiter Rate of 5%/sec.
- The speed setpoint will ramp from zero to the minimum controlling speed setting (1,000 rpm) at 20 rpm/min.

~~~~~

**PERFORMANCE INFORMATION**

JPM ID NUMBER: JPM-222

TITLE: **Start a Second Main Feedwater Pump**

---

STEP 19    X    Performance Steps: Check SGFP at 1,000 RPM

GRADE          X    Standards:    *Examinee will observe "B" SGFP speed between 970 and 1030 rpm.*

Cue: **If necessary, ask examinee what he/she is observing.**

Comments:

~~~~~

STEP 20          Performance Steps: If the standby SGFP lube oil pump starts while resetting the "B" SGFP then align it for automatic operation by placing the standby lube oil pump switch, P171B or P172B, to STOP and returning it to AUTO.

GRADE                Standards:    *Examinee determines whether the "B" SGFP standby lube oil pump started.  
If so, examinee places the standby lube oil pump switch on C-08 for P171B or P172B, to STOP and returns it to AUTO.*

Cue: **~~~~~**

Comments:

~~~~~

## PERFORMANCE INFORMATION

JPM ID NUMBER: JPM-222

TITLE: **Start a Second Main Feedwater Pump**

STEP 21     X Performance Steps: Close the following drain valves:

- HP SPLY, MS-100E/238
- HP ABOVE SEAT, MS-186B

GRADE           X Standards:     *Examinee presses the closed push button for HP SPLY, MS-100E/238, and HP ABOVE SEAT, MS-186B and observes the green closed light.*

Cue:

Comments:

STEP 22     X Performance Steps: When "B" SGFP bearing oil supply temperature (PPC point T7123) is between 100 and 110°F, simultaneously perform the following:

- Raise "B" SGFP speed and lower "A" SGFP speed to obtain FRV D/P greater than 20 psid and SGFP speed difference within 100 to 200 rpm of each other.
- Using "B" SGFP MIN FLOW RECIRC controller, maintain minimum flow between 4,200 and 4,500 gpm.

GRADE           X Standards:

- *When "B" SGFP bearing oil temperature, as read on PPC point T7123, is between 100 and 110°F, then the examinee adjusts "A" and "B" SGFP speed to establish FRV D/P greater than 20 psid and SGFP speed between 100 and 200 rpm of each other.*
- *The examinee adjusts "B" minimum flow recirc valve to maintain minimum flow between 4,200 and 4,500 gpm.*

Cue: **If lube oil temperature is NOT at 100 to 110°, then tell the examinee that the oil temperature is at the correct temperature.**

Comments: SGFP differential speeds, FRV D/P, and SGFP minimum flow may be outside the given limits momentarily while adjusting feed pump speeds and the minimum flow valve, provided the given limits are established when the examinee has completed making adjustments.

## PERFORMANCE INFORMATION

JPM ID NUMBER: JPM-222

TITLE: **Start a Second Main Feedwater Pump**

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- STEP 23     X   Performance Steps: Place the "B" SGFP MIN FLOE RECIRC, FIC-5249, controller in AUTO by the following:
- Press SEL button until cursor appears above actual flow bar graph.
  - Ensure actual flow is greater than 4,200 gpm.
  - Press SEL button until cursor appears above the setpoint bar graph.
  - Using the 'up' and 'down' arrow buttons, adjust the setpoint to 4,200 gpm.
  - Press A/M button and check the 'A' light is lit.

GRADE \_\_\_\_ X   Standards:

*Examinee places the "B" SGFP MIN FLOE RECIRC, FIC-5249, controller in AUTO by the following:*

- *Press SEL button until cursor appears above actual flow bar graph.*
- *Ensure actual flow is greater than 4,200 gpm.*
- *Press SEL button until cursor appears above the setpoint bar graph.*
- *Using the 'up' and 'down' arrow buttons, adjust the setpoint to 4,200 gpm.*
- *Press A/M button and check the 'A' light is lit*

Cue:



Comments:

~~~~~

## PERFORMANCE INFORMATION

JPM ID NUMBER: JPM-222

TITLE: **Start a Second Main Feedwater Pump**

---

- STEP **24**     X Performance Steps: Close the following valves:
- EXT SPLY, MS 100A/B
  - TB 1<sup>st</sup> STAGE, MS 184B
  - HP BELOW SEAT, MS 186A
  - EXT BELOW SEAT, MS 185A
  - EXT ABOVE SEAT, MS 185B

- GRADE \_\_\_\_ X Standards: *Examinee presses the 'close' button for the following valves and ensures the respective green 'closed' light for each valve is lit:*
- EXT SPLY, MS 100A/B
  - TB 1<sup>st</sup> STAGE, MS 184B
  - HP BELOW SEAT, MS 186A
  - EXT BELOW SEAT, MS 185A
  - EXT ABOVE SEAT, MS 185B

Cue: 

Comments:

~~~~~

- STEP **25**     X Performance Steps: To place the "A" SGFP in automatic speed control, perform the following:
- Using "A" SGFP speed RAISE and LOWER buttons, adjust speed to achieve a difference between 'actual' speed and 'auto' speed setpoint of less than or equal to 100 rpm.
  - Press and hold "A" SGFP AUTO control for 3 seconds.
  - Ensure transfer to auto speed control was successful.

- GRADE \_\_\_\_ X Standards:
- *Examinee adjusts the speed difference between 'actual' and 'auto' setpoint to less than or equal to 100 rpm.*
  - *Examinee presses and holds the "A" SGFP AUTO control for 3 seconds.*
  - *Examinee observes AUTO speed light is lit.*

Cue: 

Comments:

~~~~~

## PERFORMANCE INFORMATION

JPM ID NUMBER: JPM-222

TITLE: **Start a Second Main Feedwater Pump**

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- STEP 26    X Performance Steps: To place the "B" SGFP in automatic speed control, perform the following:
- Using "B" SGFP speed RAISE and LOWER buttons, adjust speed to achieve a difference between 'actual' speed and 'auto' speed setpoint of less than or equal to 100 rpm.
  - Press and hold "B" SGFP AUTO control for 3 seconds.
  - Ensure transfer to auto speed control was successful.


- GRADE \_\_\_\_ X Standards:
- *Examinee adjusts the speed difference between 'actual' and 'auto' setpoint to less than or equal to 100 rpm.*
  - *Examinee presses and holds the "B" SGFP AUTO control for 3 seconds.*
  - *Examinee observes AUTO speed light is lit.*

Cue: 

Comments:

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Comments: **After this step is completed, the JPM is considered complete.**

STOP TIME: 

VERIFICATION OF JPM COMPLETION

Job Performance Measure No. JPM-222

Rev. 0

Date Performed: \_\_\_\_\_

Operator: \_\_\_\_\_

Evaluator(s): \_\_\_\_\_

For examinee to achieve a satisfactory grade, **ALL** critical steps must be completed correctly. If task is Time Critical, it **MUST** be completed within the specified time to achieve a satisfactory grade.

Time Critical Task? Yes \_\_\_\_\_ No X

Validated Time (minutes): 20

Actual Time to Complete (minutes): \_\_\_\_\_

Result of JPM: \_\_\_\_\_ (Denote by an S for satisfactory or a U for unsatisfactory)

Areas for Improvement:



## EXAMINEE HANDOUT

JPM ID Number: JPM-222

Initiating Cues:

- You are the SPO.
- The US has directed you to place the "B" Main Feed Pump in automatic operation in preparation for raising power to 100%.

Initial Conditions:

- Power is at approximately 55%.
- "B" SGFP Overspeed Test keyswitch is "OFF".
- "B" SGFP Valve Limiter Override Permissive keyswitch is "NORMAL".
- Five Condensate Demineralizers are in service.
- "B" SGFP lube oil temperature is 100°F.

## JOB PERFORMANCE MEASURE APPROVAL SHEET

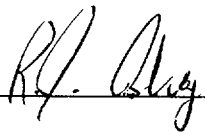
I JPM Title: HPSI Pump Operability Test

ID Number: JPM-100

Revision: 5

II. Initiated:

R. J. Ashley  
Developer



8/13/02  
Date

III. Reviewed:

[Signature]  
Technical Reviewer

9/4/02  
Date

IV. Approved:

N/A  
User Department Supervisor

                      
Date

[Signature]  
Nuclear Training Supervisor

9/5/02  
Date

## JOB PERFORMANCE MEASURE WORKSHEET

Facility: MP-2                      Examinee: \_\_\_\_\_

JPM Number: JPM-100                      Rev. 5

Task Title: HPSI Pump Operability Test

System: Emergency Core Cooling System

Time Critical Task:    Yes \_\_\_\_\_ No X

Validated Time (minutes): 15

Task No.(s): NUTIMS #006-02-017

Applicable To:            SRO X            RO X            PEO \_\_\_\_\_

K/A No. 006 A3.02            K/A Rating 4.1/4.1

### Method of Testing:

Simulated Performance: \_\_\_\_\_            Actual Performance: X

### Location:

Classroom: \_\_\_\_\_            Simulator: X            In-Plant: \_\_\_\_\_

### Task Standards:

At the completion of this JPM, the examinee has initiated Facility 1 HPSI pump surveillance on "A" HPSI pump and recognized the failure of the pump to meet the acceptance criteria for differential pressure, and states that the pump has failed its surveillance and/or that it is NOT OPERABLE.

### Required Materials (procedures, equipment):

- SP 2604A, HPSI Pump Operability and Inservice Testing, Facility 1
- Calculator
- OPS Form 2604A-1; authorized and dated

### General References:

SP 2604A, Section 4.1 (Rev. 12, Ch. 6)

### **\*\*\*\* READ TO THE EXAMINEE \*\*\*\***

*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. You may use any approved reference materials normally available in the Control Room, including logs. Make all written reports, oral reports, alarm acknowledgments, and log entries as if the evolution was actually being performed.*

## JOB PERFORMANCE MEASURE WORKSHEET

JPM Number: JPM-100

Rev. 5

Initiating Cues:

- You are the PPO.
- The Unit Supervisor has directed you to perform surveillance SP 2604A on the "A" HPSI Pump.
- An IST is NOT required.
- The examiner will act as the Unit Supervisor and/or PEO.

Initial Conditions:

- The plant is at 100% power, NOT/NOP.
- No equipment is out of service.
- OPS Form 2604A-1 has been authorized for release.

Simulator Requirements:

Initialize to any stable IC with the turbine on line and enter Malfunction SI05A @ 9% to degrade "A" HPSI pump performance.

---

**\*\*\*\*\* NOTES TO EXAMINER \*\*\*\*\***

1. Critical steps for this JPM are indicated with an "X". For the examinee to achieve a satisfactory grade, **ALL** critical steps must be completed correctly.
2. When examinee states what his/her simulated action/observation would be, read the appropriate "Cue".
3. If necessary, question examinee for details of simulated actions / observations (i.e. "What are you looking at?" or "What are you observing?").
4. This JPM may be performed in conjunction with JPM-222 and JPM-012.

## PERFORMANCE INFORMATION

JPM ID NUMBER: JPM-100

TITLE: HPSI Pump Operability Test

START TIME: \_\_\_\_\_

STEP 1      Performance Steps:    Ensure the following are open:

- "PP MINFLOW STOP, SI-659"
- "PP MINFLOW STOP, SI-660"
- HPSI pump min. flow recirc. stop, 2-SI-423
- HPSI pump suction stop, 2-SI-470

GRADE      Standards:    *Examinee performs the following:*

- *Observes SI-659 & SI-660 are open by their red lights only lit on C-01.*
- *Directs/requests PEO to locally check open 2-SI-423 and 2-SI-470.*

Cue: **Report that 2-SI-423 and 2-SI-470 are locked open.**

Comments:

~~~~~

STEP 2      Performance Steps:    Refer to TS LCO and log entry into Action Statement LCO, 3.5.2a (closed injection valves).

GRADE      Standards:    *Examinee informs the US to log into TSAS 3.5.2a due to closing the injection valves.*

Cue: **Report that the applicable entry has been made.**

Comments:

~~~~~

STEP 3      Performance Steps:    Ensure an operator stationed in the "A" Safeguards Room to monitor initial pump start.

GRADE      Standards:    *Examinee directs/requests a PEO to go to "A" Safeguards Room and prepare for "A" HPSI pump start.*

Cue: **I am in the "A" Safeguards Room. Oil levels are good and I am standing by for pump start.**

Comments:    This may have already been directed when sending PEO to check valve alignment.

~~~~~

## PERFORMANCE INFORMATION

JPM ID NUMBER: JPM-100

TITLE: HPSI Pump Operability Test

- STEP 4      X Performance Steps:      If the "A" HPSI pump is allowed to be capable of injecting into the RCS by T/S LCO 3.4.9.3, "Overpressure Protection Systems," and TRM 8.0, "Shutdown Cooling System," PERFORM the following:
1. PERFORM *one* of the following (C-01):
    - CLOSE 2-SI-656, "HPSI HDR A STOP"
    - CLOSE all 4 HPSI header "A" injection valves:
      - ◆ "LOOP 1A, SI-617"
      - ◆ "LOOP 1B, SI-627"
      - ◆ "LOOP 2A, SI-637"
      - ◆ "LOOP 2B, SI-647"
  2. If "B" HPSI Pump is aligned to Facility 1, Ensure "B" HPSI control switch is in the PULL-TO-LOCK position.
  3. ENSURE "HPSI PP A" control switch is in the *normal after trip* position (C-01).

- GRADE          X Standards:
- *Examinee either obtains key and closes 2-SI-656 OR closes 2-SI-617, 627, 637, and 647 on C-01 and observes the respective valve closes by checking green only light is lit.*
  - *Examinee ensures the "B" HPSI Pump control switch is in the PULL-TO-LOCK position.*
  - *Examinee also observes "A" HPSI pumps switch to ensure a green flag is present and the green light only is lit.*

Cue:  

Comments:      The note prior to this step states that it is preferable to close the HPSI header injection valves.

~~~~~

- STEP 5          Performance Steps:      Record time "A" HPSI header flow path secured in SM Log.

- GRADE              Standards:      *Examinee states they would inform the US to log time.*

Cue: Inform the examinee that the applicable entry has been made.

Comments:

~~~~~

## PERFORMANCE INFORMATION

JPM ID NUMBER: JPM-100

TITLE: HPSI Pump Operability Test

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STEP 6 X Performance Steps: At the ESAS panel, start the "A" HPSI pump.

GRADE     X Standards:

*Examinee performs the following:*

- (In MODE 1) Observes no "1/5" lights or bistable "TRIP" lights lit for SIAS, CIAS, EBFAS, or MSI on Facility 1 and Facility 2 ESF Actuation Cabinets 5 and 6 and all Sensor Cabinets.
- Places TEST PERMISSIVE SWITCH, S-501 in "TEST SIAS" on Actuation Cabinet 5.
- Places TEST GROUP SWITCH, S-502 in "GROUP 2" on Actuation Cabinet 5.
- Places TRIP TEST, S-102 (S-302) switch in "CONT PRESS SIAS/CIAS/EBFAS/MSI" on Sensor Cabinet "A" ("C").
- Presses and holds "TRIP TEST" button on bistable BA101 (BA301) on Sensor Cabinet "A" ("C").
- Checks actuation module, AM514 "1/5" light is lit on Actuation Cabinet 5.
- Presses "1/5" "TEST" button on actuation module AM514.
- Releases "TRIP TEST" button on bistable BA101 (BA301) on Sensor Cabinet "A" ("C").

Cue:

- Comments:
- Sensor cabinet "A" or "C" may be used. If cabinet "C" is used, two operators are required. Cabinet "C" components are in parentheses.
  - Examinee is allowed more than one attempt to start the "A" HPSI pump.

~~~~~

STEP 7 X Performance Steps: Compare start data and initial form if satisfactory.

GRADE     X Standards:

*Examinee observes the following and initials form:*

- Red "TRIP" light is lit on actuation module AM514.
- HPSI pump has started by its red light only lit and/or amperage indication on C-01.

Cue:

Comments:

## PERFORMANCE INFORMATION

JPM ID NUMBER: JPM-100

TITLE: HPSI Pump Operability Test

- STEP 8    Performance Steps:    During pump operation, observe the following:
- Normal motor amperage (C-01)
  - Visible oil levels (local)
  - Normal differential pressure (typically  $\geq 1231$  psid)
  - NO abnormal noise or vibration (local)

- GRADE    Standards:    *Examinee directs/requests the PEO to observe the listed local parameters*
- *Examinee observes motor amperage less than the red line on C-01.*
  - *Examinee observes discharge pressure (C-01) and compares to suction pressure (C-01 or local)*

Cue: **If asked, there is no abnormal noise or vibration and the oil levels are still good.  
If requested, suction pressure is 41 psig.**

- Comments:
- Examinee may use off line HPSI Pump discharge pressure as an estimation of running HPSI suction pressure.
  - Examinee may determine that HPSI Pump D/P is NOT acceptable.
- ~~~~~

- STEP 9    Performance Steps:    Restore ESF panels.

- GRADE    Standards:    *Examinee performs the following:*
- *Presses SIAS RESET button on Actuation Cabinet 5.*
  - *Presses red "TRIP" light on bistable BA101 (BA301).*
  - *Places TRIP TEST, S-102 (S-302) switch in "OPERATE".*
  - *Places TEST PERMISSIVE SWITCH, S-501 in "OPERATE".*
  - *Places TEST GROUP SWITCH, S-502 in "GROUP 1".*
  - *Resets "ATI FAULT" alarm by pressing ATI reset button on Actuation Cabinet 5.*

Cue:

Comments:

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## PERFORMANCE INFORMATION

JPM ID NUMBER: JPM-100

TITLE: HPSI Pump Operability Test

---

STEP 10 X Performance Steps: When at least 2 minutes of pump operation has elapsed, obtain and record "A" HPSI Pump suction and discharge pressure.

GRADE     X Standards: *Examinee obtains pump discharge pressure from PPC or C-01 and pump suction pressure (from PEO), at local pressure indication and records on OPS Form.*

Cue: **Report that local suction pressure is 41 psig.**

Comments:

~~~~~

STEP 11 X Performance Steps: Calculate "A" HPSI pump D/P.

GRADE     X Standards: *Examinee subtracts pump suction pressure from discharge pressure, records value on OPS Form, and compares to acceptance criteria.*

Cue:

Comments: Examinee should obtain a D/P of approximately 1193 psid.

~~~~~

STEP 12 X Performance Steps: Reports that the D/P is < 1201.8 psid and/or the acceptance criteria for D/P is not being met.

GRADE     X Standards: *Examinee states that the value is less than the acceptance criteria of 1201.8 psid and marks data section 1 as 'unsat'.*

Cue: **Acknowledge report and ask: "What impact does this have on the "A" HPSI pump status?"**

Comments:

### PERFORMANCE INFORMATION

JPM ID NUMBER: JPM-100

TITLE: HPSI Pump Operability Test

---

STEP 13 X Performance Steps: Informs the US/SM and IST Coordinator of the status of the "A" HPSI pump.

GRADE      X Standards: *Examinee notifies the US/SM and the IST Coordinator that the "A" HPSI pump has failed its surveillance and that it is NOT OPERABLE.*

Cue: **Acknowledge report.**

Comments: Examinee may state the need to stop the "A" HPSI Pump and replace the "A" HPSI pump with the "B" HPSI pump.

**After this step is completed, the JPM is considered complete.**

STOP TIME: \_\_\_\_\_

**VERIFICATION OF JPM COMPLETION**

Job Performance Measure No. JPM-100

Rev. 5

Date Performed: \_\_\_\_\_

Operator: \_\_\_\_\_

Evaluator(s): \_\_\_\_\_

For examinee to achieve a satisfactory grade, **ALL** critical steps must be completed correctly.  
If task is Time Critical, it **MUST** be completed within the specified time to achieve a satisfactory grade.

Time Critical Task? Yes \_\_\_\_\_ No X

Validated Time (minutes): 15

Actual Time to Complete (minutes): \_\_\_\_\_

Result of JPM: \_\_\_\_\_ (Denote by an S for satisfactory or a U for unsatisfactory)

Areas for Improvement:

## EXAMINEE HANDOUT

JPM ID Number: JPM-100

### Initiating Cues:

- You are the PPO.
- The Unit Supervisor has directed you to perform surveillance SP 2604A on the "A" HPSI Pump.
- An IST is NOT required.
- The examiner will act as the Unit Supervisor and/or PEO.

### Initial Conditions:

- The plant is at 100% power, NOT/NOP.
- No equipment is out of service.
- OPS Form 2604A-1 has been authorized for release.

## JOB PERFORMANCE MEASURE APPROVAL SHEET

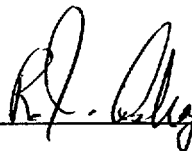
I. JPM Title: Respond to RCP Seal Problems

ID Number: JPM-012

Revision: 6

II. Initiated:

R. J. Ashley  
Developer



4/10/02  
Date

III. Reviewed:

[Signature]  
Technical Reviewer

9/4/02  
Date

IV. Approved:

N/A  
User Department Supervisor

                      
Date

[Signature]  
Nuclear Training Supervisor

9/5/02  
Date

## JOB PERFORMANCE MEASURE WORKSHEET

Facility: MP-2                      Examinee: \_\_\_\_\_

JPM Number: JPM-012                      Rev. 6

Task Title: Respond to RCP Seal Problems

System: Reactor Coolant Pump System

Time Critical Task:    Yes \_\_\_\_\_ No X

Validated Time (minutes): 15

Task No.(s): NUTIMS # 003-01-033

Applicable To:            SRO X            RO X            PEO \_\_\_\_\_

K/A No.: 003 A4.04            K/A Rating: 3.1/3.0

Method of Testing:

Simulated Performance: \_\_\_\_\_            Actual Performance: X

Location:

Classroom: \_\_\_\_\_            Simulator: X            In-Plant: \_\_\_\_\_

Task Standards:

Examinee responds to annunciators, evaluates RCP indications and makes recommendations on continued plant operation based on his findings. A manual plant trip, followed by tripping of the 'C' RCP should be recommended.

Required Materials

(procedures,equipment):

ARP 2590B, Annunciator Response for C-02/3  
OP 2301C, Reactor Coolant Pump  
Calculator

General References:

ARP 2590B, Annunciator Response for C-02/3  
OP 2301C, Reactor Coolant Pump

\*\*\*\*\* READ TO THE EXAMINEE \*\*\*\*\*

*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. You may use any approved reference materials normally available in the Control Room, including logs. Make all written reports, oral reports, alarm acknowledgments, and log entries as if the evolution was actually being performed.*

## JOB PERFORMANCE MEASURE WORKSHEET

JPM Number: JPM-012

Rev. 6

Initiating Cues:

- You are the PPO. Respond to any changing conditions related to the ~~Reactor Coolant Pumps~~ *Panel* by reporting your observations and conclusions. Make recommendations; however, NO action is to be taken unless directed by the US.
- The examiner will act as the US, participate in the communication process, and give directions for any required action.

Initial Conditions:

The plant is at 55-60% power with normal operating parameters.

Simulator Requirements:

- The simulator will be reset to any IC with the turbine on line and stable conditions.
- When the examinee is ready as the PPO, enter malfunction CC06C @ 30% on a 60 second ramp to cause a reduction in RBCCW flow to the 'C' RCP.

---

\*\*\*\* NOTES TO EXAMINER \*\*\*\*

1. Critical steps for this JPM are indicated with an "X". For the examinee to achieve a satisfactory grade, ALL critical steps must be completed correctly.
2. When examinee states what his/her simulated action/observation would be, read the appropriate "Cue".
3. If necessary, question examinee for details of simulated actions / observations (i.e. "What are you looking at?" or "What are you observing?").
4. This JPM may be performed in conjunction with JPM-222 and JPM-100.

**PERFORMANCE INFORMATION**

JPM ID NUMBER: JPM-012

TITLE: Respond to RCP Seal Problems

---

START TIME:                     

STEP 1             Performance Steps:    Respond to DA-25 on C-03 (RCP C CLG WTR FLOW LO).

GRADE               Standards:      *Examinee refers to ARP 2590B and performs the following:*

- *Checks 'C' RCP RBCCW inlet temperature on C-04R at approximately 80°F.*
- *Checks 'C' RCP RBCCW outlet temperature on C-04R at approximately 90°F.*
- *Checks RBCCW temperature rise across 'C' RCP seal cooler is approximately 10 to 12°F*
- *Checks RBCCW inlet pressure is approximately equal to 'A' header pressure*
- *Checks 'A' RBCCW header flow normal on C-06*

Cue:       If necessary, ask what the examinee is observing.      

Comments:    As a result of this malfunction, various other alarms will be annunciated. The examinee may respond to the annunciators in a different order than listed in this JPM.

~~~~~



## PERFORMANCE INFORMATION

JPM ID NUMBER: JPM-012

TITLE: Respond to RCP Seal Problems

STEP 2     X Performance Steps: Respond to AA-27 on C-03 (RCP C ANTIREV BRG TEMP HI).

|       |     |            |                                                                                                                |
|-------|-----|------------|----------------------------------------------------------------------------------------------------------------|
| GRADE | ___ | Standards: | <i>Examinee refers to ARP 2590B and performs the following;</i>                                                |
|       | ___ |            | <i>• Checks "C" RCP Anti Reverse Bearing temperature on C-04 is between 155 and 165°F.</i>                     |
|       | ___ |            | <i>• If necessary, adjusts 'A' RBCCW Heat Exchanger TCV to maintain outlet temperature between 75 and 85°F</i> |
|       | ___ |            | <i>• Verifies 'A' RBCCW header flow is normal.</i>                                                             |
|       | ___ | <u>X</u>   | <i>• Starts the 'C' RCP lift pump by taking the Start-Stop switch to 'Start' on C-03.</i>                      |
|       | ___ | ___        | <i>• States that "C" RCP temperatures must continue to be monitored.</i>                                       |
|       | ___ | <u>X</u>   | <i>• If anti-reverse bearing temperature reaches 194°F, recommends notifying the Duty Officer.</i>             |
|       | ___ | <u>X</u>   | <i>• If anti-reverse bearing temperature reaches 221°, recommends initiating a controlled plant shutdown.</i>  |
|       | ___ | <u>X</u>   | <i>• if the temperature reaches 250°F, recommends tripping.</i>                                                |

Cue: **If necessary, ask what the examinee is observing.**

Comments: Only the steps with an 'X' are considered critical.  
If the determination is made that the Reactor and RCP must be tripped at the appropriate limit, then starting the lift pump, contacting the Duty Officer, and recommending a plant shut down may NOT be performed and; therefore, are NOT considered critical steps.

~~~~~

## PERFORMANCE INFORMATION

JPM ID NUMBER: JPM-012

**TITLE:** Respond to RCP Seal Problems

STEP 3      X Performance Steps: Respond to BB-28 on C-03 (RCP C UPPER GUIDE TEMP HI).

GRADE              X      Standards:

- *Examinee refers to ARP 2590B.*
- *If temperature rises above 194°F, examinee recommends tripping the reactor and then the 'C' RCP.*

**Cue:** If necessary, ask what the examinee is observing.

Comments:

- If NOT already performed by the examinee, refer to step 2 for additional actions.
- This step is critical only if the temperature responds in a way that requires a shut down or a trip. This step is N/A if the recommendation to shut down or trip is made based on another annunciator.

~~~~~

STEP 4     X Performance Steps: Respond to CB-28 on C-03 (RCP C UPPER THRUST TEMP HI).

GRADE      X Standards:

- Examinee refers to ARP 2590B.
- If temperature rises above 194°F, examinee recommends tripping the reactor and then the 'C' RCP.

**Cue:** If necessary, ask what the examinee is observing.

Comments:

- If NOT already performed by the examinee, refer to step 2 for additional actions.
- This step is critical only if the temperature responds in a way that requires a shut down or a trip. This step is N/A if the recommendation to shut down or trip is made based on another annunciator.

~~~~~

## PERFORMANCE INFORMATION

JPM ID NUMBER: JPM-012

**TITLE:** Respond to RCP Seal Problems

STEP 5     X Performance Steps: Respond to DA-28 on C-03 (RCP C LOWER THRUST TEMP HI).

GRADE \_\_\_\_\_

**Standards:**

- *Examinee refers to ARP 2590B.*
- *If temperature rises above 194°F, examinee recommends tripping the reactor and then the 'C' RCP.*


**Cue:** If necessary, ask what the examinee is observing.

Comments:

- If NOT already performed by the examinee, refer to step 2 for additional actions.
- This step is critical only if the temperature responds in a way that requires a shut down or a trip. This step is N/A if the recommendation to shut down or trip is made based on another annunciator.

~~~~~

**Comments:** After this step is completed, the JPM is considered complete.

**STOP TIME:** 

### VERIFICATION OF JPM COMPLETION

Job Performance Measure No. JPM-012

Rev. 6

Date Performed: \_\_\_\_\_

Operator: \_\_\_\_\_

Evaluator(s): \_\_\_\_\_

|                                                                                                                                                                                                                                     |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| For examinee to achieve a satisfactory grade, <b><u>ALL</u></b> critical steps must be completed correctly. If task is Time Critical, it <b><u>MUST</u></b> be completed within the specified time to achieve a satisfactory grade. |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

Time Critical Task? Yes \_\_\_\_\_ No X

Validated Time (minutes): 15

Actual Time to Complete (minutes): \_\_\_\_\_

Result of JPM: \_\_\_\_\_ (Denote by an S for satisfactory or a U for unsatisfactory)

Areas for Improvement:

## EXAMINEE HANDOUT

JPM ID Number: JPM-012

Initiating Cues:

- You are the PPO. Respond to any changing conditions related to the Reactor Coolant Pumps by reporting your observations and conclusions. Make recommendations; however, NO action is to be taken unless directed by the US.
- The examiner will act as the US, participate in the communication process, and give directions for any required action.

Initial Conditions:

The plant is at 55-60% power with normal operating parameters.

## JOB PERFORMANCE MEASURE APPROVAL SHEET

I JPM Title: Shifting Containment Air Recirculation and Cooling Units

ID Number: JPM-221

Revision: 0

II. Initiated:

R. J. Ashley  
Developer

8/13/02  
Date

III. Reviewed:

R. J. Ashley  
Technical Reviewer

9/4/02  
Date

IV. Approved:

N/A  
User Department Supervisor

                      
Date

M. J. Hall  
Nuclear Training Supervisor

9/5/02  
Date

## JOB PERFORMANCE MEASURE WORKSHEET

Facility: MP-2                      Examinee: \_\_\_\_\_

JPM Number: JPM-221                      Rev. 0

Task Title: Shifting Containment Air Recirculation and Cooling Units

System: Containment Cooling System

Time Critical Task:    Yes \_\_\_\_\_ No X

Validated Time (minutes): 15

Task No.(s): NUTIMS #022-01-117 (022-004-01-01)

Applicable To:            SRO X            RO X            PEO \_\_\_\_\_

K/A No. 022 A4.01            K/A Rating 3.6/3.6

Method of Testing:

Simulated Performance: \_\_\_\_\_            Actual Performance: X

Location:

Classroom: \_\_\_\_\_            Simulator: X            In-Plant: \_\_\_\_\_

Task Standards:

At the completion of this JPM, the examinee has successfully stopped and restarted an OPERABLE CAR Fan.

Required Materials  
(procedures,  
equipment):

- OP 2313A, Containment Air Recirculation and Cooling System
- ARP 2590A, for annunciator D-3.

General References:

- OP 2313A, Containment Air Recirculation and Cooling System, Sections 4.1, 4.2 (Rev. 008-05)
- ARP 2590A, D-3 (Rev 004-01)
- OP 2330A, Reactor Building Closed Cooling Water, Rev 20
- MP-14-OPS-GDL02, Operations Standards, Rev, 004

\* \* \* \* READ TO THE EXAMINEE \* \* \* \*

*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. You may use any approved reference materials normally available in the Control Room, including logs. Make all written reports, oral reports, alarm acknowledgments, and log entries as if the evolution was actually being performed.*

## JOB PERFORMANCE MEASURE WORKSHEET

JPM Number: JPM-221

Rev. 0

Initiating Cues:

- The Unit Supervisor has directed you to align CAR fans such that "A", "C", and "D" are operating in fast speed and "B" CAR fan is secured.

Initial Conditions:

- "A", "B", and "C" CAR fans are operating.
- The plant is at 100% power.
- Electrical PMs are scheduled on the breaker for the "B" CAR fan.

Simulator Requirements:

- Initialize at any 100% power IC with "A", "B", and "C" CAR fans operating.
- RBCCW may or may not be aligned to "D" CAR fan.
- Ensure RBCCW header flows within normal range (~ 6,000 gpm)
- Insert malfunction CH01D on BT39 to cause the "D" CAR Fan to trip when started.

---

\*\*\*\*\* NOTES TO EXAMINER \*\*\*\*\*

1. Critical steps for this JPM are indicated with an "X". For the examinee to achieve a satisfactory grade, **ALL** critical steps must be completed correctly.
2. When examinee states what his/her simulated action/observation would be, read the appropriate "Cue".
3. If necessary, question examinee for details of simulated actions / observations (i.e. "What are you looking at?" or "What are you observing?").



## PERFORMANCE INFORMATION

JPM ID NUMBER: JPM-221

TITLE: Shifting Containment Air Recirculation and Cooling Units

---

START TIME:           

STEP 1 X Performance Steps: Place "B" CAR fan switch to "STOP" and hold for approximately 2 seconds, then release switch.

GRADE     X Standards: *Examinee places and holds switch for "B" CAR fan on C-01 to "STOP" and observes respective green light only lit and amperage decay. After 2 seconds, examinee releases switch.*

Cue: 

Comments: The examinee must realize that 4 CAR fans may not be operated in fast speed simultaneously and must first stop "B" CAR fan. Starting a fourth CAR fan in fast constitutes failure of this JPM.

~~~~~

STEP 2     Performance Steps: If desired, isolate cooling water outlet flow from "B" CAR Cooler by closing:

- "NORM OUTLET, RB-28-2B"
- "EMERG OUTLET, RB-28-3B"

Monitor RBCCW System flow and pressure

GRADE         Standards: *Examinee may NOT opt to close the above listed valves. However, if examinee closes the outlet valves, in order to pass this step, he/she should realize that RBCCW flows need to be adjusted and that he/she must monitor RBCCW header flow and pressure.*

Cue: 

Comments:

- Based on the reason for shifting CAR fans and the NOTE associated with this step, closing these valves is NOT necessary.
- If these valves are closed, flow should be adjusted to other components such as SFPC or other CAR fan if possible, to prevent exceeding a maximum pump discharge pressure of 140 psig or a low flow rate of 4000 gpm [prevent lifting relief valves] .

~~~~~

## PERFORMANCE INFORMATION

JPM ID NUMBER: JPM-221

TITLE: Shifting Containment Air Recirculation and Cooling Units

---

STEP 3    \_\_\_    Performance Steps:

- If desired to isolate cooling water inlet to the applicable CAR Cooler, obtain key and close "CLR D INLET, RB-28.1B".
- Monitor RBCW System flow and pressure.

GRADE    \_\_\_    Standards:    *Examinee observes red only light lit for RB-28.1D on C-01.*

Cue: **If the listed valves are closed, question examinee on how flows would be adjusted.**

Comments:

- Based on the reason for shifting CAR fans and the NOTE associated with the previous step, closing this valve is NOT necessary.
  - If the valve is closed, flow should be adjusted to other components such as SFPC or other CAR fan if possible, to prevent exceeding a maximum pump discharge pressure of 140 psig or a low flow rate of 4000 gpm [prevent lifting relief valves] .
- ~~~~~

STEP 4    \_\_\_    Performance Steps:    Verify CLR D INLET, RB-28.1D, is locked open.

GRADE    \_\_\_    Standards:    *Examinee observes only red light lit for RB-28.1D on C-01.*

Cue:

Comments: The CAR Cooler Inlet Valves are normally open during operations.

~~~~~

**PERFORMANCE INFORMATION**

JPM ID NUMBER: JPM-221

TITLE: Shifting Containment Air Recirculation and Cooling Units

---

STEP 5      Performance Steps:      Ensure cooling water outlets from "D" CAR fan are open:  
• "NORM OUTLET, RB-28-2D"  
• "EMERG OUTLET, RB-28-3D"

GRADE      Standards:      *Examinee observes red only lights lit for RB-28.2D and 28.3D and flow indication on C-01.*

Cue: 

Comments: Both normal and emergency outlet valves are normally open during operations.

~~~~~

STEP 6      Performance Steps:      Check Facility 2 RBCCW header flow less than 8,000 gpm.

GRADE      Standards:      *Examinee observes Facility 2 RBCCW header flow on C-06 or PPC < 8,000 gpm.*

Cue: 

Comments: If required, question examinee what they are observing.

~~~~~

## PERFORMANCE INFORMATION

JPM ID NUMBER: JPM-221

TITLE: Shifting Containment Air Recirculation and Cooling Units

STEP 7 X Performance Steps: Place "D" CAR fan switch to "START HIGH" and observe "FAST SPEED" indicating light lit.

GRADE     X Standards: *Examinee momentarily places the handswitch for the 'D' CAR fan to "START HIGH" and observes the associated 'fast speed' red light is only momentarily lit. Additionally, the examinee should observe the CTMT AIR RECIRC FAN D TRIP and the CTMT AIR RECIRC FAN D VIBRATION HI annunciators on C-01.*

Cue: 

- If necessary, ask the examinee what he/she is observing.
- If the examinee requests another start attempt, deny the request.

Comments:

- Attempting to start the fan in 'slow' will not constitute failure of this JPM.
- The examinee may or may NOT reset the CTMT AIR RECIRC FAN D VIBRATION HI annunciator
- MP-14-OPS-GDL02, Attachment 2, states, "To protect the plant or prevent a plant transient, the SM is authorized to reset any tripped device without knowing the cause." The loss of the "D" CAR Fan is NOT an immediate concern.

~~~~~

STEP 8     Performance Steps: Obtain the Annunciator Response Procedure for annunciator D-3 on C-01 and asks the US/SM to restart the "B" CAR Fan

GRADE         Standards: *Examinee obtains ARP 2590A for annunciator D-3, CTMT AIR RECIRC FAN D and asks the US/SM to restart the "B" CAR Fan.*

Cue: **If the examinee does NOT ask the US/SM to restart the "B" CAR Fan, direct the examinee to restart the "B" CAR Fan.**

Comments:

- The examinee may or may NOT reset the CTMT AIR RECIRC FAN D VIBRATION HI annunciator.
- Failure to ask the US or SM for permission to restart the "B" CAR Fans does NOT constitute a failure of this JPM.

~~~~~

**PERFORMANCE INFORMATION**

JPM ID NUMBER: JPM-221

TITLE: Shifting Containment Air Recirculation and Cooling Units

---

STEP 9    \_\_\_ Performance Steps:    Verify CLR B INLET, RB-28.1B, is locked open.

GRADE    \_\_\_    Standards:    *Examinee observes only red light lit for RB-28.1B on C-01.*

Cue: [REDACTED]

Comments: The CAR Cooler Inlet Valves are normally open during operations.

~~~~~

STEP 10    \_\_\_ Performance Steps:    Ensure cooling water outlets from "B" CAR fan are open:  
• "NORM OUTLET, RB-28-2B"  
• "EMERG OUTLET, RB-28-3B"

GRADE    \_\_\_    Standards:    *Examinee observes red only lights lit for RB-28.2B and 28.3B and flow indication on C-01.*

Cue: [REDACTED]

Comments: Both normal and emergency outlet valves are normally open during operations.

~~~~~

STEP 11    \_\_\_ Performance Steps:    Check Facility 2 RBCCW header flow less than 8,000 gpm.

GRADE    \_\_\_    Standards:    *Examinee observes Facility 2 RBCCW header flow on C-06 or PPC < 8,000 gpm.*

Cue: [REDACTED]

Comments: If required, question examinee what they are observing.

~~~~~

## PERFORMANCE INFORMATION

JPM ID NUMBER: JPM-221

TITLE: Shifting Containment Air Recirculation and Cooling Units

STEP 12 X Performance Steps: Place "B" CAR fan switch to "START HIGH" and observe "FAST SPEED" indicating light lit.

GRADE     X Standards: *Examinee momentarily places the handswitch for the 'B' CAR fan to "START HIGH" and observes the associated 'fast speed' red light is lit. Additionally, the examinee should observe the starting and running current on the ammeter for the "B" CAR Fan*

Cue: 

Comments:

- Attempting to start the fan in 'slow' will not constitute failure of this JPM provided the fan is placed in 'fast' prior to completion of the JPM.
- Failure to observe the ammeter does NOT constitute failure of this JPM.

~~~~~

STEP 13     Performance Steps: Reset the "CTMT AIR RECIRC FAN B VIBRATION HI" annunciator on C-01.

GRADE         Standards: *Examinee depresses the "CAR FAN VIB RESET B & D" pushbutton on C-01 and observes annunciator clearing on C-01.*

Cue: 

Comments: **After this step is completed, the JPM is considered complete.**

STOP TIME:

VERIFICATION OF JPM COMPLETION

Job Performance Measure No. JPM-221

Rev. 0

Date Performed: \_\_\_\_\_

Operator: \_\_\_\_\_

Evaluator(s): \_\_\_\_\_

<p>For examinee to achieve a satisfactory grade, <b><u>ALL</u></b> critical steps must be completed correctly. If task is Time Critical, it <b><u>MUST</u></b> be completed within the specified time to achieve a satisfactory grade.</p>
--

Time Critical Task? Yes \_\_\_\_\_ No X

Validated Time (minutes): \_\_\_\_\_ 15

Actual Time to Complete (minutes): \_\_\_\_\_

Result of JPM: \_\_\_\_\_ (Denote by an S for satisfactory or a U for unsatisfactory)

Areas for Improvement:

## EXAMINEE HANDOUT

JPM ID Number: 221

### Initiating Cues:

- The Unit Supervisor has directed you to align CAR fans such that "A", "C", and "D" are operating in fast speed and "B" CAR fan is secured.

### Initial Conditions:

- "A", "B", and "C" CAR fans are operating.
- The plant is at 100% power.
- Electrical PMs are scheduled on the breaker for the "B" CAR fan.



## JOB PERFORMANCE MEASURE APPROVAL SHEET

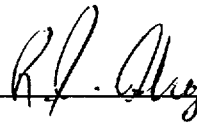
I JPM Title: Manual Makeup to the VCT

ID Number: JPM-022

Revision: 6

II. Initiated:

R. J. Ashley  
Developer



8/14/02  
Date

III. Reviewed:

Technical Reviewer



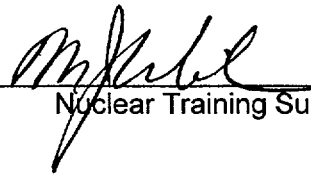
9/4/02  
Date

IV. Approved:

N/A  
User Department Supervisor

Date

Nuclear Training Supervisor



9/5/02  
Date

## JOB PERFORMANCE MEASURE WORKSHEET

Facility: MP-2                      Examinee: \_\_\_\_\_

JPM Number: JPM-022                      Rev. 6

Task Title: Manual Makeup to the VCT

System: CVCS

Time Critical Task:    Yes \_\_\_\_\_ No X

Validated Time (minutes): 15

Task No.(s): NUTIMS #004-01-194

Applicable To:            SRO X            RO X            PEO \_\_\_\_\_

K/A No. 004 A4.14            K/A Rating 3.9/4.2

Method of Testing:

Simulated Performance: \_\_\_\_\_            Actual Performance: X

Location:

Classroom: \_\_\_\_\_            Simulator: X            In-Plant: \_\_\_\_\_

Task Standards:

At the completion of this JPM, the examinee has recognized a malfunction with boric acid injection during attempted makeup to the VCT.

Required Materials  
(procedures,  
equipment):

- OP 2304C, Make Up (Boration and Dilution) Portion of CVCS
- OP 2208, Reactivity Calculations
- Calculator

General References:

- OP 2304C, Section 4.9, Rev. 021-05
- OP 2208, Reactivity Calculations, Rev 013

**\*\*\*\* READ TO THE EXAMINEE \*\*\*\***

*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. You may use any approved reference materials normally available in the Control Room, including logs. Make all written reports, oral reports, alarm acknowledgments, and log entries as if the evolution was actually being performed.*

## JOB PERFORMANCE MEASURE WORKSHEET

JPM Number: JPM-022

Rev. 6

### Initiating Cues:

- The Unit Supervisor has directed you to perform a manual blended makeup to the VCT and raise VCT level by 2% while maintaining the PMW and Boric Acid flow controllers in the "AUTO" mode of operation.
- When makeup is completed, return the system lineup to normal.
- The examiner will act as the US.

### Initial Conditions:

- RCS boron concentration is 820 ppm

### Simulator Requirements:

- Initialize at any MOL IC with charging, letdown, and makeup to the VCT available.
- Ensure VCT level is 84% or less and pressure is 25 psig or less.
- Enter remote function CVR14 (CLOSE) to close 2-CH-172.

---

### **\*\*\*\* NOTES TO EXAMINER \*\*\*\***

1. Critical steps for this JPM are indicated with an "X". For the examinee to achieve a satisfactory grade, **ALL** critical steps must be completed correctly.
2. When examinee states what his/her simulated action/observation would be, read the appropriate "Cue".
3. If necessary, question examinee for details of simulated actions / observations (i.e. "What are you looking at?" or "What are you observing?").
4. This JPM may be performed in conjunction with JPM-110 and JPM-222

**PERFORMANCE INFORMATION**

JPM ID NUMBER: JPM-022

TITLE: Manual Makeup to the VCT

---

**START TIME:**           

STEP   1       Performance Steps:     Ensure PMW is available and at least one charging pump operating.

GRADE          Standards:     *Examinee observes at least one red indicating light lit on C-02 for PMW pump and charging pump.*

Cue: 

Comments:

~~~~~

STEP   2       Performance Steps:     Determine the required ratio of boric acid flow to PMW flow.

GRADE          Standards:     *Examinee uses either OP 2208 or PPC to determine that the ratio of boric acid to PMW flow is 1 gallon to 6.25 gallons, respectively.*

Cue: 

Comments:     A PMW value of 6.0 to 6.4 gallons is acceptable for use.

~~~~~

STEP   3       Performance Steps:     Ensure the following are closed:  
  • Makeup valve stop, CH-512 (C-04)  
  • VCT makeup bypass, CH-196 (C-02)  
  • RWST isolation, CH-192 (C-02)

GRADE          Standards:     *Examinee observes indicating lights for CH-512 on C-04 and CH-196/192 on C-02 by their green lights only lit.*

Cue: 

Comments:

~~~~~

## PERFORMANCE INFORMATION

JPM ID NUMBER: JPM-022

TITLE: Manual Makeup to the VCT

---

STEP 4     Performance Steps:     Determine the desired VCT level change in % level and total gallons required.

GRADE     Standards:     *Examinee states that a 2% level rise is required and using 34 gal/% that a total of 68 gallons is required.*

Cue: **If not stated, ask the examinee how many total gallons will be added to the VCT.**

Comments:

~~~~~

STEP 5     Performance Steps:     Reset PMW and boric acid controllers (FC-210X / FC-210Y), to zero.

GRADE     Standards:     *For each controller, examinee performs the following:*

- *Checks "L" indicated*
- *Presses and holds "SEL" button until "TOTAL RST" is displayed.*
- *Presses "R/L" button to shift controller to "R" (resets totalizer), then back to "L".*
- *Presses "SEL" until controller number is displayed.*

Cue:

Comments:     Manual leak rate determination is NOT in progress.

~~~~~

STEP 6     Performance Steps:     Start PPC trend of VCT level (L226).

GRADE     Standards:     *Examinee starts PPC trend and displays it on PPC monitor.*

Cue:

Comments:

~~~~~

## PERFORMANCE INFORMATION

JPM ID NUMBER: JPM-022

TITLE: Manual Makeup to the VCT

---

STEP 7    X Performance Steps:    Adjust automatic setpoints of PMW and boric acid controllers (FC-210X / FC-210Y), and ensure controllers are in automatic.

GRADE \_\_\_\_    X Standards:    *For each controller, examinee performs the following:*

- *Ensures "AM" is lit.*
- *Adjusts controller setpoint as necessary to obtain a ratio of 1 gal. BA to 6.25 gals. PMW.*

Cue: 

Comments:

- Any ratio of approximately 1 gal. BA to 6.25 gal. PMW is acceptable (i.e. 8 gals. BA to 48-52 gals. PMW; 10 gals BA to 60-65 gals PMW; 12 gals. BA to 72-78 gals. PMW, etc.).
  - Controllers are normally in "AM" mode.
- ~~~~~

STEP 8    X Performance Steps:    Place makeup mode selector switch in "MANUAL".

GRADE \_\_\_\_    X Standards:    *Examinee places the makeup mode selector switch from the "DILUTE" position to the "MANUAL" position on C-04.*

Cue: 

Comments:

~~~~~

STEP 9    X Performance Steps:    Start one boric acid pump.

GRADE \_\_\_\_    X Standards:    *Examinee starts the selected (by indicated switch position) B.A. pump by:*

- *placing its hand switch to the "START" position*
- *checking red light lit*
- *checking indicated discharge pressure is at least 98 psig.*

Cue: 

Comments:    The selected BA pump must be supplied by the BAST used to determine the VCT blend.

~~~~~

## PERFORMANCE INFORMATION

JPM ID NUMBER: JPM-022

TITLE: Manual Makeup to the VCT

---

STEP 10 X Performance Steps: Open makeup stop valve, CH-512.

GRADE     X Standards: *Examinee places CH-512 switch to "OPEN" on C-04 and ensures red light only is lit.*

Cue: 

Comments: Examinee may check that the "M" (of "AM"), extinguishes on makeup controllers.

~~~~~

STEP 11 X Performance Steps: Ensure flows have stabilized at setpoints of the flow controllers.

GRADE     X Standards:

- *Examinee watches flow controllers on C-04 to ensure flow begins and then stabilizes at setpoints.*
- *Examinee observes that there is NO B.A. flow indicated.*
- *Examinee observes BAMAKEUP FLOW HI/LO annunciator is alarming and acknowledges the alarm.*
- *Examinee notifies US/SM of the low BA flow.*

Cue: 

Comments:

~~~~~

## PERFORMANCE INFORMATION

JPM ID NUMBER: JPM-022

TITLE: Manual Makeup to the VCT

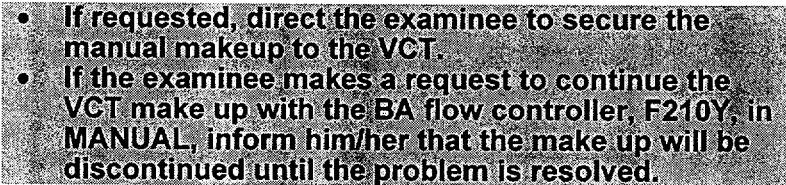
STEP 12 X Performance Steps: Terminate the on-going dilution to the VCT or recommend termination to the Unit Supervisor.

GRADE     X Standards: *Examinee terminates the make up to the VCT by the following:*

- Closes CH-512 on C-04 by placing its control switch in the "CLOSE" position until the green light only is lit
- Secures the B.A. pump on C-02 by placing its hand switch in the "STOP" position and verifying the green light is lit.
- Ensures PMW flow has stopped as indicated on controller FC-210X.

OR

- Examinee places the Makeup Mode Selector switch on C-04 in the "DILUTE" or "BORATE" position.
- Examinee ensures PMW flow has stopped as indicated on controller FC-210X.

Cue: 

- If requested, direct the examinee to secure the manual makeup to the VCT.
- If the examinee makes a request to continue the VCT make up with the BA flow controller, F210Y, in MANUAL, inform him/her that the make up will be discontinued until the problem is resolved.

Comments:

~~~~~

STEP 13 X Performance Steps: Notify US that the inadvertent dilution has been terminated.

GRADE     X Standards:

- Examinee notifies US that the dilution has been terminated as indicated by no flow on FC-210X.
- Examinee states that he/she would monitor reactor power to determine the effects of the dilution.

Cue: 

Comments: **After this step is completed, the JPM is considered complete.**

STOP TIME:



### VERIFICATION OF JPM COMPLETION

Job Performance Measure No. JPM-022

Rev. 6

Date Performed: \_\_\_\_\_

Operator: \_\_\_\_\_

Evaluator(s): \_\_\_\_\_

|                                                                                                                                                                                                                                                |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p>For examinee to achieve a satisfactory grade, <b><u>ALL</u></b> critical steps must be completed correctly.<br/>If task is Time Critical, it <b><u>MUST</u></b> be completed within the specified time to achieve a satisfactory grade.</p> |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

Time Critical Task? Yes \_\_\_\_\_ No X

Validated Time (minutes): 15

Actual Time to Complete (minutes): \_\_\_\_\_

Result of JPM: \_\_\_\_\_ (Denote by an S for satisfactory or a U for unsatisfactory)

Areas for Improvement:

## EXAMINEE HANDOUT

JPM ID Number: JPM-022

### Initiating Cues:

- The Unit Supervisor has directed you to perform a manual blended makeup to the VCT and raise VCT level by 2% while maintaining the PMW and Boric Acid flow controllers in the "AUTO" mode of operation.
- When makeup is completed, return the system lineup to normal.
- The examiner will act as the US.

### Initial Conditions:

- RCS boron concentration is 820 ppm

## JOB PERFORMANCE MEASURE APPROVAL SHEET

I. JPM Title: Cross-Tying 480 Volt Buses

ID Number: JPM-053

Revision: 6

II. Initiated:

R. J. Ashe  
Developer

4/4/02  
Date

III. Reviewed:

R. J. Ashe  
Technical Reviewer

9/4/02  
Date

IV. Approved:

N/A  
User Department Supervisor

            
Date

M. Kell  
Nuclear Training Supervisor

9/5/02  
Date

### JOB PERFORMANCE MEASURE WORKSHEET

Facility: MP-2 Examinee: \_\_\_\_\_

JPM Number: JPM-053 Rev. 6

Task Title: **Cross-Tying 480 Volt Buses**

System: AC Electrical Distribution System

Time Critical Task: Yes \_\_\_\_\_ No X

Validated Time (minutes): 10

Task No.(s): NUTIMS # 062-01-394

Applicable To: SRO X RO X PEO \_\_\_\_\_

K/A No.: 062 A4.01 K/A Rating: 3.3/3.1

#### Method of Testing:

Simulated Performance: \_\_\_\_\_ Actual Performance: X

#### Location:

Classroom: \_\_\_\_\_ Simulator: X In-Plant: \_\_\_\_\_

#### Task Standards:

At the completion of this JPM, the examinee has successfully cross-tied Bus 22A with Bus 22B, and has isolated transformer 24A1-1X per OP-2344A.

#### Required Materials

OP 2344A, 480 Volt Load Centers

#### (procedures,equipment):

#### General References:

OP 2344A, 480 Volt Load Centers, Rev. 020-04

#### **\*\*\* READ TO THE EXAMINEE \*\*\***

*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. You may use any approved reference materials normally available in the Control Room, including logs. Make all written reports, oral reports, alarm acknowledgments, and log entries as if the evolution was actually being performed.*

## JOB PERFORMANCE MEASURE WORKSHEET

JPM Number: JPM-053

Rev. 6

### Initiating Cues:

- You are the SPO.
- Electrical maintenance has given work control an AWO to replace 480 volt transformer, 24A1-1X.
- The US has directed you to cross tie Bus 22A with Bus 22B in accordance with OP 2344A, 480 Volt Load Centers, to allow tagging of the transformer.

### Initial Conditions:

- The plant is @ 100% power and NOT/NOP.
- Group 1 and Group 2 backup heaters are in PULL-TO-LOCK and caution tagged.
- "C" TBCCW Pump is in service and "A" TBCCW Pump has been secured.

### Simulator Requirements:

- Initialize to any IC with 100% power, NOT/NOP.
- Place Group 1 and Group 2 backup heaters in PULL-TO-LOCK and caution tag their hand switches on C-03.
- Place "C" TBCCW Pump in service and secure "A" TBCCW Pump

---

### \*\*\*\* NOTES TO EXAMINER \*\*\*\*

1. Critical steps for this JPM are indicated with an "X". For the examinee to achieve a satisfactory grade, **ALL** critical steps must be completed correctly.
2. When examinee states what his/her simulated action/observation would be, read the appropriate "Cue".
3. If necessary, question examinee for details of simulated actions / observations (i.e. "What are you looking at?" or "What are you observing?").
4. Under **NO** circumstances must the examinee be allowed to manipulate any devices during the performance of this JPM (in-plant only).

## PERFORMANCE INFORMATION

JPM ID NUMBER: JPM-053

**TITLE: Cross-Tying 480 Volt Buses**

START TIME: 08:00

STEP 1      —      Performance Steps: Verify combined load of Bus 22A and Bus 22B is < 1800 amps.

GRADE \_\_\_\_ Standards: *Examinee observes ammeters on C-08 for Bus 22A and Bus 22B and determines that adding both together will NOT exceed 1800 amps or states that placing the two groups of backup heaters in PULL-TO-LOCK will prevent exceeding 1800 amps.*

**Cue:** If necessary, ask examinee why the backup heaters were placed in PULL-TO-LOCK..

Comments: This is a note prior to first step. Placing the two groups of backup heaters in PULL-TO-LOCK will prevent exceeding 1800 amps.

~~~~~

STEP 2      X   Performance Steps: Place SYN SEL SW 22A/22B in the CL TIE/TRIP A position

GRADE \_\_\_\_ X Standards:

- *Examinee obtains sync switch handle and places it in the 22A/22B sync switch slot.*
- *Examinee rotates switch to the CL TIE TRIP A position.*

Cue: 

Comments:

~~~~~

**PERFORMANCE INFORMATION**

JPM ID NUMBER: JPM-053

TITLE: **Cross-Tying 480 Volt Buses**

STEP 3          Performance Steps: Ensure bus voltages are matched.

GRADE          Standards:     *Examinee observes the volt meters on C-08 for Bus 22A and Bus 22B and determines they are matched.*

Cue: **If necessary, ask examinee what he/she is observing.**

Comments:

~~~~~

STEP 4     X Performance Steps: Using 22A/22B TIE BKR, 22A-1T-2 (B0111), breaker control switch, close 22A/22B TIE BKR, 22A-1T-2 (B0111).

GRADE          X Standards:     *Examinee momentarily places the 22A/22B TIE BKR, 22A-1T-2 (B0111), breaker control switch in the CLOSE position.*

Cue:

Comments:

~~~~~

STEP 5          Performance Steps: Ensure 22A/22B TIE BKR, 22A-1T-2 (B0111), has closed and 22A SPLY BKR, 24A1-1X3-2 (B0102) has opened.

GRADE          Standards:     *Examinee observes that the 22A/22B TIE BKR, 22A-1T-2 (B0111), has a red 'closed' light and 22A SPLY BKR, 24A1-1X3-2 (B0102) has a green 'open' light.*

Cue: **If necessary, ask the examinee how he/she knows that the appropriate equipment response occurred.**

Comments:

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**PERFORMANCE INFORMATION**

JPM ID NUMBER: JPM-053

TITLE: **Cross-Tying 480 Volt Buses**

---

STEP 6     X   Performance Steps: To de-energize 480 volt transformer, 24A1-1X, open 24A/22A FDR BKR, 24A1-2 (A103).

GRADE \_\_\_\_ X   Standards:     *Examinee opens 24A/22A FDR BKR, 24A1-2 (A103).*

Cue: **If necessary, inform the examinee that the transformer is required to be deenergized at this time.**

Comments:

~~~~~

Comments:     **After this step is completed, the JPM is considered complete.**

STOP TIME: 



### VERIFICATION OF JPM COMPLETION

Job Performance Measure No. JPM-053

Rev. 6

Date Performed: \_\_\_\_\_

Operator: \_\_\_\_\_

Evaluator(s): \_\_\_\_\_

For examinee to achieve a satisfactory grade, **ALL** critical steps must be completed correctly. If task is Time Critical, it **MUST** be completed within the specified time to achieve a satisfactory grade.

Time Critical Task? Yes \_\_\_\_\_ No X

Validated Time (minutes): 10

Actual Time to Complete (minutes): \_\_\_\_\_

Result of JPM: \_\_\_\_\_ (Denote by an S for satisfactory or a U for unsatisfactory)

Areas for Improvement:

## EXAMINEE HANDOUT

JPM ID Number: JPM-053

### Initiating Cues:

- You are the SPO.
- Electrical maintenance has given work control an AWO to replace 480 volt transformer, 24A1-1X.
- The US has directed you to cross tie Bus 22A with Bus 22B in accordance with OP 2344A, 480 Volt Load Centers, to allow tagging of the transformer.

### Initial Conditions:

- The plant is @ 100% power and NOT/NOP.
- Group 1 and Group 2 backup heaters are in PULL-TO-LOCK and caution tagged.
- "C" TBCCW Pump is in service and "A" TBCCW Pump has been secured.

## JOB PERFORMANCE MEASURE APPROVAL SHEET

I. JPM Title: Respond to Circulating Water Malfunction

ID Number: JPM-224

Revision: 0

II. Initiated:

R. J. Ashley  
Developer

8/30/02  
Date

III. Reviewed:

[Signature]  
Technical Reviewer

9/4/02  
Date

IV. Approved:

N/A  
User Department Supervisor

            
Date

[Signature]  
Nuclear Training Supervisor

9/5/02  
Date

## JOB PERFORMANCE MEASURE WORKSHEET

Facility: MP-2

Examinee: \_\_\_\_\_

JPM Number: JPM-224

Rev. 0

Task Title: Respond to Circulating Water Malfunction

System: Plant Service Systems

Time Critical Task: Yes \_\_\_\_\_ No X

Validated Time (minutes): 15

Task No.(s): NUTIMS # 000-04-250

Applicable To: SRO X RO X PEO \_\_\_\_\_

K/A No.: 075 A2.02 K/A Rating: 2.5/2.7\*

Method of Testing:

Simulated Performance: \_\_\_\_\_ Actual Performance: X

Location:

Classroom: \_\_\_\_\_ Simulator: X In-Plant: \_\_\_\_\_

Task Standards:

At the completion of this JPM the examinee has started the "B" Circulating Water Pump, observed the trip of the "B" Circulating Water Pump, and properly cross tied "A" and "B" water boxes with "A" Circulating Water Pump supplying.

Required Materials

(procedures,equipment):

- OP 2325A
- AOP 2517
- ARP 2590E

General References:

- OP 2325A, Circulating Water System, Rev. 026-03
- AOP 2517, Circulating Water Malfunctions, Rev. 000-02
- ARP 2590E, Rev. 008-06

\* \* \* \* READ TO THE EXAMINEE \* \* \* \*

*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. You may use any approved reference materials normally available in the Control Room, including logs. Make all written reports, oral reports, alarm acknowledgments, and log entries as if the evolution was actually being performed.*

## JOB PERFORMANCE MEASURE WORKSHEET

JPM Number: JPM-224

Rev. 0

### Initiating Cues:

- You are the SPO.
- The US has directed you to start the "B" Circulating Water Pump.
- The examiner will act as the US.

### Initial Conditions:

- "A" and "B" water boxes area cross tied with "A" Circulating Water Pump supplying.
- "B" Circulating Water Pump was tagged for PMs. All tags are cleared.
- Water Box Priming is in service on all water boxes.
- The "B" Circulating Water Bay has been educted. Water is visible in the suction line sight glass.
- "B" Circulating Water Pump lube water flow is 11 gpm.
- There are NO diving operations in progress.
- The screen wash system is in 'manual' with screens in 'slow'.

### Simulator Requirements:

- Reset to any stable 100% power IC.
- Cross tie "A" and "B" water boxes with the "A" Circulating Water Pump supplying.
- Insert malfunction CW01B on BT40 to trip the "B" Circulating Water Pump when the associated Condenser Inlet valve, CW-11G is full open.

---

### **\*\*\*\* NOTES TO EXAMINER \*\*\*\***


1. Critical steps for this JPM are indicated with an "X". For the examinee to achieve a satisfactory grade, **ALL** critical steps must be completed correctly.
2. When examinee states what his/her simulated action/observation would be, read the appropriate "Cue".
3. If necessary, question examinee for details of simulated actions / observations (i.e. "What are you looking at?" or "What are you observing?").
4. Under **NO** circumstances must the examinee be allowed to manipulate any devices during the performance of this JPM (in-plant only).

**PERFORMANCE INFORMATION**

JPM ID NUMBER: JPM-224

TITLE: **Respond to Circulating Water Malfunction**

---

**START TIME:** 

STEP 1       X   Performance Steps: Ensure condenser inlet X-TIE, CW-12D is closed.

GRADE        X   Standards:     *Examinee places the condenser inlet X-TIE, CW-12D, switch in the CLOSE position.*

Cue: 

Comments:     

- This action will stop circ water flow to the "B" water box and may result in a slight degradation of vacuum.
- The HI COND D/T and the HI COND DIS TEMP alarms will be annunciated. These are expected alarms for the condition.

~~~~~

STEP 2          Performance Steps: Ensure "B" water box OUTLET, CW-11B, is open.

GRADE           Standards:     *Examinee observes the green open light only is lit for "B" water box OUTLET, CW-11B*

Cue: 

Comments:

~~~~~

### PERFORMANCE INFORMATION

JPM ID NUMBER: JPM-224

TITLE: **Respond to Circulating Water Malfunction**

---

STEP 3     X Performance Steps: When at least 5 seconds has elapsed, position "B" water box INLET, CW-11G to between 20 and 25% open.

GRADE \_\_\_\_ X Standards:

- *Examinee waits 5 seconds then places "B" water box INLET, CW-11G to the OPEN position.*
- *When the red and green lights are lit (indicating 20 to 25% open), the examinee places the hand switch for CW-11G in the N position.*

Cue:

Comments: The examinee is allowed more than one attempt to position the inlet valve to 20-25% open.

~~~~~

STEP 4     \_\_\_\_ Performance Steps: Locally check that the "C" Circulating Water Pump is NOT rotating backwards.

GRADE \_\_\_\_ \_\_\_\_ Standards: *Examinee dispatches a PEO to the Intake Structure to ensure the "B" Circulating Water Pump is NOT rotating backwards.*

Cue: **Report that the "B" Circulating Water Pump is NOT rotating backwards.**

Comments:

~~~~~

**PERFORMANCE INFORMATION**

JPM ID NUMBER: JPM-224

TITLE: **Respond to Circulating Water Malfunction**

---

STEP 5            Performance Steps: Position "B" water box INLET, CW-11G to between 20 and 25% open.

GRADE            Standards:     *Examinee states that the "B" water box INLET, CW-11G is 20 to 25% open.*

Cue: 

Comments:     This step was performed previously.

~~~~~

STEP 6       X   Performance Steps: Start the "B" Circulating Water Pump and monitor the pump starting current.

GRADE              X   Standards:     *Examinee momentarily places the "B" Circulating Water Pump hand switch in the START position and observes starting current.*

Cue: 

Comments:

~~~~~

STEP 7       X   Performance Steps: When the pump starting current has decayed, open "B" water box INLET, CW-11G.

GRADE              X   Standards:     *Examinee places the "B" water box INLET, CW-11G, to the OPEN position*

Cue: 

Comments:

~~~~~



## PERFORMANCE INFORMATION

JPM ID NUMBER: JPM-224

**TITLE: Respond to Circulating Water Malfunction**

**STEP 8**      X Performance Steps:

- Observe the CIRC WATER PUMP B OVERLOAD/TRIP annunciator and "B" Circulating Water Pump amps are at zero.
- Obtain the annunciator response procedure.

GRADE \_\_\_\_ X Standards:

- Examinee observes the CIRC WATER PUMP B OVERLOAD/TRIP annunciator, B-9, alarm and "B" Circulating Water Pump amps at zero.
- Examinee obtains ARP 2590E for B-9.

Cue:

- Acknowledge the trip of the “B” Circulating Water Pump.
- If required, direct the examinee to obtain the annunciator response procedure and perform the required actions.

**Comments:**

**STEP 9**          Performance Steps: Go to AOP 2517, Circulating Water Malfunctions.

GRADE \_\_\_\_ Standards: *Examinee performs the required steps of the Annunciator Response Procedure and obtains AOP 2517, Circulating Water Malfunctions.*

**Cue:** If required, direct the examinee to perform the applicable steps of AOP 2517.

Comments:

**PERFORMANCE INFORMATION**

JPM ID NUMBER: JPM-224

TITLE: **Respond to Circulating Water Malfunction**

---

STEP 10    \_\_\_ Performance Steps: Ensure "A" or "B" Circulating Water Pump is operating and ensure "C" or "D" Circulating Water Pump is operating.

GRADE \_\_\_    \_\_\_ Standards:    *Examinee states that "A", "C" and "D" Circulating Water Pumps are operating.*

Cue: 

Comments:

~~~~~

STEP 11    \_\_\_ Performance Steps: Go to Section 5.0, Trip of One Circulating Water Pump.

GRADE \_\_\_    \_\_\_ Standards:    *Examinee proceeds to Section 5.0 of AOP 2517.*


Cue: 

Comments:

~~~~~

STEP 12    \_\_\_ Performance Steps: Stop any process liquid waste discharges.

GRADE \_\_\_    \_\_\_ Standards:    *Examinee informs the US/SM that process liquid waste discharges must be secured.*

Cue: 

Comments:

~~~~~

**PERFORMANCE INFORMATION**

JPM ID NUMBER: JPM-224

TITLE: **Respond to Circulating Water Malfunction**

---

STEP 13         Performance Steps: Ensure Sodium Hypochlorite shocking of bays is NOT in progress.

GRADE              Standards:    *Examinee informs the US/SM that Sodium Hypochlorite shocking of bays must be secured, if in progress.*

Cue: **Inform examinee that Sodium Hypochlorite shocking of bays is NOT in progress.**

Comments:

~~~~~

STEP 14      X   Performance Steps: Close "B" water box INLET, CW-11G

GRADE           X   Standards:    *Examinee places the hand switch for the "B" water box INLET, CW-11G, in the CLOSE position and observes the green only light is lit.*

Cue:

Comments:

~~~~~

### PERFORMANCE INFORMATION

JPM ID NUMBER: JPM-224

TITLE: **Respond to Circulating Water Malfunction**

---

- STEP 15    X Performance Steps: Perform the following:
- Place "B" Circulating Water Pump in PULL-TO-LOCK.
  - Ensure "B" water box OUTLET, CW-11B is open.
  - Open Condenser inlet XTIE, CW-12D.

- GRADE \_\_\_\_ X Standards:    *Examinee performs the following:*
- *Places "B" Circulating Water Pump in PULL-TO-LOCK.*
  - *Observes the red only light is lit for "B" water box OUTLET, CW-11B.*
  - *Places the hand switch for Condenser inlet XTIE, CW-12D, in the OPEN position and observes the red only light is lit.*

Cue: **If required, direct examinee to cross tie "A" and "B" water boxes with "A" Circulating Pump supplying.**

Comments:

~~~~~

- STEP 16    X Performance Steps: Check condenser back pressure is less than or equal to 4.5 inches Hg.

- GRADE \_\_\_\_ X Standards:    *Examinee observes condenser back pressure on P-5124 or recorder 5265 has stabilized at less than 4.5 inches Hg.*

Cue:

Comments:

~~~~~

Comments:    **After this step is completed, the JPM is considered complete.**

STOP TIME:

### VERIFICATION OF JPM COMPLETION

Job Performance Measure No. JPM-224

Rev. 0

Date Performed: \_\_\_\_\_

Operator: \_\_\_\_\_

Evaluator(s): \_\_\_\_\_

|                                                                                                                                                                                                                                     |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| For examinee to achieve a satisfactory grade, <b><u>ALL</u></b> critical steps must be completed correctly. If task is Time Critical, it <b><u>MUST</u></b> be completed within the specified time to achieve a satisfactory grade. |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

Time Critical Task? Yes \_\_\_\_\_ No X

Validated Time (minutes): 15

Actual Time to Complete (minutes): \_\_\_\_\_

Result of JPM: \_\_\_\_\_ (Denote by an S for satisfactory or a U for unsatisfactory)

Areas for Improvement:

## EXAMINEE HANDOUT

JPM ID Number: JPM-224

### Initiating Cues:

- You are the SPO.
- The US has directed you to start the "B" Circulating Water Pump.
- The examiner will act as the US.

### Initial Conditions:

- "A" and "B" water boxes area cross tied with "A" Circulating Water Pump supplying.
- "B" Circulating Water Pump was tagged for PMs. All tags are cleared.
- Water Box Priming is in service on all water boxes.
- The "B" Circulating Water Bay has been educted. Water is visible in the suction line sight glass.
- "B" Circulating Water Pump lube water flow is 11 gpm.
- There are NO diving operations in progress.
- The screen wash system is in 'manual' with screens in 'slow'.

## JOB PERFORMANCE MEASURE APPROVAL SHEET

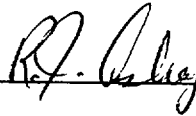
I. JPM Title: Startup and Parallel CEDM MG Sets

ID Number: JPM-013

Revision: 6

II. Initiated:

R. J. Ashley  
Developer



8/28/02  
Date

III. Reviewed:

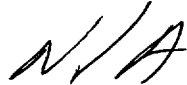
Richard Ashley  
Technical Reviewer



9/5/02  
Date

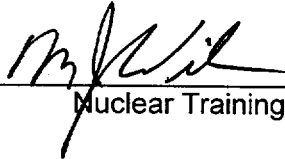
IV. Approved:

N/A  
User Department Supervisor



                      
Date

M. J. Wilk  
Nuclear Training Supervisor



9/5/02  
Date

## JOB PERFORMANCE MEASURE WORKSHEET

Facility: MP-2 Examinee: \_\_\_\_\_

JPM Number: JPM-013 Rev. 6

Task Title: Startup and Parallel CEDM MG Sets

System: CEDM

Time Critical Task: Yes \_\_\_\_\_ No X

Validated Time (minutes): 20

Task No.(s): NUTIMS # 001-01-019

Applicable To: SRO X RO X PEO \_\_\_\_\_

K/A No.: 001 A.408 K/A Rating: 3.7/3.4

### Method of Testing:

Simulated Performance: X Actual Performance: \_\_\_\_\_

### Location:

Classroom: \_\_\_\_\_ Simulator: \_\_\_\_\_ In-Plant: X

Task Standards: At the completion of this JPM, the examinee has successfully started and paralleled the "A" CEDM MG set with the "B" CEDM MG set.

Required Materials OP 2302A  
(procedures,equipment):

General References: OP 2302A, Section 4.7 (Rev. 016-05)

### **\*\*\*\* READ TO THE EXAMINEE \*\*\*\***

*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. You may use any approved reference materials normally available in the Control Room, including logs. Make all written reports, oral reports, alarm acknowledgments, and log entries as if the evolution was actually being performed.*



## JOB PERFORMANCE MEASURE WORKSHEET

JPM Number: JPM-013

Rev. 5

Initiating Cues: The Unit Supervisor has directed you to startup the "A" CEDM MG set and parallel it with the "B" CEDM MG set.

Initial Conditions:

- The plant is preparing for startup.
- The "B" CEDM MG set has been placed in service with its load contactor closed.
- All TCBs are open except TCB-9, which is closed.
- Both voltage droop circuits are on.
- In-plant loads are powered from the RSST.
- NO maintenance has been performed on "A" or "B" CEDM MG sets.

Simulator Requirements: N/A

---

### **\*\*\*\* NOTES TO EXAMINER \*\*\*\***

1. Critical steps for this JPM are indicated with an "X". For the examinee to achieve a satisfactory grade, **ALL** critical steps must be completed correctly.
2. When examinee states what his/her simulated action/observation would be, read the appropriate "Cue".
3. If necessary, question examinee for details of simulated actions / observations (i.e. "What are you looking at?" or "What are you observing?").
4. Under **NO** circumstances must the examinee be allowed to manipulate any devices during the performance of this JPM.

**PERFORMANCE INFORMATION**

JPM ID NUMBER: JPM-013

TITLE: Startup and Parallel CEDM MG Sets

---

START TIME: 

STEP 1           Performance Steps: Ensure bus 24C and 24D are receiving power from the same source.

GRADE                Standards:      *Examinee observes that 24C and 24D are powered from the RSST by indications on C-08 or states that initial conditions state that all in-plant loads are powered from the RSST.*


Cue: 

Comments:

~~~~~

STEP 2      X Performance Steps: Place "MG-A" switch to "START" on C-04.

GRADE           X Standards:      *Examinee states that they place "MG-A" hand switch to "START" or request that it be done by Control Room personnel.*

Cue:  If requested, report, "MG-A" hand switch has been taken to "START".

Comments:

~~~~~

**PERFORMANCE INFORMATION**

JPM ID NUMBER: JPM-013

TITLE: Startup and Parallel CEDM MG Sets

---

STEP 3      X Performance Steps: Place "A" CEDM MG "MOTOR INPUT" breaker to "ON" on C-29.

GRADE \_\_\_\_ X Standards: *Examinee that they close the MG motor supply breaker by taking the handle on top left of C-29 to "ON".*

Cue: **Breaker is closed.**

Comments:

~~~~~

STEP 4      X Performance Steps: Place the "A" CEDM MG "INCOMING GENERATOR" synchronizing selector switch to "LOCAL".

GRADE \_\_\_\_ X Standards: *Examinee states that they place the synchroscope selector switch on C-29 in "LOCAL".*

Cue: **Switch is in "LOCAL".**

Comments:

~~~~~

## PERFORMANCE INFORMATION

JPM ID NUMBER: JPM-013

TITLE: Startup and Parallel CEDM MG Sets

- STEP 5      X Performance Steps: Start the "A" CEDM MG set by performing the following:
1. Press "LOCAL" "MOTOR ON" button and hold for approximately 4 to 5 seconds.
  2. Release the "MOTOR ON" button.
  3. Allow MG set to come up to rated speed (red "LOCAL" "MOTOR ON" light lit).
  4. Observe rise in "LOCAL" "GENERATOR VOLTAGE" indication.
  5. Approximately 170 seconds following start, listen for audible clunk (indicates starting winding deenergized).

- GRADE          X Standards:
- *Examinee states that they press the "LOCAL" "MOTOR ON" pushbutton for 4-5 sec.*
  - *Examinee states that they observe the red "MOTOR ON" light illuminates when the MG set is at speed*
  - *Examinee states that they observe the voltage rise*
  - *Examinee states that they listen for the audible clunk during the start.*

Cue: Inform examinee:

- 4-5 sec. has elapsed.
- the red "MOTOR ON" light is lit and MG set is at speed
- voltage rises to 240 volts
- audible clunk was heard.

Comments:

~~~~~

- STEP 6          Performance Steps: Using "LOCAL" "GEN VOLTAGE ADJUSTMENT" switch, adjust output voltage as close as possible to 240 volts.

- GRADE              Standards: *Examinee states that they adjust output voltage to 240 volts using the "LOCAL" "GEN VOLTAGE ADJUSTMENT" switch.*

Cue: When examinee simulates adjusting voltage, inform examinee that voltage is @ 240V.

Comments:

~~~~~

## PERFORMANCE INFORMATION

JPM ID NUMBER: JPM-013

TITLE: Startup and Parallel CEDM MG Sets

---

STEP 7      X Performance Steps: Place "A" CEDM MG "GENERATOR OUTPUT" breaker to "ON".

GRADE \_\_\_\_ X Standards:      *Examinee states that they would close the MG output breaker by taking the handle on C-29 to "ON".*

Cue: **Breaker is closed.**

Comments:      Note: This step does NOT place the MG set on the bus.

~~~~~

STEP 8      X Performance Steps: If synchroscope is NOT at 12 o'clock and is NOT rotating, perform the following to get synchroscope to move:

- Use "REMOTE" "GENERATOR VOLTAGE ADJUSTMENT" switch to raise "REMOTE GENERATOR VOLTS" to 250 VAC.
- Use "LOCAL" "GENERATOR VOLTAGE ADJUSTMENT" switch to lower "LOCAL" "GENERATOR VOLTS" to 235 VAC.

GRADE \_\_\_\_ X Standards:

1. *Examinee states that they observe the synchroscope on C-29.*
2. *Examinee states that they use the "REMOTE" "GENERATOR VOLTAGE ADJUSTMENT" switch to raise voltage of the "B" MG set to 250 VAC and "LOCAL" "GENERATOR VOLTAGE ADJUSTMENT" switch to lower the voltage of the "A" MG set to 235 VAC.*

Cue: **1. Synchroscope is stopped at the 3 o'clock position.  
2. After adjustment, synchroscope is rotating toward the 12 o'clock position.**

Comments:

~~~~~

## PERFORMANCE INFORMATION

JPM ID NUMBER: JPM-013      TITLE: Startup and Parallel CEDM MG Sets

---

STEP 9      X Performance Steps: When synchroscope is at approximately the 12 o'clock position, adjust both MG set output voltages to 240 VAC (the synchroscope should be nearly stationary).

GRADE          X Standards:      *Examinee states that they lower voltage of the "B" MG set to 240 VAC and raise voltage of the "A" MG set to 240 VAC to get the needle to stop at approximately the 12 o'clock position.*

Cue: **Voltages are at 240 VAC; needle is stopped at the 12 o'clock position.**

Comments:

STEP 10      X Performance Steps: Press and hold "LOCAL" "LOAD ON" button and release when "LOCAL" "LOAD ON" light is lit.

GRADE          X Standards:      *Examinee states that they press the "LOAD ON" button until the "LOAD ON" light is lit.*

Cue: **The "LOAD ON" light is lit.**

Comments:

~~~~~

STEP 11          Performance Steps: Place "A" CEDM MG "INCOMING GENERATOR" synchronizing selector switch to "OFF".

GRADE              Standards:      *Examinee states that they place the synchroscope selector switch on C-29 to "OFF".*

Cue: **Synchroscope selector switch is in "OFF".**

Comments:

~~~~~

**PERFORMANCE INFORMATION**

JPM ID NUMBER: JPM-013 TITLE: Startup and Parallel CEDM MG Sets

---

STEP 12    \_\_\_ Performance Steps: Press and Release "RESET" button.  
Ensure relays "4TD", "LO AMP", "HI AMP", "OVR" and  
"SK" lights are not lit.

GRADE \_\_\_    \_\_\_ Standards:    *Examinee states that they open the back door of C-29,  
press the reset button, and observe designated relay  
lights are NOT lit.*

Cue: **The relay lights are out.**

Comments:    If the rear door of panel C-29 CANNOT be opened due to operational/safety  
concerns, then the examinee may successfully complete this JPM by describing  
the location of the reset button relay lights.    The reset button and relay lights  
are located in the approximate center of the panel.

~~~~~

Comments:    **After this step is completed, the JPM is considered complete.**

STOP TIME: **\_\_\_\_\_**

### VERIFICATION OF JPM COMPLETION

Job Performance Measure No. JPM-013

Rev. 6

Date Performed: \_\_\_\_\_

Operator: \_\_\_\_\_

Evaluator(s): \_\_\_\_\_

For examinee to achieve a satisfactory grade, **ALL** critical steps must be completed correctly. If task is Time Critical, it **MUST** be completed within the specified time to achieve a satisfactory grade.

Time Critical Task? Yes \_\_\_\_\_ No X

Validated Time (minutes): 20

Actual Time to Complete (minutes): \_\_\_\_\_

Result of JPM: \_\_\_\_\_ (Denote by an S for satisfactory or a U for unsatisfactory)

Areas for Improvement:



## EXAMINEE HANDOUT

JPM ID Number: JPM-013

Initiating Cues: The Unit Supervisor has directed you to startup the "A" CEDM MG set and parallel it with the "B" CEDM MG set.

Initial Conditions:

- The plant is preparing for startup.
- The "B" CEDM MG set has been placed in service with its load contactor closed.
- All TCBs are open except TCB-9, which is closed.
- Both voltage droop circuits are on.
- In-plant loads are powered from the RSST.
- NO maintenance has been performed on "A" or "B" CEDM MG sets.

## JOB PERFORMANCE MEASURE APPROVAL SHEET

I. JPM Title: Supplying Emergency Backup Air to 2-CH-192

ID Number: JPM-045

Revision: 6

II. Initiated:

R. J. Ashley  
Developer

8/28/02  
Date

III. Reviewed:

Richard Ashley  
Technical Reviewer

9/5/02  
Date

IV. Approved:

N/A  
Cognizant Plant Supervisor (Optional)

                      
Date

M. J. Smith  
Nuclear Training Supervisor

9/5/02  
Date

## JOB PERFORMANCE MEASURE WORKSHEET

Facility: MP-2 Examinee: \_\_\_\_\_

JPM Number: JPM-045 Rev. 6

Task Title: Supplying Emergency Backup Air to 2-CH-192

System: Plant Service Systems

Time Critical Task: Yes \_\_\_\_\_ No X

Validated Time (minutes): 10

Task No.(s): NUTIMS # 078-01-056

Applicable To: SRO X RO X PEO \_\_\_\_\_

K/A No.: 078 K4.01 K/A Rating: 2.7/2/9

### Method of Testing:

Simulated Performance: X Actual Performance: \_\_\_\_\_

### Location:

Classroom: \_\_\_\_\_ Simulator: \_\_\_\_\_ In-Plant: X

Task Standards: At the completion of this JPM, the examinee has demonstrated alignment of emergency backup air to 2-CH-192.

Required Materials OP 2332B  
(procedures,equipment):

General References: OP 2332B, Instrument Air System, Section 4.21 (Rev. 019-04)

### **\*\*\*\* READ TO THE EXAMINEE \*\*\*\***

*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. You may use any approved reference materials normally available in the Control Room, including logs. Make all written reports, oral reports, alarm acknowledgments, and log entries as if the evolution was actually being performed.*

## JOB PERFORMANCE MEASURE WORKSHEET

JPM Number: JPM-045

Rev. 6

Initiating Cues: The Unit Supervisor has directed you to supply emergency backup air to 2-CH-192.

Initial Conditions: The plant has tripped due to a complete loss of Instrument Air.

Simulator Requirements: N/A

---

### **\*\*\*\*\* NOTES TO EXAMINER \*\*\*\*\***

1. Critical steps for this JPM are indicated with an "X". For the examinee to achieve a satisfactory grade, **ALL** critical steps must be completed correctly.
2. When examinee states what his/her simulated action/observation would be, read the appropriate "Cue".
3. If necessary, question examinee for details of simulated actions / observations (i.e. "What are you looking at?" or "What are you observing?").
4. Under **NO** circumstances must the examinee be allowed to manipulate any devices during the performance of this JPM.

**PERFORMANCE INFORMATION**

JPM ID NUMBER: JPM-045

TITLE: Supplying Emergency Backup Air to 2-CH-192

---

START TIME: 

STEP 1         Performance Steps: Adjust backup air PCV, 2-IA-594, to minimum (fully counterclockwise).

GRADE            Standards:      *Examinee locates air bottle and 2-IA-594 and explains they would turn valve fully counterclockwise.*

Cue: 

Comments:

~~~~~

STEP 2      X Performance Steps: Slowly open master stop C-4A, 2-IA-602.

GRADE         X Standards:      *Examinee locates 2-IA-602 and explains they would slowly open it by turning it in the counterclockwise direction.*

Cue: 

Comments:

~~~~~

STEP 3      X Performance Steps: Open master stop, 2-IA-593.

GRADE         X Standards:      *Examinee locates 2-IA-593 and explains they would open it by turning it in the counterclockwise direction.*

Cue: 

Comments:

~~~~~

**PERFORMANCE INFORMATION**

JPM ID NUMBER: JPM-045 TITLE: Supplying Emergency Backup Air to 2-CH-192

---

STEP 4      X Performance Steps: Adjust backup air PCV, 2-IA-594, clockwise and Establish 100 psig outlet pressure.

GRADE \_\_\_\_ X Standards: *Examinee simulates turning 2-IA-594 in the clockwise direction, while observing the PCV outlet pressure gauge, until 100 psig is achieved.*

Cue: **Use pen to show pressure rise to 100 psig and then stabilizing when examinee stops turning valve.**

Comments:

~~~~~

STEP 5      X Performance Steps: Slowly open master stop, 2-IA-596.

GRADE \_\_\_\_ X Standards: *Examinee locates 2-IA-596 and explains they would open it by turning it in the counterclockwise direction.*

Cue: **Valve is open.**

Comments: Examinee may also state the monitoring requirements while supplying backup air (daily or every 4 hours while in an EOP), but it is NOT required.

~~~~~

Comments: **After this step is completed, the JPM is considered complete.**

STOP TIME:

VERIFICATION OF JPM COMPLETION

Job Performance Measure No. JPM-045

Rev. 6

Date Performed: \_\_\_\_\_

Operator: \_\_\_\_\_

Evaluator(s): \_\_\_\_\_

For examinee to achieve a satisfactory grade, **ALL** critical steps must be completed correctly. If task is Time Critical, it **MUST** be completed within the specified time to achieve a satisfactory grade.

Time Critical Task? Yes \_\_\_\_\_ No X

Validated Time (minutes): 10

Actual Time to Complete (minutes): \_\_\_\_\_

Result of JPM: \_\_\_\_\_ (Denote by an S for satisfactory or a U for unsatisfactory)

Areas for Improvement:

## EXAMINEE HANDOUT

JPM ID Number: JPM-045

Initiating Cues: The Unit Supervisor has directed you to supply emergency backup air to 2-CH-192.

Initial Conditions: The plant has tripped due to a complete loss of Instrument Air.



## JOB PERFORMANCE MEASURE APPROVAL SHEET

I JPM Title: Establish Manual Control of Hydrogen Purge Valve

ID Number: JPM-137

Revision: 2

*Step #6 Pastoral?*

II. Initiated:

R. J. Ashley  
Developer

*R. J. Ashley*

8/28/02  
Date

III. Reviewed:

Richard Upm  
Technical Reviewer

9/5/02  
Date

IV. Approved:

N/A  
Cognizant Plant Supervisor (Optional)

                      
Date

M. J. Smith  
Nuclear Training Supervisor

7/5/02  
Date

## JOB PERFORMANCE MEASURE WORKSHEET

Facility: MP-2                      Examinee: \_\_\_\_\_

JPM Number: JPM-137                      Rev. 2

Task Title: Establish Manual Control of Hydrogen Purge Valve

System: Containment Integrity

Time Critical Task:    Yes \_\_\_\_\_ No X

Validated Time (minutes): 15

Task No.(s): NUTIMS # 028-01-019

Applicable To:            SRO X            RO X            PEO \_\_\_\_\_

K/A No. 103 A4.01            K/A Rating 3.2\*/3.3

### Method of Testing:

Simulated Performance: X            Actual Performance: \_\_\_\_\_

### Location:

Classroom: \_\_\_\_\_            Simulator: \_\_\_\_\_            In-Plant: X

### Task Standards:

At the completion of this JPM, manual control has been established for 2-EB-99.

### Required Materials (procedures, equipment):

OP 2313C, Section 4.7

### General References:

OP 2313C, Containment Post-Incident Hydrogen Control, Section 4.7 (Rev. 019-02)

### **\*\*\*\* READ TO THE EXAMINEE \*\*\*\***

*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. You may use any approved reference materials normally available in the Control Room, including logs. Make all written reports, oral reports, alarm acknowledgments, and log entries as if the evolution was actually being performed.*

## JOB PERFORMANCE MEASURE WORKSHEET

Initiating Cues:

The US has directed you to take local manual control of 2-EB-99 and open the valve to initiate venting of Containment.

Initial Conditions:

- The plant is in MODE 5 with Containment integrity established.
- 2-EB-92 and 2-EB-99 are closed with associated fuse blocks tagged for work on valve indicating lights.
- Containment pressure is +10 inches of water and rising slowly.
- The Control Room has begun to initiate venting of Containment to EBFS.
- 2-EB-100 is open.

Simulator Requirements:

N/A

---

**\*\*\*\* NOTES TO EXAMINER \*\*\*\***

1. Critical steps for this JPM are indicated with an "X". For the examinee to achieve a satisfactory grade, **ALL** critical steps must be completed correctly.
2. When examinee states what his/her simulated action/observation would be, read the appropriate "Cue".
3. If necessary, question examinee for details of simulated actions / observations (i.e. "What are you looking at?" or "What are you observing?").
4. Under **NO** circumstances must the examinee be allowed to manipulate any devices during the performance of this JPM.

## PERFORMANCE INFORMATION

JPM ID NUMBER: JPM-137

TITLE: Establish Manual Control of Hydrogen Purge Valve

---

START TIME:           

STEP   1     X   Performance Steps: Obtain fork-shaped pry bar.

GRADE       X   Standards: *Examinee obtains fork-shaped pry bar located by EOP box on large column in 38'6" East Penetration Room.*

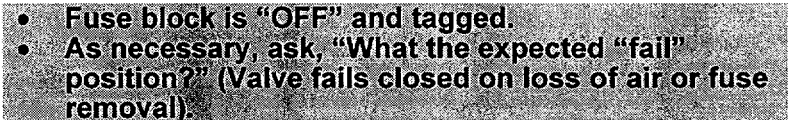
Cue: 

Comments:

~~~~~

STEP   2       Performance Steps: Ensure fuse block "FB-CFT-C01R" (2-EB-99) is "OFF".

GRADE         Standards: *Examinee states that they request the Control Room to ensure fuse block is in "OFF"*  
*OR*  
*Examinee observes fuse block FB-CFT-C01R in the "OFF" position.*

Cue: 

- Fuse block is "OFF" and tagged.
- As necessary, ask, "What the expected "fail" position?" (Valve fails closed on loss of air or fuse removal).

Comments:

~~~~~

**PERFORMANCE INFORMATION**

JPM ID NUMBER: JPM-137

TITLE: Establish Manual Control of Hydrogen Purge Valve

---

STEP 3         Performance Steps:    Ensure valve (2-EB-99), is closed.

GRADE              Standards:    *Examinee states they observe local valve position indication to ensure valve is closed.*

Cue: **Valve indicates closed.**

Comments:

STEP 4    X Performance Steps:    As necessary, align manual operator shaft with valve stem.

GRADE         X Standards:    *Examinee states they would ensure the alignment key (lever arm), on manual operator shaft was aligned with the key-way on the valve stem by adjusting the manual hand wheel as required.*

Cue: **The manual operator shaft is aligned with the valve stem.**

Comments:

~~~~~

STEP 5    X Performance Steps:    Loosen allen head screw on lever arm of manual operator shaft and engage lever arm.

GRADE         X Standards:    *Examinee states they would turn the allen head screw counterclockwise using locally mounted allen wrench and engage the lever arm.*

Cue: **The lever arm is engaged.**

Comments:

~~~~~

**PERFORMANCE INFORMATION**

JPM ID NUMBER: JPM-137

TITLE: Establish Manual Control of Hydrogen Purge Valve

---

STEP 6            Performance Steps:    Tighten allen head screw on lever arm of manual operator shaft until snug.

GRADE                 Standards:    *Examinee states that once the arm is engaged they would turn the allen screw clockwise to tighten it until snug.*

Cue: **Allen screw is snug.**

Comments:

~~~~~

STEP 7    X    Performance Steps:    Using fork-shaped pry bar, apply force to extend air actuator stem approximately 1/8 inch and remove pin connecting air actuator to valve stem.

GRADE         X    Standards:    *Examinee states they would insert the pry bar onto the collar nut of the air actuator stem and apply force to extend the stem, then remove the pin.*

Cue: **Pin is removed.**

Comments:

~~~~~

**PERFORMANCE INFORMATION**

JPM ID NUMBER: JPM-137

TITLE: Establish Manual Control of Hydrogen Purge Valve

---

STEP 8 X Performance Steps: Manually operate valve as directed.

GRADE      X Standards: *Examinee states they would turn the manual hand wheel to open the valve as indicated by the local position indicator.*

Cue: **The valve is open.**

Comments:

~~~~~

Comments: **After this step is completed, the JPM is considered complete.**

**NOTE:**

**\*\*\* Ensure pry bar is returned to it's original storage location. \*\*\***

STOP TIME: 00:00:00

### VERIFICATION OF JPM COMPLETION

Job Performance Measure No. JPM -137

Rev. 2

Date Performed: \_\_\_\_\_

Operator: \_\_\_\_\_

Evaluator(s): \_\_\_\_\_

For examinee to achieve a satisfactory grade, **ALL** critical steps must be completed correctly.  
If task is Time Critical, it **MUST** be completed within the specified time to achieve a satisfactory grade.

Time Critical Task? Yes \_\_\_\_\_ No X

Validated Time (minutes): 15

Actual Time to Complete (minutes): \_\_\_\_\_

Result of JPM: \_\_\_\_\_ (Denote by an S for satisfactory or a U for unsatisfactory)

Areas for Improvement:



## EXAMINEE HANDOUT

JPM ID Number: JPM-137

Initiating Cues:

The US has directed you to take local manual control of 2-EB-99 and open the valve to initiate venting of Containment.

Initial Conditions:

- The plant is in MODE 5 with Containment integrity established.
- 2-EB-92 and 2-EB-99 are closed with associated fuse blocks tagged for work on valve indicating lights.
- Containment pressure is +10 inches of water and rising slowly.
- The Control Room has begun to initiate venting of Containment to EBFS.
- 2-EB-100 is open.

## JOB PERFORMANCE MEASURE APPROVAL SHEET

I. JPM Title: Shift from "A" to "B" Waste Gas Decay Tank

ID Number: JPM-225

Revision: 0

II. Initiated:

R. J. Ashe  
Developer

8/28/02  
Date

III. Reviewed:

Richard Ashe  
Technical Reviewer

9/5/02  
Date

IV. Approved:

mf  
User

9/5/02  
Date

Nucle  
Nucle

9/5/02  
Date

Spare  
In Plant  
JPM

### JOB PERFORMANCE MEASURE WORKSHEET

Facility: MP-2 Examinee: \_\_\_\_\_

JPM Number: JPM-225 Rev. 0

Task Title: **Shift From "A" to "B" Waste Gas Decay Tank**

System: Radioactivity Release

Time Critical Task: Yes \_\_\_\_\_ No X

Validated Time (minutes): 10

Task No.(s): NUTIMS # 071-01-035

Applicable To: SRO X RO X PEO \_\_\_\_\_

K/A No.: 071 A4.05 K/A Rating: 2.6\*/2.6\*

#### Method of Testing:

Simulated Performance: X Actual Performance: \_\_\_\_\_

#### Location:

Classroom: \_\_\_\_\_ Simulator: \_\_\_\_\_ In-Plant: X

Task Standards: *At the completion of this JPM the examinee has shifted from the "A" Waste Gas Decay Tank in service to the "B" Waste Gas Decay Tank in service.*

Required Materials OP 2337, Section 4.2  
(procedures,equipment):

General References: OP 2337, Section 4.2, Rev. 016-02

#### **\*\*\*\* READ TO THE EXAMINEE \*\*\*\***

*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. You may use any approved reference materials normally available in the Control Room, including logs. Make all written reports, oral reports, alarm acknowledgments, and log entries as if the evolution was actually being performed.*

## JOB PERFORMANCE MEASURE WORKSHEET

JPM Number: JPM-225

Rev. 0

Initiating Cues: The US has directed you to remove the "A" Waste Gas Decay Tank from service and place the "B" Waste Gas Decay Tank in service.

Initial Conditions: The "A" Waste Gas Decay Tank pressure indicates 137 psig.  
"B" Waste Gas Decay Tank pressure indicates 5 psig

Simulator Requirements: N/A

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### \*\*\*\* NOTES TO EXAMINER \*\*\*\*

1. Critical steps for this JPM are indicated with an "X". For the examinee to achieve a satisfactory grade, **ALL** critical steps must be completed correctly.
2. When examinee states what his/her simulated action/observation would be, read the appropriate "Cue".
3. If necessary, question examinee for details of simulated actions / observations (i.e. "What are you looking at?" or "What are you observing?").
4. Under **NO** circumstances must the examinee be allowed to manipulate any devices during the performance of this JPM (in-plant only).

**PERFORMANCE INFORMATION**

JPM ID NUMBER: JPM-225

TITLE: **Shift From "A" to "B" Waste Gas Decay Tank**

START TIME: 

STEP 1     \_\_\_ Performance Steps: Mark the boxes in steps 4.2.5, 4.2.9, and 4.2.10 with the letter "A" (for the "A" waste Gas Decay Tank).

GRADE \_\_\_     Standards:     *Examinee records the letter "A" in the boxes for steps 4.2.5, 4.2.9, and 4.2.10.*

Cue: 

Comments:

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STEP 2     \_\_\_ Performance Steps: Mark the boxes in step 4.2.6 with the letter "B" (for the "B" Waste Gas Decay Tank).

GRADE \_\_\_     Standards:     *Examinee records the letter "B" in the boxes for steps 4.2.6.*

Cue: 

Comments:

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STEP 3     \_\_\_ Performance Steps: Record position of Waste Gas Compressor hand switches.

GRADE \_\_\_     Standards:     *Examinee records the position of the "A" and "B" of Waste Gas Compressor hand switches.*

Cue: 

Comments:     One compressor will be in AUTO, the other will be in STANDBY.

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**PERFORMANCE INFORMATION**

JPM ID NUMBER: JPM-225

TITLE: **Shift From "A" to "B" Waste Gas Decay Tank**

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STEP 4       X   Performance Steps: Place both Waste Gas Compressor hand switches in OFF position.

GRADE            X   Standards:     *Examinee states that they would place both Waste Gas Compressor hand switches on panel C-61 in the OFF position.*

Cue: 

Comments:

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STEP 5       X   Performance Steps: Close the following valves:

- WASTE GAS DECAY TANK INLET VALVE, 2-GR-6.1A (C-61)
- Decay Tank Inlet Stop, 2-GR-6A (local)
- Pressure Control Valve Outlet Isolation, 2-GR-7A (local)

GRADE            X   Standards:     *Examinee states that they would place the hand switch for the following valves in the CLOSE position and observe the only the green light is lit:*

- WASTE GAS DECAY TANK INLET VALVE, 2-GR-6.1A, on C-61
- Decay Tank Inlet Stop, 2-GR-6A, in the -25'6" elevation
- Pressure Control Valve Outlet Isolation, 2-GR-7A, in the -25'6" elevation

Cue:  The valves are closed and the green lights are lit.

Comments:

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**PERFORMANCE INFORMATION**

JPM ID NUMBER: JPM-225

TITLE: **Shift From "A" to "B" Waste Gas Decay Tank**

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- STEP 6       X   Performance Steps: Ensure the following valves are closed:
- DECAY TANK OUTLET CONTROL VALVE, 2-GR-8.1B (C-61)
  - Decay Tank Outlet Isolation, 2-GR-8A (local)
  - Decay Tank Outlet Stop, 2-GR-9A (local)

- GRADE            X   Standards: *Examinee states that they would ensure the hand switch for the following valves were in the CLOSE position and observe that only the green light is lit:*
- WASTE GAS DECAY TANK OUTLET VALVE, 2-GR-8.1A, on C-61
  - Decay Tank Outlet Isolation, 2-GR-8A, in the -25'6" elevation
  - Decay Tank Outlet Stop, 2-GR-9A, in the -25'6" elevation

Cue: **The valves are closed.**

Comments:

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## PERFORMANCE INFORMATION

JPM ID NUMBER: JPM-225

TITLE: **Shift From "A" to "B" Waste Gas Decay Tank**

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STEP 7       X   Performance Steps: Open the following valves:

- WASTE GAS DECAY TANK INLET VALVE, 2-GR-6.1B (C-61)
- Decay Tank Inlet Stop, 2-GR-6B (local)
- Pressure Control Valve Outlet Isolation, 2-GR-7B (local)

GRADE        X   Standards: *Examinee states that they would place the hand switch for the following valves in the OPEN position and observe the only the red light is lit:*

- WASTE GAS DECAY TANK INLET VALVE, 2-GR-6.1B, on C-61
- Decay Tank Inlet Stop, 2-GR-6B, in the -25'6" elevation
- Pressure Control Valve Outlet Isolation, 2-GR-7B, in the -25'6" elevation

Cue: **The valves are open**

Comments:

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STEP 8       X   Performance Steps: Place Waste Gas Compressor switches back to the original position.

GRADE        X   Standards: *Examinee states that they would place both Waste Gas Compressor hand switches on panel C-61 in the previously recorded position.*

Cue: **The compressor hand switches have been returned to their original position.**

Comments:

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**PERFORMANCE INFORMATION**

JPM ID NUMBER: JPM-225

TITLE: **Shift From "A" to "B" Waste Gas Decay Tank**

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STEP 9       X   Performance Steps: Record time and pressure of "A" and "B" Waste Gas Decay Tanks in the Rad Waste Log.

GRADE            X   Standards:     *Examinee states that they would obtain the Rad Waste Log and record the time and pressure when the "A" and "B" Waste Gas Decay Tanks were swapped.*

Cue: **The information has been properly logged.**

Comments:

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STEP 10       X   Performance Steps: Open Decay Tank Sample Stop, 2-GR-17, and request Chemistry to sample the "A" Waste Gas Decay Tank.

GRADE            X   Standards:     *Examinee state that they would open Decay Tank Sample Stop, 2-GR-17, and request Chemistry to sample the "A" Waste Gas Decay Tank.*

Cue: **The valve is open.**

Comments:     Examinee may state that they would close Decay Tank Sample Stop, 2-GR-17, when sampling is complete.

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Comments:     **After this step is completed, the JPM is considered complete.**

STOP TIME:

**VERIFICATION OF JPM COMPLETION**

Job Performance Measure No. JPM-225

Rev. 0

Date Performed: \_\_\_\_\_

Operator: \_\_\_\_\_

Evaluator(s): \_\_\_\_\_

For examinee to achieve a satisfactory grade, **ALL** critical steps must be completed correctly. If task is Time Critical, it **MUST** be completed within the specified time to achieve a satisfactory grade.

Time Critical Task? Yes \_\_\_\_\_ No X

Validated Time (minutes): \_\_\_\_\_

Actual Time to Complete (minutes): 10

Result of JPM: \_\_\_\_\_ (Denote by an S for satisfactory or a U for unsatisfactory)

Areas for Improvement:

## EXAMINEE HANDOUT

JPM ID Number: JPM-225

Initiating Cues: The US has directed you to remove the "A" Waste Gas Decay Tank from service and place the "B" Waste Gas Decay Tank in service.

Initial Conditions: The "A" Waste Gas Decay Tank pressure indicates 137 psig.  
"B" Waste Gas Decay Tank pressure indicates 5 psig