

JOB PERFORMANCE MEASURE
NRC EXAM 2008

JPM Title Manually Start the RCIC System	No.: 08-S-002 Revision: 0 Page 1
---------------------------------------------	----------------------------------------

Preferred Evaluation Method:

Perform Walkthrough Discuss
Plant Simulator Classroom

System:

E5100 – Reactor Core Isolation Cooling System

Task:

02E5100004 - Initiate Reactor Core Isolation Cooling in Manual Mode

References: Required (R) / Available (A)

23.206, "Reactor Core Isolation Cooling System", Enclosure B (R)
6M721-5709-1, RCIC Functional Operating Sketch (A)

Tools and Equipment Required:

None

Initial Conditions:

- You are the Control Room NSO.
- A Reactor Scram has occurred and the reactor is shutdown.
- EOP flow charts **have been** entered.

Initiating Cue(s):

- The CRS directs you to start RCIC manually and inject to the vessel to maintain Reactor Water Level 173-214".
- Another operator will address plant alarms **not** associated with this task.

Terminating Cue(s):

RCIC is injecting to the RPV at approximately 650 gpm with level increasing.

Task Standard:

RCIC has been started manually and is injecting to the RPV at approximately 650 gpm IAW 23.206.

JOB PERFORMANCE MEASURE
NRC EXAM 2008

JPM Title Manually Start the RCIC System	No.: 08-S-002 Revision: 0 Page 2
---------------------------------------------	----------------------------------------

Licensed Operator Exam Information (required for NRC exams)

Safety Function:

2 - Reactor Water Inventory Control

K/A Reference: (from NUREG 1123)

K/A SYSTEM: 217000 - Reactor Core Isolation Cooling System
K/A STATEMENT:
A4. Ability to manually operate and/or monitor in the control room:
A4.04 Manually initiated controls.....3.6 / 3.6

Maintenance Rule Safety Classification:

E5100-01

Maintenance Rule Risk Significant? (Yes or No)

Yes

JOB PERFORMANCE MEASURE
NRC EXAM 2008

JPM Title Manually Start the RCIC System	No.: 08-S-002 Revision: 0 Page 3
---------------------------------------------	----------------------------------------

PERFORMANCE EVALUATION

Start Time _____

ELEMENT	STANDARD
PREREQUISITES: None	
CUE: Provide Examinee with CUE SHEET.	
NOTE: Examinee should use 23.206, Enclosure B hard card at H11P601. It is not intended to perform or verify 23.206, Section 5.4, Manual Initiation.	
1. Start E5101-C004, RCIC Baro Cndr Vacuum Pump.	1. Starts E5101-C004.
* 2. Open E5150-F046, RCIC Oil Clr Clg Water Iso Vlv.	* 2. Opens E5150-F046.
NOTE: Examinee should make Hi-Com announcement and Crew Update "Starting RCIC"	
* 3. Open E5150-F095, RCIC Turb Stm Inlet Byp Vlv.	* 3. Opens E5150-F095.
* 4. After approximately 15 seconds, open E5150-F045, RCIC Turb Steam Inlet Vlv.	* 4. Opens E5150-F045.
* 5. Open E5150-F013, RCIC Disch To FW Inbd Iso Valve.	* 5. Opens E5150-F013.
NOTE: E51-K615 may not need to be adjusted to obtain proper flow rate. Flow is indicated on E51-R613. There may be changes in level and RCIC Flow due to Low-Low Set cycling.	
* 6. Adjusts flow as necessary with E51-K615, RCIC Discharge Flow Controller.	* 6. Examinee adjusts flow as necessary to raise RPV Water Level of 173-214 inches.
CUE: End JPM when RCIC is injecting a approximately 650 gpm with level increasing.	

_____ SATISFACTORY

_____ UNSATISFACTORY

Stop Time _____

* **Critical Step**

JOB PERFORMANCE MEASURE
NRC EXAM 2008

JPM Title Manually Start the RCIC System	No.: 08-S-002 Revision: 0 Page 4
---------------------------------------------	----------------------------------------

Evaluator Notes:

ENSURE ALL INDUSTRIAL AND PERSONNEL SAFETY PRACTICES ARE USED AND ENFORCED AT ALL TIMES.

Generic Notes and Cues:

CMC switches will turn RED and amperage will increase when the switch is rotated to the start position started. The current should initially be five to seven times the normal running amps with the ammeter flashing. As counter EMF is developed, the amperage will lower to the normal running amperage and the ammeter will no longer flash. CMC switches will turn GREEN when the pumps are stopped and amperage will decrease to zero.

Ex.: Pump start: "Switch has been rotated to the start position, red light is lit, green light is out, amperage initially pegs out high, and is now indicating X amps."

Pump stop: "Switch has been rotated to the stop position, green light is lit, red light is out, amperage indicates 0 amps."

Remotely operated valve position is determined with open and close indicating lights. A RED light only would indicate that the valve is open. A GREEN light only would indicate that the valve is closed. Dual indication would indicate that the valve is in some intermediate position.

Manual valves are checked in the closed direction (MOP02 and MOP05). Valve stem position may aid in valve position determination, but cannot be used as Independent Verification (MOP02).

Ex.: Verify valve closed: "Valve handwheel indicates no valve movement in the clockwise direction."

Verify valve open: "Valve handwheel has been rotated slightly in the clockwise direction and returned to the original positions."

Closing a valve: "Valve handwheel has been rotated in the fully clockwise direction until no additional valve movement. Valve stem is down."

Opening a valve: "Valve handwheel has been rotated in the fully counterclockwise direction until no additional valve movement, valve stem is out."

Controllers have an Auto light that is GREEN when selected and AMBER (YELLOW) when Manual is selected. When in Manual, the open and closed pushbuttons control the parameter to be changed by adjusting position or speed. When the deviation meter is nulled, then the process can be shifted to Auto to allow the desired setpoint to control the process.

System Specific Notes and Cues:

None

Task Performance and Cues:

The Elements of this JPM are step by step in accordance with the procedure. The Standard is that the procedure is performed as written. The Cues are as listed above for indication or as each step is completed the appropriate information is reported to the examinee. Notify Examinee that time compression may be used for activities performed outside of the Control Room.

Critical Steps:

Critical Tasks are identified by asterisk (*) and **bolded** steps on the cover sheet. Verify that the latest revision of the procedure is used and critical tasks are correctly identified.

JOB PERFORMANCE MEASURE
NRC EXAM 2008

JPM Title Manually Start the RCIC System	No.: 08-S-002 Revision: 0 Page 5
---------------------------------------------	----------------------------------------

FOLLOW-UP DOCUMENTATION QUESTIONS

Reason for follow-up question(s):

Question:

Reference:

Response:

Question:

Reference

Response:

JOB PERFORMANCE MEASURE
NRC EXAM 2008

JPM Title Manually Start the RCIC System	No.: 08-S-002 Revision: 0 Page 6
---------------------------------------------	----------------------------------------

Simulator Setup

IC#:

Any IC with pressure >150 psig or post scram >150 psig.

Malfunctions:

Number	Title	Value	Delay	Ramp
N/A				

Remote Functions:

Number	Title	Value	Delay	Ramp
N/A				

Override Functions:

Number	Title	Value	Delay	Ramp
N/A				

Special Instructions:

Ensure reactor level is approx. 130-170 inches and steady.

Cue Sheet

Initial Conditions:

- You are the Control Room NSO.
- A Reactor Scram has occurred and the reactor is shutdown.
- EOP flow charts **have been** entered.

Initiating Cue(s):

- The CRS directs you to start RCIC manually and inject to the vessel to maintain Reactor Water Level 173-214”.
- Another operator will address plant alarms **not** associated with this task.

JOB PERFORMANCE MEASURE
NRC EXAM 2008

Job Position SRO / RO	No. 08-S-007	Revision 0
JPM Title Respond to Refuel Floor High Radiation (BANK/Alt Path)	Duration 15 minutes	Page COVER SHEET

Examinee: _____ SRO / RO / NO / STA

Evaluator: _____

JPM Type: Normal / **Alternate Path** / Time Critical

Evaluation Method: **Perform** / Walkthrough / Discuss Start Time _____

(Circle method used) Plant / **Simulator** / Classroom Stop Time _____

Total Time: _____

PERFORMANCE EVALUATION SUMMARY							
Element	S	U	Comments	Element	S	U	Comments
1.							
2.							
3.							
4.							
* 5.							
6.							
7.							
8.							
9.							
*10.							
11.							
12.							
13.							
14.							
15.							

_____ SATISFACTORY

_____ UNSATISFACTORY

OVERALL EVALUATOR COMMENTS:

Evaluator Signature / Date: _____ / _____

JOB PERFORMANCE MEASURE
NRC EXAM 2008

JPM Title Respond to Refuel Floor High Radiation	No.: 08-S-007 Revision: 0 Page 1
-----------------------------------------------------	----------------------------------------

Preferred Evaluation Method:

Perform Walkthrough _____ Discuss _____
Plant _____ Simulator Classroom _____

System:

D1100 – Radiation Protection System

Task:

32970 – Respond to plant alarms in accordance with Alarm Response Procedures

References: Required (R) / Available (A)

23.404, "Standby Gas Treatment System", Section 5.3, 5.4, and/or 6.1. (R)
3D31, "Div 1/2 Fuel Pool Vent Exh Rad Monitor Upscale" (R)
3D35, "Div 1/2 Fuel Pool Vent Exh Rad Monitor Upscale Trip" (R)

Tools and Equipment Required:

None

Initial Conditions:

- You are the Control Room NSO.
- The Plant is in Mode 5.
- Plant conditions are as you see them.
- Fuel Handling is in progress in the Spent Fuel Pool.

Initiating Cue(s):

- Respond to conditions in accordance with plant procedures.

Terminating Cue(s):

SGTS is operating maintaining Secondary Containment pressure.

Task Standard:

Manually initiate Div 2 SGTS in response to a failure of Div 1 SGTS to automatically initiate following Fuel Pool Area Radiation High.

JOB PERFORMANCE MEASURE
NRC EXAM 2008

JPM Title Respond to Refuel Floor High Radiation	No.: 08-S-007 Revision: 0 Page 2
-----------------------------------------------------	----------------------------------------

Licensed Operator Exam Information (required for NRC exams)

Safety Function:

9 - Radioactivity Release

K/A Reference: (from NUREG 1123)

K/A SYSTEM: 272000 - Radiation Monitoring System

K/A STATEMENT:

A2. Ability to (a) predict the impacts of the following on the RADIATION MONITORING SYSTEM ;
and (b) based on those predictions, use procedures to correct, control, or mitigate the
consequences of those abnormal conditions or operations:

A2.12 Refuel floor handling accidents/operations..... 3.3 / 4.0

Maintenance Rule Safety Classification:

D1100-05

Maintenance Rule Risk Significant? (Yes or No)

No

JOB PERFORMANCE MEASURE
NRC EXAM 2008

JPM Title Respond to Refuel Floor High Radiation	No.: 08-S-007 Revision: 0 Page 3
-----------------------------------------------------	----------------------------------------

PERFORMANCE EVALUATION

Start Time _____

ELEMENT	STANDARD
PREREQUISITES: None	
NOTE: Unless otherwise noted, all controls and indications for this section are located on COP H11- P601 (Back), H11-P808 and P817. Due to the nature of this event, the expected sequence of responses may differ from that listed below.	
CUE: Provide Examinee with CUE SHEET. Cue the console operator to trigger the malfunction(s) when ready to begin the JPM.	
1. Announce alarm 3D31, DIV I/II FP VENT EXH RADN MONITOR UPSCALE and 3D35 DIV I/II FP VENT EXH RADN MONITOR UPSCALE TRIP.	1. Examinee calls out alarm and reviews ARPs.
2. Verify > 3 mr/hr on either D11-R605 or D11R606, Fuel Pool Vent Exh East (West) Duct PRMS Recorder (back of COP H11-P601).	2. Verifies D11K609A and B, East FP Vent Exhaust Radiation High.
CUE: Refuel floor personnel call the CR and report a fuel bundle has impacted the fuel racks, on the East side of the Fuel Pool, with visible damage.	
CUE: If dispatched to the Relay Room, the Patrol NSO reports D11K609A and B, Div 1 (2) East FP Vent Exhaust Radiation Monitors indicate 10 mr/hr.	
3. May direct an operator to RR H11-P606 to verify D11-K609A and B, Div 1 (2) Fuel Pool East Vent Exh Duct Rad Monitors, are greater than 3 mr/hr.	3. Contacts Patrol NSO to investigate RR indications.
CUE: As CRS, acknowledge AOP and EOP entry conditions. Direct CRNSO to continue with ARP response.	
4. May notify CRS to perform 20.000.02, "Abnormal Release of Radioactive Material," and 29.100.01 SH 5, "Secondary Containment and Rad Release," concurrently with ARP.	4. CRS acknowledges AOP and EOP entry conditions.
* 5. Verify T4600-C003, Div 1 SGTS Exhaust Fan started.	* 5. Fan T4600-C003 indicates tripped .
Alternate Path Begins Here	
6. Verify Reactor Building HVAC fans trip and isolate.	6. Verifies RBHVAC Supply and Exhaust fans are tripped and SCIVs are CLOSED.
NOTE: SOP 23.413 CCHVAC verification may be delayed by CRNSO as follow up action as determined by Examiner.	
7. Verify per 3D35, Control Center HVAC automatic shift to RECIRC in accordance with 23.413,"Control Center HVAC."	7. Verifies CCHVAC has shifted to RECIRC Mode by identifying RECIRC light is LIT and T4100-C047, Div 1 CCHVAC Emerg Makeup Fan is operating.

JOB PERFORMANCE MEASURE
NRC EXAM 2008

JPM Title Respond to Refuel Floor High Radiation	No.: 08-S-007 Revision: 0 Page 4
-----------------------------------------------------	----------------------------------------

ELEMENT	STANDARD
8. Verify per 3D35 automatic Isolations: - Group 14, Drywell and Suppression Pool Ventilation System - Group 16, Nitrogen Inerting System	8. Verifies Groups 14 and 16 are isolated. (May be done as a follow up item as determined by Examiner.)
NOTE: The following steps are from 23.404, "Standby Gas Treatment System", Section 6.1. Sections 5.3 and 5.4 also specify actions that will accomplish the final objective of starting Division 2 SGTS. Actions IAW Section 5.3 or 5.4 are acceptable provided the critical step of Element 11 is accomplished. These actions may be implemented from memory.	
9. Open or verify open or T4100-F407.	9. T4100-F407 is verified open
*10. Start T4600-C004, Div 2 SGTS Exhaust Fan.	*10. Starts Div 2 SGTS Exhaust Fan by taking the CMC Switch to RUN.
11. Verify T4600-F004B, Div 2 SGTS Exh Fan Inlet Iso Damper is OPEN.	11. Verifies T4600-F004B open.
12. Verify T4600-F008B, Div 2 SGTS SC Otbd Iso Dmpr is OPEN.	12. Verifies T4600-F008B open.
13. Verify T4600-F408, Div 2 SGTS SC Inbd Iso Dmpr is OPEN.	13. Verifies T4600-F408 open.
14. Verify T4600-F410, RB5 Air Inlet Iso Vlv is OPEN.	14. Verifies T4600-F410 open.
15. Verify T46-R800B, Div 2 SGTS Exh Gas Flow Recorder, indicates between 3420 and 4180 cfm.	15. Verifies flow is in acceptable range.
CUE: End JPM when SGTS is operating maintaining Secondary Containment pressure.	

_____ SATISFACTORY

_____ UNSATISFACTORY

Stop Time _____

*** Critical Step**

JOB PERFORMANCE MEASURE
NRC EXAM 2008

JPM Title Respond to Refuel Floor High Radiation	No.: 08-S-007 Revision: 0 Page 5
-----------------------------------------------------	----------------------------------------

Evaluator Notes:

ENSURE ALL INDUSTRIAL AND PERSONNEL SAFETY PRACTICES ARE USED AND ENFORCED AT ALL TIMES.

Generic Notes and Cues:

CMC switches will turn RED and amperage will increase when the switch is rotated to the start position started. The current should initially be five to seven times the normal running amps with the ammeter flashing. As counter EMF is developed, the amperage will lower to the normal running amperage and the ammeter will no longer flash. CMC switches will turn GREEN when the pumps are stopped and amperage will decrease to zero.

Ex.: Pump start: "Switch has been rotated to the start position, red light is lit, green light is out, amperage initially pegs out high, and is now indicating X amps."

Pump stop: "Switch has been rotated to the stop position, green light is lit, red light is out, amperage indicates 0 amps."

Remotely operated valve position is determined with open and close indicating lights. A RED light only would indicate that the valve is open. A GREEN light only would indicate that the valve is closed. Dual indication would indicate that the valve is in some intermediate position.

Manual valves are checked in the closed direction (MOP02 and MOP05). Valve stem position may aid in valve position determination, but cannot be used as Independent Verification (MOP02).

Ex.: Verify valve closed: "Valve handwheel indicates no valve movement in the clockwise direction."

Verify valve open: "Valve handwheel has been rotated slightly in the clockwise direction and returned to the original positions."

Closing a valve: "Valve handwheel has been rotated in the fully clockwise direction until no additional valve movement. Valve stem is down."

Opening a valve: "Valve handwheel has been rotated in the fully counterclockwise direction until no additional valve movement, valve stem is out."

Controllers have an Auto light that is GREEN when selected and AMBER (YELLOW) when Manual is selected. When in Manual, the open and closed pushbuttons control the parameter to be changed by adjusting position or speed. When the deviation meter is nulled, then the process can be shifted to Auto to allow the desired setpoint to control the process.

System Specific Notes and Cues:

None

Task Performance and Cues:

The Elements of this JPM are step by step in accordance with the procedure. The Standard is that the procedure is performed as written. The Cues are as listed above for indication or as each step is completed the appropriate information is reported to the examinee. Notify Examinee that time compression may be used for activities performed outside of the Control Room.

Critical Steps:

Critical Tasks are identified by asterisk (*) and **bolded** steps on the cover sheet. Verify that the latest revision of the procedure is used and critical tasks are correctly identified.

JOB PERFORMANCE MEASURE
NRC EXAM 2008

JPM Title Respond to Refuel Floor High Radiation	No.: 08-S-007 Revision: 0 Page 6
-----------------------------------------------------	----------------------------------------

FOLLOW-UP DOCUMENTATION QUESTIONS

Reason for follow-up question(s):

Question:

Reference:

Response:

Question:

Reference

Response:

JOB PERFORMANCE MEASURE
NRC EXAM 2008

JPM Title Respond to Refuel Floor High Radiation	No.: 08-S-007 Revision: 0 Page 7
-----------------------------------------------------	----------------------------------------

Simulator Setup

IC#:

IC-2

Malfunctions:

Number	Title	Value	Delay	Ramp
D11MF0021	D11N010A Div 2 E FP Rad Monitor A	11		
D11MF0022	D11N010B Div 2 E FP Rad Monitor B	11		

Remote Functions:

Number	Title	Value	Delay	Ramp
--------	-------	-------	-------	------

Override Functions:

Number	Title	Value	Delay	Ramp
TCBDRL_101CRTVSP	Div 2 SGTS Auto Start Failure	0		
TCBASPECIFIC_F302368CC	Div 1 SGTS Exh Fan Trip	TRUE		

Special Instructions:

1. Initialize simulator to desired IC and place in RUN.
2. Open and execute Lesson 08-S-007.Isn.
3. When cued by examiner, trigger the lesson step.

Cue Sheet

Initial Conditions:

- You are the Control Room NSO.
- The Plant is in Mode 5.
- Plant conditions are as you see them.
- Fuel Handling is in progress in the Spent Fuel Pool.

Initiating Cue(s):

- Respond to conditions in accordance with plant procedures.

JOB PERFORMANCE MEASURE
NRC EXAM 2008

JPM Title Manually Initiate Low-Low Set	No.: 08S003 Revision: 0 Page 1
--------------------------------------------	--------------------------------------

Preferred Evaluation Method:

Perform Walkthrough _____ Discuss _____
Plant _____ Simulator Classroom _____

System:

B2104 – Safety Relief Valves

Task:

02B2104002 - Operate/Shutdown the Safety Relief Valves Low Low Set function

References: Required (R) / Available (A)

23.201, "Safety Relief Valves and Automatic Depressurization System", Enclosure B (R)

Tools and Equipment Required:

None

Initial Conditions:

- You are the Control Room NSO.
- The plant is shutdown, and the MSIVs are closed.
- CRS has entered the EOP's on Level 3.
- CRS directs you to maintain pressure 900-1050# using Lo-Lo Set.

Initiating Cue(s):

- The CRS directs you to manually initiate Low-low Set.
- Another operator will address plant alarms **not** associated with this task.

Terminating Cue(s):

Low-low Set has been manually initiated.

Task Standard:

Manually initiate Low-low Set per 23.201.

Licensed Operator Exam Information (required for NRC exams)

Safety Function:

3 – Reactor Pressure Control

K/A Reference: (from NUREG 1123)

K/A SYSTEM: 239002 - Relief/Safety Valves
K/A STATEMENT:
A4. Ability to manually operate and/or monitor in the control room:
A4.01 SRVs4.4 / 4.4

Maintenance Rule Safety Classification:

B2104-05

Maintenance Rule Risk Significant? (Yes or No)

No

JOB PERFORMANCE MEASURE
NRC EXAM 2008

JPM Title Manually Initiate Low-Low Set	No.: 08S003 Revision: 0 Page 2
--------------------------------------------	--------------------------------------

PERFORMANCE EVALUATION

Start Time _____

ELEMENT	STANDARD
PREREQUISITES: None	
CUE: Provide Examinee with CUE SHEET.	
NOTE: Examinee should use hard card for 23.201 Enclosure B at H11P601.	
* 1. Open selected SRV by depressing the OPEN pushbutton.	* 1. Opens an SRV.
2. Verify 1D38, DIV I/II LOW - LOW SET ARMED, alarms.	2. Verifies 1D38.
* 3. Close selected SRV by depressing the CLOSE pushbutton.	* 3. Closes SRV.
4. Allow Reactor pressure to increase to Scram Pressure setpoint of 1093 psig.	4. Monitors Reactor Pressure on Post Accident Recorder B21R623A.
NOTE: Evaluator may terminate JPM prior to reaching SRV set pressures if RPV pressure rise is too slow.	
5. Verify B2104-F013A, Div 1 MS Line D SRV, and B2104-F013G, Div 2 MS Line B SRV, open automatically to control Reactor pressure.	5. Verifies LLS valves operate properly – SRV A opens at 1017 psig, SRV G at 1047 psig.
CUE: Another Operator will perform Section 5.3.	
6. Perform or verify complete steps of Section 5.3, Low-Low Set Operation.	6. Informed by examiner that another operator will perform these steps.
CUE: End JPM when Low-low Set has been manually initiated.	

_____ SATISFACTORY

_____ UNSATISFACTORY

Stop Time _____

* **Critical Step**

JOB PERFORMANCE MEASURE
NRC EXAM 2008

JPM Title Manually Initiate Low-Low Set	No.: 08S003 Revision: 0 Page 3
--------------------------------------------	--------------------------------------

Evaluator Notes:

ENSURE ALL INDUSTRIAL AND PERSONNEL SAFETY PRACTICES ARE USED AND ENFORCED AT ALL TIMES.

Generic Notes and Cues:

CMC switches will turn RED and amperage will increase when the switch is rotated to the start position started. The current should initially be five to seven times the normal running amps with the ammeter flashing. As counter EMF is developed, the amperage will lower to the normal running amperage and the ammeter will no longer flash. CMC switches will turn GREEN when the pumps are stopped and amperage will decrease to zero.

Ex.: Pump start: "Switch has been rotated to the start position, red light is lit, green light is out, amperage initially pegs out high, and is now indicating X amps."

Pump stop: "Switch has been rotated to the stop position, green light is lit, red light is out, amperage indicates 0 amps."

Remotely operated valve position is determined with open and close indicating lights. A RED light only would indicate that the valve is open. A GREEN light only would indicate that the valve is closed. Dual indication would indicate that the valve is in some intermediate position.

Manual valves are checked in the closed direction (MOP02 and MOP05). Valve stem position may aid in valve position determination, but cannot be used as Independent Verification (MOP02).

Ex.: Verify valve closed: "Valve handwheel indicates no valve movement in the clockwise direction."

Verify valve open: "Valve handwheel has been rotated slightly in the clockwise direction and returned to the original positions."

Closing a valve: "Valve handwheel has been rotated in the fully clockwise direction until no additional valve movement. Valve stem is down."

Opening a valve: "Valve handwheel has been rotated in the fully counterclockwise direction until no additional valve movement, valve stem is out."

Controllers have an Auto light that is GREEN when selected and AMBER (YELLOW) when Manual is selected. When in Manual, the open and closed pushbuttons control the parameter to be changed by adjusting position or speed. When the deviation meter is nulled, then the process can be shifted to Auto to allow the desired setpoint to control the process.

System Specific Notes and Cues:

None

Task Performance and Cues:

The Elements of this JPM are step by step in accordance with the procedure. The Standard is that the procedure is performed as written. The Cues are as listed above for indication or as each step is completed the appropriate information is reported to the examinee. Notify Examinee that time compression may be used for activities performed outside of the Control Room.

Critical Steps:

Critical Tasks are identified by asterisk (*) and **bolded** steps on the cover sheet. Verify that the latest revision of the procedure is used and critical tasks are correctly identified.

JOB PERFORMANCE MEASURE
NRC EXAM 2008

JPM Title Manually Initiate Low-Low Set	No.: 08S003 Revision: 0 Page 4
--------------------------------------------	--------------------------------------

FOLLOW-UP DOCUMENTATION QUESTIONS

Reason for follow-up question(s):

Question:

Reference:

Response:

Question:

Reference

Response:

JOB PERFORMANCE MEASURE
NRC EXAM 2008

JPM Title Manually Initiate Low-Low Set	No.: 08S003 Revision: 0 Page 5
--------------------------------------------	--------------------------------------

Simulator Setup

IC#:

IC-20

Malfunctions:

Number	Title	Value	Delay	Ramp
N/A				

Remote Functions:

Number	Title	Value	Delay	Ramp
N/A				

Override Functions:

Number	Title	Value	Delay	Ramp
N/A				

Special Instructions:

1. Initialize the simulator to IC-20 and place in **RUN**.
2. Place the Mode Switch in Shutdown.
3. Ensure Low-Low Set is not armed.
4. **Freeze** simulator post scram with Reactor Pressure approximately 970-1000 psig.
5. Close the MSIV's
6. Place simulator in **RUN** once examinee indicates he understands initial conditions and initiating cues.

Cue Sheet

Initial Conditions:

- You are the Control Room NSO.
- The plant is shutdown, and the MSIVs are closed.
- CRS has entered the EOP's on Level 3.
- CRS directs you to maintain pressure 900-1050# using Lo-Lo Set.

Initiating Cue(s):

- The CRS directs you to manually initiate Low-low Set.
- Another operator will address plant alarms **not** associated with this task.

JOB PERFORMANCE MEASURE
NRC EXAM 2008

JPM Title Operate Div 1 Core Spray System in Test Mode	No.: 08-S-005 Revision: 0 Page 1
-----------------------------------------------------------	----------------------------------------

Preferred Evaluation Method:

Perform Walkthrough Discuss
Plant Simulator Classroom

System:

E2100 – Core Spray System

Task:

02E2100022 - Place Core Spray System in Test Mode

References: Required (R) / Available (A)

23.203, "Core Spray System" ,Section 6.1 (R)

M-5707 Core Spray System Functional Operating Sketch (A)

Tools and Equipment Required:

None

Initial Conditions:

- You are the Control Room NSO.
- Reactor Power is at 100%.
- Corrective maintenance has just been completed on the Div 1 Core Spray System, with post maintenance testing (PMT) planned for your shift.
- The Core Spray System is in a Standby Lineup.
- Plant conditions are stable as you see them.

Initiating Cue(s):

- The CRS directs you to start Div 1 Core Spray System in the Test Mode IAW 23.203, Section 6.1, and establish a flow rate of 6,000 gpm, for PMT.
- All prerequisites are met for Operation of Div 1 Core Spray in the Test Mode.
- Another operator will address plant alarms **not** associated with this task.

Terminating Cue(s):

Examinee recognizes limitations on Core Spray Pump operation on minimum flow in Test Mode, and shuts down CS Pumps.

Task Standard:

Examinee establishes Core Spray Test Mode Line-Up to point of recognizing failure of the Test Valve; then shuts down Core Spray pumps prior to exceeding 5 minutes run time on minimum flow.

JOB PERFORMANCE MEASURE
NRC EXAM 2008

JPM Title Operate Div 1 Core Spray System in Test Mode	No.: 08-S-005 Revision: 0 Page 2
-----------------------------------------------------------	----------------------------------------

Licensed Operator Exam Information (required for NRC exams)

Safety Function:

4 - Heat Removal From Reactor Core

K/A Reference: (from NUREG 1123)

K/A SYSTEM: 209001 - Low Pressure Core Spray System
K/A STATEMENT:
A2. Ability to (a) predict the impacts of the following on the LOW PRESSURE CORE SPRAY SYSTEM; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those abnormal conditions or operations:
A2.06 Inadequate system flow3.2 / 3.2

Maintenance Rule Safety Classification:

E2100-02

Maintenance Rule Risk Significant? (Yes or No)

No

JOB PERFORMANCE MEASURE
NRC EXAM 2008

JPM Title Operate Div 1 Core Spray System in Test Mode	No.: 08-S-005 Revision: 0 Page 3
-----------------------------------------------------------	----------------------------------------

PERFORMANCE EVALUATION

Start Time _____

ELEMENT	STANDARD
PREREQUISITES: None	
NOTE: Unless otherwise noted, all controls and indications for this section are located on COP H11-P601. A CAUTION for this test reads, "When in Test Mode, Core Spray Pumps should not be operated for more than five minutes with only E2150-F031A, Div 1 CS Pumps Min Flow Vlv, open, to prevent pump overheating.	
CUE: Provide Examinee with CUE SHEET.	
NOTE: JPM becomes Time Sensitive at this point which begins with start of the first pump. Time E2101-C001A started: _____	
* 1. Start E2101-C001A, Div 1 CS Pump A.	* 1. Starts E2101-C001A, Div 1 CS Pump A.
NOTE: Pumps are limited to 5 minutes runtime on minimum flow. Time E2101-C001C started: _____	
* 2. Start E2101-C001C, Div 1 CS Pump C.	* 2. Starts E2101-C001C, Div 1 CS Pump C.
Alternate Path Begins Here	
3. Throttle open E2150-F015A, Div 1 CS Test Line Iso Vlv, to establish a pump flow indication between 3000 and 6600 gpm on E21-R601A, Div 1 Core Spray Flow Ind.	3. Valve will not respond to OPEN pushbutton. Examinee identifies condition (failure of test valve) <u>and</u> concern (for operating pumps in Test Mode on minimum flow).
CUE: If Examinee asks for guidance, as CRS ask for his recommendations. When satisfied that examinee recognizes need shut down CS Pumps, as CRS direct examinee to perform actions per 23.203, Step 6.1.2.5.	
NOTE: Examinee should proceed with actions following the statement, "When operation in Test Mode is no longer required, perform the following:"	
4. Close E2150-F015A, Div 1 CS Test Line Iso Vlv.	4. No action required, valve would not initially move.
5. Verify E2150-F031A, Div 1 CS Pmps Min Flow Vlv, opens.	5. Valve is verified open.
NOTE: Pumps are limited to 5 minutes runtime on minimum flow. Time E2101-C001A stopped: _____	
* 6. Stop E2101-C001A, Div 1 CS Pump A.	* 6. Stops E2101-C001A, Div 1 CS Pump A.
NOTE: Pumps are limited to 5 minutes runtime on minimum flow. Time E2101-C001C stopped: _____	
* 7. Stop E2101-C001C, Div 1 CS Pump C.	* 7. Stops E2101-C001C, Div 1 CS Pump C.

JOB PERFORMANCE MEASURE
NRC EXAM 2008

JPM Title Operate Div 1 Core Spray System in Test Mode	No.: 08-S-005 Revision: 0 Page 4
-----------------------------------------------------------	----------------------------------------

ELEMENT	STANDARD
CUE: Inform Examinee that another operator will establish standby lineup.	
8. Place Div 1 Core Spray System in Standby Mode in accordance with Section 5.3, Standby Mode Div 1.	8. Another operator will establish standby lineup.
CUE: End JPM when examinee recognizes limitations on Core Spray Pump operation on minimum flow in Test Mode, and shuts down the Core Spray Pumps.	

SATISFACTORY
 UNSATISFACTORY

Stop Time _____

* Critical Step

JOB PERFORMANCE MEASURE
NRC EXAM 2008

JPM Title Operate Div 1 Core Spray System in Test Mode	No.: 08-S-005 Revision: 0 Page 5
-----------------------------------------------------------	----------------------------------------

Evaluator Notes:

ENSURE ALL INDUSTRIAL AND PERSONNEL SAFETY PRACTICES ARE USED AND ENFORCED AT ALL TIMES.

Generic Notes and Cues:

CMC switches will turn RED and amperage will increase when the switch is rotated to the start position started. The current should initially be five to seven times the normal running amps with the ammeter flashing. As counter EMF is developed, the amperage will lower to the normal running amperage and the ammeter will no longer flash. CMC switches will turn GREEN when the pumps are stopped and amperage will decrease to zero.

Ex.: Pump start: "Switch has been rotated to the start position, red light is lit, green light is out, amperage initially pegs out high, and is now indicating X amps."

Pump stop: "Switch has been rotated to the stop position, green light is lit, red light is out, amperage indicates 0 amps."

Remotely operated valve position is determined with open and close indicating lights. A RED light only would indicate that the valve is open. A GREEN light only would indicate that the valve is closed. Dual indication would indicate that the valve is in some intermediate position.

Manual valves are checked in the closed direction (MOP02 and MOP05). Valve stem position may aid in valve position determination, but cannot be used as Independent Verification (MOP02).

Ex.: Verify valve closed: "Valve handwheel indicates no valve movement in the clockwise direction."

Verify valve open: "Valve handwheel has been rotated slightly in the clockwise direction and returned to the original positions."

Closing a valve: "Valve handwheel has been rotated in the fully clockwise direction until no additional valve movement. Valve stem is down."

Opening a valve: "Valve handwheel has been rotated in the fully counterclockwise direction until no additional valve movement, valve stem is out."

Controllers have an Auto light that is GREEN when selected and AMBER (YELLOW) when Manual is selected. When in Manual, the open and closed pushbuttons control the parameter to be changed by adjusting position or speed. When the deviation meter is nulled, then the process can be shifted to Auto to allow the desired setpoint to control the process.

System Specific Notes and Cues:

None

Task Performance and Cues:

The Elements of this JPM are step by step in accordance with the procedure. The Standard is that the procedure is performed as written. The Cues are as listed above for indication or as each step is completed the appropriate information is reported to the examinee. Notify Examinee that time compression may be used for activities performed outside of the Control Room.

Critical Steps:

Critical Tasks are identified by asterisk (*) and **bolded** steps on the cover sheet. Verify that the latest revision of the procedure is used and critical tasks are correctly identified.

JOB PERFORMANCE MEASURE
NRC EXAM 2008

JPM Title Operate Div 1 Core Spray System in Test Mode	No.: 08-S-005 Revision: 0 Page 6
-----------------------------------------------------------	----------------------------------------

FOLLOW-UP DOCUMENTATION QUESTIONS

Reason for follow-up question(s):

Question:

Reference:

Response:

Question:

Reference

Response:

JOB PERFORMANCE MEASURE
NRC EXAM 2008

JPM Title Operate Div 1 Core Spray System in Test Mode	No.: 08-S-005 Revision: 0 Page 7
-----------------------------------------------------------	----------------------------------------

Simulator Setup

IC#:

IC-19, 20, or 21

Malfunctions:

Number	Title	Value	Delay	Ramp
N/A				

Remote Functions:

Number	Title	Value	Delay	Ramp
N/A				

Override Functions:

Number	Title	Value	Delay	Ramp
P601_B010_1	Div 1 CS F015A Test Valve OPEN Switch	1		
P601_B009_1	Div 1 CS F015A Test Valve CLOSE Switch	0		

Special Instructions:

1. Initialize the simulator to the desired IC and place in **RUN**.
2. **Open** and **execute** Lesson 08-S-005.Isn.
3. When cued by the examiner, activate the overrides listed above.

Cue Sheet

Initial Conditions:

- You are the Control Room NSO.
- Reactor Power is at 100%.
- Corrective maintenance has just been completed on the Div 1 Core Spray System, with post maintenance testing (PMT) planned for your shift.
- The Core Spray System is in a Standby Lineup.
- Plant conditions are stable as you see them.

Initiating Cue(s):

- The CRS directs you to start Div 1 Core Spray System in the Test Mode IAW 23.203, Section 6.1, and establish a flow rate of 6,000 gpm, for PMT.
- All prerequisites are met for Operation of Div 1 Core Spray in the Test Mode.
- Another operator will address plant alarms **not** associated with this task.

JOB PERFORMANCE MEASURE
NRC EXAM 2008

JPM Title Restore a RWCU Pump After Oil Sample (Plant Hot) With System Leak and Failure to Isolate	No.: 08-S-009 Revision: 0 Page 1
----------------------------------------------------------------------------------------------------------	----------------------------------------

Preferred Evaluation Method:

Perform Walkthrough Discuss
Plant Simulator Classroom

System:

G3300 – Reactor Water Cleanup System

Task:

02G3300012 - Return a Reactor Water Cleanup Pump to service

References: Required (R) / Available (A)

ARP 1D66, "Steam Leak Detection Ambient Temp High" (R)
ARP 1D70, "Steam Leak Detection Diff Temp High" (R)
20.707.01, "Loss of RWCU" (A)

Tools and Equipment Required:

None

Initial Conditions:

- You are the Control Room NSO.
- You are restoring a RWCU Pump to service (Hot Plant) after drawing an oil sample.
- All prerequisites are complete.

Initiating Cue(s):

- The CRS directs you to restore RWCU Pump B to service in accordance with SOP 23.707.

Terminating Cue(s):

RWCU is isolated.

Task Standard:

Isolate RWCU Group 11 (G3352-F004 & F220) following a system leak and failure of automatic isolation to occur.

JOB PERFORMANCE MEASURE
NRC EXAM 2008

JPM Title Restore a RWCU Pump After Oil Sample (Plant Hot) With System Leak and Failure to Isolate	No.: 08-S-009 Revision: 0 Page 2
----------------------------------------------------------------------------------------------------------	----------------------------------------

Licensed Operator Exam Information (required for NRC exams)

Safety Function:

5 - Containment Integrity

K/A Reference: (from NUREG 1123)

K/A SYSTEM: 223002 - Primary Containment Isolation System /Nuclear Steam Supply Shut-Off
K/A STATEMENT:
A2. Ability to (a) predict the impacts of the following on the PRIMARY CONTAINMENT ISOLATION SYSTEM/NUCLEAR STEAM SUPPLY SHUT-OFF ; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those abnormal conditions or operations:
A2.03 System logic failures 3.0 / 3.3

Maintenance Rule Safety Classification:

G3300-03

Maintenance Rule Risk Significant? (Yes or No)

Yes

JOB PERFORMANCE MEASURE
NRC EXAM 2008

JPM Title Restore a RWCU Pump After Oil Sample (Plant Hot) With System Leak and Failure to Isolate	No.: 08-S-009 Revision: 0 Page 3
----------------------------------------------------------------------------------------------------------	----------------------------------------

PERFORMANCE EVALUATION

Start Time _____

ELEMENT	STANDARD
PREREQUISITES: None	
NOTE: Unless otherwise noted, all controls and indications for this section are located on COP H11-P601 and P602.	
CUE: Provide Examinee with CUE SHEET.	
* 1. Start RWCU Pump B and operate dead headed for 1-2 minutes.	* 1. RWCU Pump B is started.
NOTE: RWCU Isolation will occur in ~44 seconds after 2D115 alarms. Examinee may trip pumps and manually isolate system before the 44 seconds elapse.	
CUE: After 30 sec the Nuclear Operator in the RWCU Room reports, "Steam and loud noise in the pump room. Leaving the area."	
2. Announce alarms 2D115, RWCU DIFF HIGH FLOW, 1D66, STEAM LEAK DETECTION AMBIENT TEMP HIGH, and/or 1D70, STEAM LEAK DETECTION DIFF TEMP HIGH.	2. Alarms are announced.
NOTE: Examinee may check IPCS Area Temperatures Screen (ARM), but RWCU Data is only available in the Relay Room. He may also check IPCS Primary Containment Isolation Status Display for indications of isolation signal(s).	
3. Review ARP for alarm windows received.	3. ARPs reviewed.
CUE: Respond as Patrol NSO, who reports RWCU Pump Room B Delta T, G33-N602B, 60°F increasing AND RWCU Pump Room B Temp, G33-N600B, 185°F increasing.	
NOTE: This exceeds automatic isolation setpoints of 50°F differential temperature and 175°F for G3352-F001, F004 & F220 IAW ARPs 1D66 and 1D70. Isolation signals on IPCS – PRIMARY CONTAINMENT ISOLATION GROUP STATUS (Group 10 & 11) is adequate information for candidate to take actions to isolate RWCU.	
4. Direct Patrol NSO to Relay Room Panel H11-P614 to investigate alarm(s).	4. Operator sent to Relay Room to investigate.
CUE: Acknowledge report as CRS.	
5. Report information from Relay Room to CRS.	5. Information reported to CRS.
NOTE: Candidate may mention the need to enter EOPs on High Secondary Containment Temperature and/or Perform Loss of RWCU AOP.	
CUE: IF required, acknowledge (as CRS) report of need to enter EOPs on High Secondary Containment Temperature and/or Perform Loss of RWCU AOP.	
* 6. Recognize need to manually isolate RWCU from ARP information or Primary Containment Isolation Group Status Display.	* 6. Need to manually isolate system is recognized.

JOB PERFORMANCE MEASURE
NRC EXAM 2008

JPM Title Restore a RWCU Pump After Oil Sample (Plant Hot) With System Leak and Failure to Isolate	No.: 08-S-009 Revision: 0 Page 4
----------------------------------------------------------------------------------------------------------	----------------------------------------

ELEMENT	STANDARD
NOTE: Candidate may elect to shutdown RWCU pumps prior to isolation of system valves.	
* 7. Manually isolate RWCU valves G3350-F001, F004, & F220 (Groups 10 & 11).	* 7. RWCU valves G3350-F001, F004, & F220 are closed
CUE: End JPM when RWCU is isolated.	

_____ SATISFACTORY

_____ UNSATISFACTORY

Stop Time _____

* **Critical Step**

JOB PERFORMANCE MEASURE
NRC EXAM 2008

JPM Title Restore a RWCU Pump After Oil Sample (Plant Hot) With System Leak and Failure to Isolate	No.: 08-S-009 Revision: 0 Page 5
----------------------------------------------------------------------------------------------------------	----------------------------------------

Evaluator Notes:

ENSURE ALL INDUSTRIAL AND PERSONNEL SAFETY PRACTICES ARE USED AND ENFORCED AT ALL TIMES.

Generic Notes and Cues:

CMC switches will turn RED and amperage will increase when the switch is rotated to the start position started. The current should initially be five to seven times the normal running amps with the ammeter flashing. As counter EMF is developed, the amperage will lower to the normal running amperage and the ammeter will no longer flash. CMC switches will turn GREEN when the pumps are stopped and amperage will decrease to zero.

Ex.: Pump start: "Switch has been rotated to the start position, red light is lit, green light is out, amperage initially pegs out high, and is now indicating X amps."

Pump stop: "Switch has been rotated to the stop position, green light is lit, red light is out, amperage indicates 0 amps."

Remotely operated valve position is determined with open and close indicating lights. A RED light only would indicate that the valve is open. A GREEN light only would indicate that the valve is closed. Dual indication would indicate that the valve is in some intermediate position.

Manual valves are checked in the closed direction (MOP02 and MOP05). Valve stem position may aid in valve position determination, but cannot be used as Independent Verification (MOP02).

Ex.: Verify valve closed: "Valve handwheel indicates no valve movement in the clockwise direction."

Verify valve open: "Valve handwheel has been rotated slightly in the clockwise direction and returned to the original positions."

Closing a valve: "Valve handwheel has been rotated in the fully clockwise direction until no additional valve movement. Valve stem is down."

Opening a valve: "Valve handwheel has been rotated in the fully counterclockwise direction until no additional valve movement, valve stem is out."

Controllers have an Auto light that is GREEN when selected and AMBER (YELLOW) when Manual is selected. When in Manual, the open and closed pushbuttons control the parameter to be changed by adjusting position or speed. When the deviation meter is nulled, then the process can be shifted to Auto to allow the desired setpoint to control the process.

System Specific Notes and Cues:

None

Task Performance and Cues:

The Elements of this JPM are step by step in accordance with the procedure. The Standard is that the procedure is performed as written. The Cues are as listed above for indication or as each step is completed the appropriate information is reported to the examinee. Notify Examinee that time compression may be used for activities performed outside of the Control Room.

Critical Steps:

Critical Tasks are identified by asterisk (*) and **bolded** steps on the cover sheet. Verify that the latest revision of the procedure is used and critical tasks are correctly identified.

JOB PERFORMANCE MEASURE
NRC EXAM 2008

JPM Title Restore a RWCU Pump After Oil Sample (Plant Hot) With System Leak and Failure to Isolate	No.: 08-S-009 Revision: 0 Page 6
----------------------------------------------------------------------------------------------------------	----------------------------------------

FOLLOW-UP DOCUMENTATION QUESTIONS

Reason for follow-up question(s):

Question:

Reference:

Response:

Question:

Reference

Response:

JOB PERFORMANCE MEASURE
NRC EXAM 2008

JPM Title Restore a RWCU Pump After Oil Sample (Plant Hot) With System Leak and Failure to Isolate	No.: 08-S-009 Revision: 0 Page 7
----------------------------------------------------------------------------------------------------------	----------------------------------------

Simulator Setup

IC#:

IC-19, 20, or 21

Malfunctions:

Number	Title	Value	Delay	Ramp	Step
G301G3303C001B_MTFSSHEAR	Pump Shaft Shear	TRUE	0	0	2
G3BCSUM2547585K1	RWCU Flow Instrument Gain	0.55	0	5	4
G301G3352F001_MTVFAILSP	F001 Fail Specified Position	1	0	0	4
G301G3352F004_MTVFAILSP	F004 Fail Specified Position	1	0	0	4
G301G3352F220_MTVFAILSP	F220 Fail Specified Position	100	0	0	4
G301G3352F001_MTVFAILSP	F001 Fail Specified Position cd='P602_B138_1 EQ 1'	-1	0	0	5
G301G3352F004_MTVFAILSP	F004 Fail Specified Position cd='P602_B181_1 EQ 1'	-1	0	0	5
G301G3352F220_MTVFAILSP	F220 Fail Specified Position cd='P602_B196_1 EQ 1'	0	0	0	5

Remote Functions:

Number	Title	Value	Delay	Ramp	Step
G33RF0016	G33-F262A, RWCU Filter/Demin A FCV Auto Setpoint	118	0	30	1
G33RF0017	G33-F262B, RWCU Filter/Demin B FCV Auto Setpoint	0	0	30	1

Override Functions:

Number	Title	Value	Delay	Ramp	Step
H_P602_D097_1	02D97 RWCU Filter Demin Trouble Alarm	0	0	0	1
H_P602_A159_1	Clean-Up Recirc Pump B Ammeter cd='H_P602_A160_4 EQ 1'	40	0	1	2
H_P602_A159_1	Clean-Up Recirc Pump B Ammeter cd='H_P602_A160_4 EQ 1'	5	1	1	3
H_P601_D066_1	01D66 Steam Leak Detection Ambient Temp High	1	52	0	4
H_P601_D070_1	01D70 Steam Leak Detection Diff Temp High	1	58	0	4

Special Instructions:

1. Initialize simulator to desired IC and place in **RUN**.
2. Open and execute Lesson 08-S-009.Isn or load malfunctions/remotes/overrides as indicated above.
3. Trigger the Setup step of the lesson, allow RWCU flow to stabilize (~1.5 minutes), then stop RWCU Pump B.
4. Trigger step 2 of the lesson when the JPM has started. Steps 3, 4 & 5 automatically trigger when appropriate.

Cue Sheet

Initial Conditions:

- You are the Control Room NSO.
- You are restoring a RWCU Pump to service (Hot Plant) after drawing an oil sample.
- All prerequisites are complete.

Initiating Cue(s):

- The CRS directs you to restore RWCU Pump B to service in accordance with SOP 23.707.

JOB PERFORMANCE MEASURE
NRC EXAM 2008

JPM Title Respond to Multiple Control Rod Drifts and RPS Failure	No.: 08-S-006 Revision: 0 Page 1
---------------------------------------------------------------------	----------------------------------------

Preferred Evaluation Method:

Perform Walkthrough _____ Discuss _____
Plant _____ Simulator Classroom _____

System:

C1100 – Control Rod Drive Hydraulic System

Task:

02A0001020 - Recognize, respond to, and correct a Control Rod Drift

References: Required (R) / Available (A)

3D80, "Control Rod Drift" (R)
20.106.07, "Control Rod Drift" (A)
23.106, "Control Rod Drive Hydraulic System" (A)
ODE 10, "Emergency Operating Procedure Expectations" (A)

Tools and Equipment Required:

None

Initial Conditions:

- You are the P603 Operator.
- Plant conditions are as you see them.

Initiating Cue(s):

- Respond to conditions in accordance with plant procedures.
- Another operator will address plant alarms **not** associated with this task.

Terminating Cue(s):

Mode Switch is in SHUTDOWN, RPS has actuated using Manual Scram pushbuttons and all rods are fully inserted.

Task Standard:

Examinee places Mode Switch in Shutdown due to multiple rod drifts. Then he identifies failure of Mode Switch and depresses Manual Scram Pushbuttons resulting in a full scram.

JOB PERFORMANCE MEASURE
NRC EXAM 2008

JPM Title Respond to Multiple Control Rod Drifts and RPS Failure	No.: 08-S-006 Revision: 0 Page 2
---------------------------------------------------------------------	----------------------------------------

Licensed Operator Exam Information (required for NRC exams)

Safety Function:

7 - Instrumentation

K/A Reference: (from NUREG 1123)

K/A SYSTEM: 212000 - Reactor Protection System

K/A STATEMENT:

A2. Ability to (a) predict the impacts of the following on the REACTOR PROTECTION SYSTEM ;
and (b) based on those predictions, use procedures to correct, control, or mitigate the
consequences of those abnormal conditions or operations:

A2.16 Changing mode switch position4.0 / 4.1

Maintenance Rule Safety Classification:

C7100-02

Maintenance Rule Risk Significant? (Yes or No)

Yes

JOB PERFORMANCE MEASURE
NRC EXAM 2008

JPM Title Respond to Multiple Control Rod Drifts and RPS Failure	No.: 08-S-006 Revision: 0 Page 3
---------------------------------------------------------------------	----------------------------------------

PERFORMANCE EVALUATION

Start Time _____

ELEMENT	STANDARD
PREREQUISITES: None	
NOTE: Unless otherwise noted, all controls and indications for this section are located on COP H11-P603.	
CUE: Provide Examinee with CUE SHEET. After examinee states he is ready, inform him he has control, then cue the console operator to trigger the rod drifts.	
1. Announce alarm 3D80, CONTROL ROD DRIFT.	1. Examinee calls out alarm and reviews ARP.
2. Verify Rod Drift as follows: <ul style="list-style-type: none"> • Red Rod Drift light ON at Full Core Display. • Rod moving out or into core. • Nuclear Instrumentation for power changes caused by moving Control Rods. 	2. Using Full Core Display, identifies drifting rod 10-15. If rod 10-15 is SELECTED, rod is drifting IN.
NOTE: Next rod begins to drift 3 seconds later. Actions for single control rod drift should not be able to be completed in their entirety but are listed here.	
3. IF single Control Rod is moving inward or outward, PERFORM 20.106.07, "Control Rod Drift."	3. Reviews AOP 20.106.07.
4. Fully insert Control Rod.	4. Selects the 02-27 and inserts to 00 using Normal Insert.
CUE: Respond as RB Rounds Operator that you are getting a peer checker and will disarm Control Rod 10-157 IAW 23.106 Section 6.6.	
5. Disarm Control Rod as follows: <ul style="list-style-type: none"> a. Close C11-F103 (HCU 10-15). b. Close C11-F105 (HCU 10-15). 	5. Contacts RB Rounds Operator and directs disarming 02-27 IAW 23.106.
6. Notify SNE of drifting Control Rod.	6. Contacts SNE.
* 7. Examinee observes and identifies multiple control rods drifting.	* 7. Examinee identifies and reports multiple control rods are drifting.
8. Places Reactor Mode Switch in SHUTDOWN.	8. Immediate actions to place the mode switch in SHUTDOWN are carried out without direction when required by 20.106.07, "Control Rod Drift". Examinee identifies RPS did not actuate.

JOB PERFORMANCE MEASURE
NRC EXAM 2008

JPM Title Respond to Multiple Control Rod Drifts and RPS Failure	No.: 08-S-006 Revision: 0 Page 4
---------------------------------------------------------------------	----------------------------------------

ELEMENT	STANDARD
Alternate Path Begins Here (RPS Failure)	
* 8. If one or both divisions of RPS fail to actuate after Mode Switch in Shutdown, examinee depresses RPS Manual Scram Pushbuttons and monitors for proper operation of RPS.	* 8. Manual Scram Pushbuttons are depressed.
CUE: End JPM when Mode Switch is in SHUTDOWN, RPS has been actuated using Manual Scram pushbuttons, and all rods are fully inserted.	

_____ SATISFACTORY

_____ UNSATISFACTORY

Stop Time _____

*** Critical Step**

JOB PERFORMANCE MEASURE
NRC EXAM 2008

JPM Title Respond to Multiple Control Rod Drifts and RPS Failure	No.: 08-S-006 Revision: 0 Page 5
---------------------------------------------------------------------	----------------------------------------

Evaluator Notes:

ENSURE ALL INDUSTRIAL AND PERSONNEL SAFETY PRACTICES ARE USED AND ENFORCED AT ALL TIMES.

Generic Notes and Cues:

CMC switches will turn RED and amperage will increase when the switch is rotated to the start position started. The current should initially be five to seven times the normal running amps with the ammeter flashing. As counter EMF is developed, the amperage will lower to the normal running amperage and the ammeter will no longer flash. CMC switches will turn GREEN when the pumps are stopped and amperage will decrease to zero.

Ex.: Pump start: "Switch has been rotated to the start position, red light is lit, green light is out, amperage initially pegs out high, and is now indicating X amps."

Pump stop: "Switch has been rotated to the stop position, green light is lit, red light is out, amperage indicates 0 amps."

Remotely operated valve position is determined with open and close indicating lights. A RED light only would indicate that the valve is open. A GREEN light only would indicate that the valve is closed. Dual indication would indicate that the valve is in some intermediate position.

Manual valves are checked in the closed direction (MOP02 and MOP05). Valve stem position may aid in valve position determination, but cannot be used as Independent Verification (MOP02).

Ex.: Verify valve closed: "Valve handwheel indicates no valve movement in the clockwise direction."

Verify valve open: "Valve handwheel has been rotated slightly in the clockwise direction and returned to the original positions."

Closing a valve: "Valve handwheel has been rotated in the fully clockwise direction until no additional valve movement. Valve stem is down."

Opening a valve: "Valve handwheel has been rotated in the fully counterclockwise direction until no additional valve movement, valve stem is out."

Controllers have an Auto light that is GREEN when selected and AMBER (YELLOW) when Manual is selected. When in Manual, the open and closed pushbuttons control the parameter to be changed by adjusting position or speed. When the deviation meter is nulled, then the process can be shifted to Auto to allow the desired setpoint to control the process.

System Specific Notes and Cues:

None

Task Performance and Cues:

The Elements of this JPM are step by step in accordance with the procedure. The Standard is that the procedure is performed as written. The Cues are as listed above for indication or as each step is completed the appropriate information is reported to the examinee. Notify Examinee that time compression may be used for activities performed outside of the Control Room.

Critical Steps:

Critical Tasks are identified by asterisk (*) and **bolded** steps on the cover sheet. Verify that the latest revision of the procedure is used and critical tasks are correctly identified.

JOB PERFORMANCE MEASURE
NRC EXAM 2008

JPM Title Respond to Multiple Control Rod Drifts and RPS Failure	No.: 08-S-006 Revision: 0 Page 6
---------------------------------------------------------------------	----------------------------------------

FOLLOW-UP DOCUMENTATION QUESTIONS

Reason for follow-up question(s):

Question:

Reference:

Response:

Question:

Reference

Response:

JOB PERFORMANCE MEASURE
NRC EXAM 2008

JPM Title Respond to Multiple Control Rod Drifts and RPS Failure	No.: 08-S-006 Revision: 0 Page 7
---------------------------------------------------------------------	----------------------------------------

Simulator Setup

IC#:

IC-19 (or any full power IC)

Malfunctions:

Number	Title	Value	Delay	Ramp	Step
C97MF0426	3D80 Rod Drift Alarm	1	0	0	1
C11MF0109	Control Rod 10-15 Drift In	ACTIVE	0	0	1
C11MF0019	Control Rod 02-27 Drift In	ACTIVE	3	0	2
C11MF0067	Control Rod 06-27 Drift In	ACTIVE	6	0	2
C11MF1039	Control Rod 54-27 Drift In	ACTIVE	9	0	2
C11MF1075	Control Rod 58-19 Drift In	ACTIVE	12	0	2

Remote Functions:

Number	Title	Value	Delay	Ramp	Step
N/A					

Override Functions:

Number	Title	Value	Delay	Ramp	Step
P603_A048_4	Reactor Mode Run Handle Pos	1	0	0	1

Special Instructions:

1. Initialize the simulator to the desired IC and place in **RUN**.
2. Open and execute Lesson 08-S-006.Isn, or load the malfunctions/overrides as listed above.
3. Trigger the control rod drifts when cued by examiner.

Cue Sheet

Initial Conditions:

- You are the P603 Operator.
- Plant conditions are as you see them.

Initiating Cue(s):

- Respond to conditions in accordance with plant procedures.
- Another operator will address plant alarms **not** associated with this task.

JOB PERFORMANCE MEASURE
NRC EXAM 2008

Job Position SRO / RO	No. 08-S-008	Revision 0
JPM Title Manually Initiate Div 1 Emergency Equipment Cooling Water (Alt Path)	Duration 20 minutes	Page COVER SHEET

Examinee: _____ SRO / RO / NO / STA

Evaluator: _____

JPM Type: Normal / **Alternate Path** / Time Critical

Evaluation Method: **Perform** / Walkthrough / Discuss Start Time _____

(Circle method used) Plant / **Simulator** / Classroom Stop Time _____

Total Time: _____

PERFORMANCE EVALUATION SUMMARY							
Element	S	U	Comments	Element	S	U	Comments
1.							
2.							
3.							
4.							
* 5.							
6.							
7.							
8.							
* 9.							
10.							
*11.							
*12.							
13.							

_____ SATISFACTORY

_____ UNSATISFACTORY

OVERALL EVALUATOR COMMENTS:

Evaluator Signature / Date: _____ / _____

JOB PERFORMANCE MEASURE
NRC EXAM 2008

JPM Title Manually Initiate Div 1 Emergency Equipment Cooling Water (Alt Path)	No.: 08-S-008 Revision: 0 Page 1
--------------------------------------------------------------------------------------	----------------------------------------

Preferred Evaluation Method:

Perform Walkthrough _____ Discuss _____
Plant _____ Simulator Classroom _____

System:

P4400 – Emergency Equipment Closed Cooling Water System

Task:

02P4400001 - Startup Reactor Building Closed Cooling Water/Emergency Equipment Cooling Water

References: Required (R) / Available (A)

23.127, "Reactor Building Closed Cooling Water / Emergency Equipment Closed Cooling Water System" (R)
1D88, "DIV 1 EECW HX OUTLET TEMPERATURE HIGH/LOW" (R)
23.208, "RHR Complex Service Water Systems" (R)

Tools and Equipment Required:

None

Initial Conditions:

- You are the Control Room NSO.
- RBCCW is operating normally, however heat load is expected to increase.

Initiating Cue(s):

- The CRS directs you to manually initiate Div 1 EECW.
- Another operator will address plant alarms **not** associated with this task.

Terminating Cue(s):

Division I EECW is operating, TCV in MANUAL control, TCV is open, and EESW Flow is indicated

Task Standard:

Div 1 EECW has been manually initiated in accordance with 23.127. TCV has been taken to MANUAL control, TCV is open, and EESW flow is indicated.

JOB PERFORMANCE MEASURE
NRC EXAM 2008

JPM Title Manually Initiate Div 1 Emergency Equipment Cooling Water (Alt Path)	No.: 08-S-008 Revision: 0 Page 2
--------------------------------------------------------------------------------------	----------------------------------------

Licensed Operator Exam Information (required for NRC exams)

Safety Function:

8 – Plant Service Systems

K/A Reference: (from NUREG 1123)

K/A SYSTEM: 40000 - Component Cooling Water Systems (CCWS)
K/A STATEMENT:
A4 Ability to manually operate and / or monitor in the control room: (CFR: 41.7 / 45.5 to 45.8)
A4.01 CCW indications and control 3.1 / 3.0

Maintenance Rule Safety Classification:

P4400-01

Maintenance Rule Risk Significant? (Yes or No)

Yes

JOB PERFORMANCE MEASURE
NRC EXAM 2008

JPM Title Manually Initiate Div 1 Emergency Equipment Cooling Water (Alt Path)	No.: 08-S-008 Revision: 0 Page 3
--------------------------------------------------------------------------------------	----------------------------------------

PERFORMANCE EVALUATION

Start Time _____

ELEMENT	STANDARD
PREREQUISITES: None	
CUE: T4100-B033 is in OFF	
1. Place T4100-B033, Battery Room AC Unit Switch, in OFF.	1. Direction given to NO to place T4100-B033 Switch in OFF.
2. Close P4400-F613, Div 1 EECW To Batt Rm's A/C Iso Vlv (H11-P808).	2. Close pushbutton depressed.
3. Verify P4400-F613 is closed.	3. P4400-F613 is verified closed.
CUE: RPS MG set room doors are CLOSED.	
4. Verify RPS MG set room doors are closed.	4. Direction given to NO to verify RPS MG set room doors are closed.
* 5. Depress EECW Div I Manual Initiation pushbutton.	* 5. Div I Manual Initiation pushbutton is depressed.
6. Verify the white Emergency Mode light comes ON.	6. White Emergency light is verified ON.
NOTE: Div 1 EECW TCV fails closed when Emergency Mode is initiated.	
7. Verify the following valves reposition as indicated: a. P44-F603A, Div 1 EECW Supply Iso Vlv, Closed b. P44-F601A, Div 1 EECW Return Iso Vlv, Closed c. P44-F602A, Div I EECW Make Up Tank Iso Vlv, Open d. P4400-F613, Div 1 EECW to Batt Rm's AC Iso, (T4100-B033 Iso Valve), Closed e. P44-F605A, Div 1 EECW to NW Sump HX Iso Vlv, Closed f. P44-F614, Div 1 EECW to Penet Clr's Iso, Closed g. P44-F606A, Div 1 EECW DW Otbd Supply Valve, Closed (if High Drywell Pressure also exists)	7. Valve positions are verified.
8. Verify EECW Pump A and EESW Pump A auto starts.	8. EECW and EESW Pump A are verified running.
* 9. Verify all operating parameters for Div I EECW System are normal and all alarms are cleared.	* 9. All operating parameters are <u>NOT NORMAL:</u> <ul style="list-style-type: none"> • 1D88 is in alarm. • EESW Flow is 0%. • EECW TCV is Closed.

JOB PERFORMANCE MEASURE
NRC EXAM 2008

JPM Title Manually Initiate Div 1 Emergency Equipment Cooling Water (Alt Path)	No.: 08-S-008 Revision: 0 Page 4
--------------------------------------------------------------------------------------	----------------------------------------

ELEMENT	STANDARD
*10. Notifies CRS that EECW TCV is not functioning correctly.	*10. CRS informed EECW TCV malfunctioning.
Alternate Path Starts Here	
11. Review ARP 1D88.	11. ARP is reviewed. ARP Step 4 directs manual control, IF TCV <u>not</u> responding in AUTO.
NOTE: MOP04, Section 2.3.3.2 has direction for manual control IF AUTO control is not available OR Manual control is required to maintain control band. Alternate path actions also found in 23.208, Sections 5.7.2.1.4 and 5.10.2.1.e and ARP 1D88	
NOTE: Malfunction clears when manual control is taken.	
*12. Take MANUAL Control of Div 1 EECW TCV.	*12. Examinee announces taking Manual Control, depressing the A/M Pushbutton and observing the red LED Light ON.
*13. Open the TCV.	*13. Examinee turns the Pulser Knob clockwise to open the TCV and control EECW temperature.
14. Monitor for indications of response to manual control signals.	14. Examinee monitors the system to observe indications of response to manual control signals.
CUE: End JPM when Division I EECW is operating, TCV in MANUAL control, TCV is open, and EESW Flow is indicated.	

_____ SATISFACTORY

_____ UNSATISFACTORY

Stop Time _____

*** Critical Step**

JOB PERFORMANCE MEASURE
NRC EXAM 2008

JPM Title Manually Initiate Div 1 Emergency Equipment Cooling Water (Alt Path)	No.: 08-S-008 Revision: 0 Page 5
--------------------------------------------------------------------------------------	----------------------------------------

Evaluator Notes:

RBCCW should be in service and remain in service, and EECW loads should not be restored.

Evaluator should be prepared to respond as CRS to decide if EECW initiation signal and EECW cooling loads should be restored, if requested by the examinee. The initiation signal does not need to be reset. Cooling loads do not need to be restored at this time.

ENSURE ALL INDUSTRIAL AND PERSONNEL SAFETY PRACTICES ARE USED AND ENFORCED AT ALL TIMES.

Generic Notes and Cues:

CMC switches will turn RED and amperage will increase when the switch is rotated to the start position started. The current should initially be five to seven times the normal running amps with the ammeter flashing. As counter EMF is developed, the amperage will lower to the normal running amperage and the ammeter will no longer flash. CMC switches will turn GREEN when the pumps are stopped and amperage will decrease to zero.

Ex.: Pump start: "Switch has been rotated to the start position, red light is lit, green light is out, amperage initially pegs out high, and is now indicating X amps."

Pump stop: "Switch has been rotated to the stop position, green light is lit, red light is out, amperage indicates 0 amps."

Remotely operated valve position is determined with open and close indicating lights. A RED light only would indicate that the valve is open. A GREEN light only would indicate that the valve is closed. Dual indication would indicate that the valve is in some intermediate position.

Manual valves are checked in the closed direction (MOP02 and MOP05). Valve stem position may aid in valve position determination, but cannot be used as Independent Verification (MOP02).

Ex.: Verify valve closed: "Valve handwheel indicates no valve movement in the clockwise direction."

Verify valve open: "Valve handwheel has been rotated slightly in the clockwise direction and returned to the original positions."

Closing a valve: "Valve handwheel has been rotated in the fully clockwise direction until no additional valve movement. Valve stem is down."

Opening a valve: "Valve handwheel has been rotated in the fully counterclockwise direction until no additional valve movement, valve stem is out."

Controllers have an Auto light that is GREEN when selected and AMBER (YELLOW) when Manual is selected. When in Manual, the open and closed pushbuttons control the parameter to be changed by adjusting position or speed. When the deviation meter is nulled, then the process can be shifted to Auto to allow the desired setpoint to control the process.

System Specific Notes and Cues:

None

Task Performance and Cues:

The Elements of this JPM are step by step in accordance with the procedure. The Standard is that the procedure is performed as written. The Cues are as listed above for indication or as each step is completed the appropriate information is reported to the examinee. Notify Examinee that time compression may be used for activities performed outside of the Control Room.

Critical Steps:

Critical Tasks are identified by asterisk (*) and **bolded** steps on the cover sheet. Verify that the latest revision of the procedure is used and critical tasks are correctly identified.

JOB PERFORMANCE MEASURE
NRC EXAM 2008

JPM Title Manually Initiate Div 1 Emergency Equipment Cooling Water (Alt Path)	No.: 08-S-008 Revision: 0 Page 6
--------------------------------------------------------------------------------------	----------------------------------------

FOLLOW-UP DOCUMENTATION QUESTIONS

Reason for follow-up question(s):

Question:

Reference:

Response:

Question:

Reference

Response:

JOB PERFORMANCE MEASURE
NRC EXAM 2008

JPM Title Manually Initiate Div 1 Emergency Equipment Cooling Water (Alt Path)	No.: 08-S-008 Revision: 0 Page 7
--------------------------------------------------------------------------------------	----------------------------------------

Simulator Setup

IC#:

Any IC, as long as EECW is in Standby

Malfunctions:

Number	Title	Value	Delay	Ramp
EB05TCVF400A_ATVFAILSP	*FAIL TO SPECIFIED POSITION cd='H_P601_B154_2 EQ 1'	0	30	0
EB05TCVF400A_ATVFAILSP	*FAIL TO SPECIFIED POSITION cd='P601_A168_4 EQ 1'	-1	0	0

Remote Functions:

Number	Title	Value	Delay	Ramp
None				

Override Functions:

Number	Title	Value	Delay	Ramp
None				

Special Instructions:

1. Initialize simulator to selected IC.
2. Place simulator in RUN.
3. Open and execute lesson 08-S-008.lsn.

Cue Sheet

Initial Conditions:

- You are the CRNSO.
- RBCCW is operating normally, however heat load is expected to increase.

Initiating Cue(s):

- The CRS directs you to manually initiate Div 1 EECW.
- Another operator will address plant alarms **not** associated with this task.

JOB PERFORMANCE MEASURE
NRC EXAM 2008

JPM Title Shift Operating CRD Pumps	No.: 08-S-001 Revision: 0 Page 1
----------------------------------------	----------------------------------------

Preferred Evaluation Method:

Perform Walkthrough Discuss
Plant Simulator Classroom

System:

C1150 – Control Rod Drive Hydraulic System

Task:

02C1150004 - Shift Control Rod Drive Pumps

References: Required (R) / Available (A)

23.106, "Control Rod Drive Hydraulic System, Section 5.1, CRD Pump Shift" (R)
6M721-5703-1, CRD System Functional Operating Sketch (A)
6M721-2081, CRDH System- RB Part 1 of 2 (A)

Tools and Equipment Required:

None

Initial Conditions:

- You are the Control Room NSO.
- CRD pumps are to be shifted for upcoming maintenance.
- A pre-job brief has been completed.
- An operator is in the field awaiting instructions.
- All prerequisites are met for CRD pump shift.

Initiating Cue(s):

- The CRS directs you to shift operating CRD Pumps.
- Another operator will address plant alarms **not** associated with this task.

Terminating Cue(s):

CRD Pump shift is complete.

Task Standard:

CRD pumps are shifted in accordance with normal operating procedure (23.106).

JOB PERFORMANCE MEASURE
NRC EXAM 2008

JPM Title Shift Operating CRD Pumps	No.: 08-S-001 Revision: 0 Page 2
----------------------------------------	----------------------------------------

Licensed Operator Exam Information (required for NRC exams)

Safety Function:

1 – Reactivity Control

K/A Reference: (from NUREG 1123)

K/A SYSTEM: 201001 - Control Rod Drive Hydraulic System
K/A STATEMENT:
A4. Ability to manually operate and/or monitor in the control room:
A4.01 CRD pumps..... 3.1 / 3.1

Maintenance Rule Safety Classification:

C1100-08

Maintenance Rule Risk Significant? (Yes or No)

No

JOB PERFORMANCE MEASURE
NRC EXAM 2008

JPM Title Shift Operating CRD Pumps	No.: 08-S-001 Revision: 0 Page 3
----------------------------------------	----------------------------------------

PERFORMANCE EVALUATION

Start Time _____

ELEMENT	STANDARD
PREREQUISITES: CRD Pump A is in service.	
CUE: Provide Examinee with CUE SHEET. Hand examinee a copy of 23.106 after candidate locates the correct procedure.	
CUE: RB Rounds calls back and states 5.1.2.1 through 5.1.2.3 are complete, and reports "West CRD Pump ready for start."	
1. Perform pre-start checks of standby pump.	1. Contact RB Rounds and direct Steps 5.1.2.1 through 5.1.2.3 of 23.106 for CRD Pump B.
* 2. Place Control Rod Drive Hydraulic System Flow controller in MANUAL.	* 2. Places C11-K612 in MANUAL.
* 3. Slowly decrease system flow to approximately 30 gpm.	* 3. Turn knob on C11-K612 to decrease system flow to approximately 30 gpm as indicated on C11-R800, CRD Hyd Flow indication.
NOTE: Candidate should make Hi-Com announcement and Crew Update, "Starting the West (B) CRD Pump" prior to starting pump.	
CUE: RB Rounds calls and reports good start on West CRD Pump.	
* 4. Start standby C1106-C001B, West CRD Pump.	* 4. Starts standby pump.
* 5. Stop C1106-C001A, East CRD Pump.	* 5. Stops initially running pump.
CUE: If candidate asks for desired flow, respond by stating "Return to the pre-shift flow setting of 63 gpm."	
* 6. Slowly adjust Control Rod Drive Hydraulic System Flow controller to establish a flow rate of 37 to 63 gpm.	* 6. Depress OPEN pushbutton on C11-K612 to return flow to approx. 63 gpm as indicated on C11-R800, CRD Hydraulic Flow indicator.
* 7. Place in AUTO.	* 7. Places C11-K612 in AUTO.
8. If necessary, throttle C1152-F003, CRD Drive/Clg Water PCV, to maintain the following: a. 255 to 265 psi on C11-R602, Drive Water Diff Press Ind. b. 6 to 30 psi on C11-R603, Cooling Wtr Diff Press Ind.	8. Throttles PCV as necessary to establish pressures in band.
CUE: End JPM when CRD Pump shift is complete.	

_____ SATISFACTORY

_____ UNSATISFACTORY

Stop Time _____

*** Critical Step**

JOB PERFORMANCE MEASURE
NRC EXAM 2008

JPM Title Shift Operating CRD Pumps	No.: 08-S-001 Revision: 0 Page 4
----------------------------------------	----------------------------------------

Evaluator Notes:

ENSURE ALL INDUSTRIAL AND PERSONNEL SAFETY PRACTICES ARE USED AND ENFORCED AT ALL TIMES.

Generic Notes and Cues:

CMC switches will turn RED and amperage will increase when the switch is rotated to the start position started. The current should initially be five to seven times the normal running amps with the ammeter flashing. As counter EMF is developed, the amperage will lower to the normal running amperage and the ammeter will no longer flash. CMC switches will turn GREEN when the pumps are stopped and amperage will decrease to zero.

Ex.: Pump start: "Switch has been rotated to the start position, red light is lit, green light is out, amperage initially pegs out high, and is now indicating X amps."

Pump stop: "Switch has been rotated to the stop position, green light is lit, red light is out, amperage indicates 0 amps."

Remotely operated valve position is determined with open and close indicating lights. A RED light only would indicate that the valve is open. A GREEN light only would indicate that the valve is closed. Dual indication would indicate that the valve is in some intermediate position.

Manual valves are checked in the closed direction (MOP02 and MOP05). Valve stem position may aid in valve position determination, but cannot be used as Independent Verification (MOP02).

Ex.: Verify valve closed: "Valve handwheel indicates no valve movement in the clockwise direction."

Verify valve open: "Valve handwheel has been rotated slightly in the clockwise direction and returned to the original positions."

Closing a valve: "Valve handwheel has been rotated in the fully clockwise direction until no additional valve movement. Valve stem is down."

Opening a valve: "Valve handwheel has been rotated in the fully counterclockwise direction until no additional valve movement, valve stem is out."

Controllers have an Auto light that is GREEN when selected and AMBER (YELLOW) when Manual is selected. When in Manual, the open and closed pushbuttons control the parameter to be changed by adjusting position or speed. When the deviation meter is nulled, then the process can be shifted to Auto to allow the desired setpoint to control the process.

System Specific Notes and Cues:

None

Task Performance and Cues:

The Elements of this JPM are step by step in accordance with the procedure. The Standard is that the procedure is performed as written. The Cues are as listed above for indication or as each step is completed the appropriate information is reported to the examinee. Notify Examinee that time compression may be used for activities performed outside of the Control Room.

Critical Steps:

Critical Tasks are identified by asterisk (*) and **bolded** steps on the cover sheet. Verify that the latest revision of the procedure is used and critical tasks are correctly identified.

JOB PERFORMANCE MEASURE
NRC EXAM 2008

JPM Title Shift Operating CRD Pumps	No.: 08-S-001 Revision: 0 Page 5
----------------------------------------	----------------------------------------

FOLLOW-UP DOCUMENTATION QUESTIONS

Reason for follow-up question(s):

Question:

Reference:

Response:

Question:

Reference

Response:

JOB PERFORMANCE MEASURE
NRC EXAM 2008

JPM Title Shift Operating CRD Pumps	No.: 08-S-001 Revision: 0 Page 6
----------------------------------------	----------------------------------------

Simulator Setup

IC#:

Any IC with CRD in operation.

Malfunctions:

Number	Title	Value	Delay	Ramp
N/A				

Remote Functions:

Number	Title	Value	Delay	Ramp
N/A				

Override Functions:

Number	Title	Value	Delay	Ramp
N/A				

Special Instructions:

Ensure CRD Pump A is in service.

Cue Sheet

Initial Conditions:

- You are the Control Room NSO.
- CRD pumps are to be shifted for upcoming maintenance.
- A pre-job brief has been completed.
- An operator is in the field awaiting instructions.
- All prerequisites are met for CRD pump shift.

Initiating Cue(s):

- The CRS directs you to shift operating CRD Pumps.
- Another operator will address plant alarms **not** associated with this task.

JOB PERFORMANCE MEASURE
NRC EXAM 2008

Job Position SRO / RO	No. 08-S-004	Revision 0
JPM Title Temporary Removal and Restoration of Shutdown Cooling for I&C Surveillances (Alt Path)	Duration 30 minutes	Page COVER SHEET

Examinee: _____ SRO / RO / NO / STA

Evaluator: _____

JPM Type: Normal / **Alternate Path** / Time Critical

Evaluation Method: **Perform** / Walkthrough / Discuss Start Time _____

(Circle method used) Plant / **Simulator** / Classroom Stop Time _____

Total Time: _____

PERFORMANCE EVALUATION SUMMARY							
Element	S	U	Comments	Element	S	U	Comments
* 1.							
* 2.							
3.							
4.							
5.							
6.							
7.							
8.							
* 9.							
*10.							
11.							
*12.							
13.							
14.							

_____ SATISFACTORY

_____ UNSATISFACTORY

OVERALL EVALUATOR COMMENTS:

Evaluator Signature / Date: _____ / _____

JOB PERFORMANCE MEASURE
NRC EXAM 2008

JPM Title Temporary Removal and Restoration of Shutdown Cooling for I&C Surveillances	No.: 08-S-004 Revision: 0 Page 1
---------------------------------------------------------------------------------------------	----------------------------------------

Preferred Evaluation Method:

Perform Walkthrough Discuss
Plant Simulator Classroom

System:

E1150 – Residual Heat Removal System

Task:

02E1100007 - Operate RHR in Shutdown Cooling Mode

References: Required (R) / Available (A)

23.205, "Residual Heat Removal System", Section 6.7 (R)
6M721-5703-2, RHR Div 1 Functional Operating Sketch (A)
6M721-5703-1, RHR Div 2 Functional Operating Sketch (A)

Tools and Equipment Required:

None

Initial Conditions:

- You are the Control Room NSO.
- The plant is in Mode 4
- Time to boil is >8 hours.
- Reactor Level band is 220-255 inches.
- A pre-job brief has been completed.
- Operators are in the field and have all required equipment to perform their evolutions.
- All prerequisites are met for the temporary removal and restoration of SDC.
- Another Operator is taking temperature data.
- All MDCT Fans are operating in high speed.
- E1100-F211 is open.

Initiating Cue(s):

- The CRS directs you to temporarily remove and restore Shutdown Cooling for I&C Surveillances.
- Another operator will address plant alarms not associated with this task.

Terminating Cue(s):

Div 2 RHR Pump B or D is shutdown and E1100-F018B is directed to be unlocked and closed.

Task Standard:

Div 2 RHR Pump B or D is shutdown per 23.205.

JOB PERFORMANCE MEASURE
NRC EXAM 2008

JPM Title Temporary Removal and Restoration of Shutdown Cooling for I&C Surveillances	No.: 08-S-004 Revision: 0 Page 2
---------------------------------------------------------------------------------------------	----------------------------------------

Licensed Operator Exam Information (required for NRC exams)

Safety Function:

4 – Heat Removal from Reactor Core

K/A Reference: (from NUREG 1123)

K/A SYSTEM: 205000 - Shutdown Cooling System (RHR Shutdown Cooling Mode)
K/A STATEMENT:
A4. Ability to manually operate and/or monitor in the control room:
A4.05 Minimum flow valves 3.2 / 3.2

Maintenance Rule Safety Classification:

From MMR Appendix E

Maintenance Rule Risk Significant? (Yes or No)

From MMR Appendix E

JOB PERFORMANCE MEASURE
NRC EXAM 2008

JPM Title Temporary Removal and Restoration of Shutdown Cooling for I&C Surveillances	No.: 08-S-004 Revision: 0 Page 3
---------------------------------------------------------------------------------------------	----------------------------------------

PERFORMANCE EVALUATION

Start Time _____

ELEMENT	STANDARD
PREREQUISITES: None	
NOTE: Unless otherwise noted, all controls and indications for this section are located on COP H11-P602.	
CUE: Provide Examinee with CUE SHEET. Examiner hands examinee a copy of 23.205 after candidate locates the correct procedure and section.	
NOTE: T.S. 3.4.9 is being complied with.	
CUE: All communications will be directed to me and I will respond as addressed.	
* 1. Close E1150-F611B, Div 2 RHR LPCI Bypass Vlv.	* 1. Closes E1150-F611B.
* 2. Immediately shut down RHR Pump B.	* 2. Stops RHR Pump B.
3. Verify closed, E1150-F007B, Div 2 RHR Pmps Min Flow Vlv.	3. Verifies E1150-F007B closed.
CUE: RHR SW will not be required to be shutdown.	
CUE: I&C is done with their surveillance. Restore RHR DIV II Shutdown Cooling to service.	
4. When desired to restore Shutdown Cooling, verify the following valves CLOSED: <ul style="list-style-type: none"> a. E1150-F007B, Div 2 RHR Pmps Min Flow Vlv b. E1150-F004B, Div 2 RHR Pump B Torus Suct Iso c. E1150-F004D, Div 2 RHR Pump D Torus Suct Iso d. E1150-F017B, Div 2 LPCI Otbd Iso Vlv 	4. The following valves are CLOSED: <ul style="list-style-type: none"> a. E1150-F007B, Div 2 RHR Pmps Min Flow Vlv b. E1150-F004B, Div 2 RHR Pump B Torus Suct Iso c. E1150-F004D, Div 2 RHR Pump D Torus Suct Iso d. E1150-F017B, Div 2 LPCI Otbd Iso Vlv
5. Verify the following valves OPEN: <ul style="list-style-type: none"> a. E1150-F008, RHR SDC Otbd Suction Iso Vlv b. E1150-F009, RHR SDC Inbd Suction Iso Vlv c. E1150-F006B, Div 2 RHR Pump B SDC Suct Iso VI d. E1150-F006D, Div 2 RHR Pump D SDC Suct Iso Vlv e. E1150-F015B, Div 2 LPCI Inbd Iso Vlv 	5. The following valves are OPEN: <ul style="list-style-type: none"> a. E1150-F008, RHR SDC Otbd Suction Iso Vlv b. E1150-F009, RHR SDC Inbd Suction Iso Vlv c. E1150-F006B, Div 2 RHR Pump B SDC Suct Iso VI d. E1150-F006D, Div 2 RHR Pump D SDC Suct Iso Vlv e. E1150-F015B, Div 2 LPCI Inbd Iso Vlv

JOB PERFORMANCE MEASURE
NRC EXAM 2008

JPM Title Temporary Removal and Restoration of Shutdown Cooling for I&C Surveillances	No.: 08-S-004 Revision: 0 Page 4
---------------------------------------------------------------------------------------------	----------------------------------------

ELEMENT	STANDARD
CUE: Respond as NO for direction to vent the Div 2 Shutdown Cooling Loop. After a short delay report, "Div 2 Shutdown Cooling Loop high point is vented as expected, no air." Procedure 23.205 step 6.7.3.2.d	
6. Direct operator to vent the high point of Div 2 Shutdown Cooling Loop via the following valves: a. E1100-F204B, RHR Loop B Drywell Spray Line High Point Vent Valve b. E1100-F205B, Loop B Drywell Spray Line High Point Vent Valve	6. Div 2 Shutdown Cooling Loop has been directed to be vented.
CUE: Respond as NO for direction to vent the Head Spray Line. After a short delay report, "Div 2 Shutdown Cooling Loop Head Spray Line is vented as expected, no air." Procedure 23.205 step 6.7.3.2.e	
7. Direct operator to vent Head Spray Line via the following valves (RB3-C13): a. E1100-F330, RPV Head Spray Vent Iso Valve. b. E1100-F331, RPV Head Spray Vent Iso Valve.	7. The Head Spray Line has been directed to be vented.
CUE: Respond as NO, "Standing by to operate E1100-F018B."	
8. Station operator at E1100-F018B and D, Div 2 RHR Pump B and D Min Flow Line Iso Vlv (RB-SB).	8. An operator has been directed to stand by.
NOTE: The examinee should closely monitor RPV water level while performing the following steps. The following steps should be performed in rapid order.	
* 9. Start E1102-C002B or D, Div 2 RHR Pump B or D.	* 9. Div 2 RHR Pump B or D is started.
*10. Open E1150-F611B, Div 2 RHR LPCI Bypass Vlv (orificed to flow rate of 10,000 gpm).	*10. E1150-F611B, Div 2 RHR LPCI Bypass Vlv is open.
ALTERNATE PATH STARTS HERE	
CUE: E1150-F007B, Div 2 RHR Pmps Min Flow Vlv, will fail open in the following step. The examinee should attempt to close and determine the valve has failed. He should then take appropriate action per the SOPs ALTERNATE PATH.	
11. When E1150-F007B, Div 2 RHR Pmps Min Flow Vlv, opens and loop flow exceeds 3000 gpm, depress the CLOSE pushbutton.	11. E1150-F007B, Div 2 RHR Pmps Min Flow Vlv, CLOSE pushbutton was depressed.
*12. Stop E1102-C002B or D, Div 2 RHR Pump B or D.	*12. Div 2 RHR Pump B or D is stopped.
CUE: Respond as CRS.	
13. Notify CRS of E1150-F007B failure, either by normal communication or Crew Update.	13. CRS is notified.

JOB PERFORMANCE MEASURE
NRC EXAM 2008

JPM Title Temporary Removal and Restoration of Shutdown Cooling for I&C Surveillances	No.: 08-S-004 Revision: 0 Page 5
---------------------------------------------------------------------------------------------	----------------------------------------

ELEMENT	STANDARD
14. Direct field operator to unlock and close E1100-F018B and D, Div 2 RHR Pump B and D Min Flow Line Iso Vlv.	14. Field operator is directed to unlock and close E1100-F018B.
CUE: End JPM when Div 2 RHR Pump B or D is shutdown and E1100-F018B is directed to be unlocked and closed.	

_____ SATISFACTORY

_____ UNSATISFACTORY

Stop Time _____

*** Critical Step**

JOB PERFORMANCE MEASURE
NRC EXAM 2008

JPM Title Temporary Removal and Restoration of Shutdown Cooling for I&C Surveillances	No.: 08-S-004 Revision: 0 Page 6
---------------------------------------------------------------------------------------------	----------------------------------------

Evaluator Notes:

ENSURE ALL INDUSTRIAL AND PERSONNEL SAFETY PRACTICES ARE USED AND ENFORCED AT ALL TIMES.

Generic Notes and Cues:

CMC switches will turn RED and amperage will increase when the switch is rotated to the start position started. The current should initially be five to seven times the normal running amps with the ammeter flashing. As counter EMF is developed, the amperage will lower to the normal running amperage and the ammeter will no longer flash. CMC switches will turn GREEN when the pumps are stopped and amperage will decrease to zero.

Ex.: Pump start: "Switch has been rotated to the start position, red light is lit, green light is out, amperage initially pegs out high, and is now indicating X amps."

Pump stop: "Switch has been rotated to the stop position, green light is lit, red light is out, amperage indicates 0 amps."

Remotely operated valve position is determined with open and close indicating lights. A RED light only would indicate that the valve is open. A GREEN light only would indicate that the valve is closed. Dual indication would indicate that the valve is in some intermediate position.

Manual valves are checked in the closed direction (MOP02 and MOP05). Valve stem position may aid in valve position determination, but cannot be used as Independent Verification (MOP02).

Ex.: Verify valve closed: "Valve handwheel indicates no valve movement in the clockwise direction."

Verify valve open: "Valve handwheel has been rotated slightly in the clockwise direction and returned to the original positions."

Closing a valve: "Valve handwheel has been rotated in the fully clockwise direction until no additional valve movement. Valve stem is down."

Opening a valve: "Valve handwheel has been rotated in the fully counterclockwise direction until no additional valve movement, valve stem is out."

Controllers have an Auto light that is GREEN when selected and AMBER (YELLOW) when Manual is selected. When in Manual, the open and closed pushbuttons control the parameter to be changed by adjusting position or speed. When the deviation meter is nulled, then the process can be shifted to Auto to allow the desired setpoint to control the process.

System Specific Notes and Cues:

None

Task Performance and Cues:

The Elements of this JPM are step by step in accordance with the procedure. The Standard is that the procedure is performed as written. The Cues are as listed above for indication or as each step is completed the appropriate information is reported to the examinee. Notify Examinee that time compression may be used for activities performed outside of the Control Room.

Critical Steps:

Critical Tasks are identified by asterisk (*) and **bolded** steps on the cover sheet. Verify that the latest revision of the procedure is used and critical tasks are correctly identified.

JOB PERFORMANCE MEASURE
NRC EXAM 2008

JPM Title Temporary Removal and Restoration of Shutdown Cooling for I&C Surveillances	No.: 08-S-004 Revision: 0 Page 7
---------------------------------------------------------------------------------------------	----------------------------------------

FOLLOW-UP DOCUMENTATION QUESTIONS

Reason for follow-up question(s):

Question:

Reference:

Response:

Question:

Reference

Response:

JOB PERFORMANCE MEASURE
NRC EXAM 2008

JPM Title Temporary Removal and Restoration of Shutdown Cooling for I&C Surveillances	No.: 08-S-004 Revision: 0 Page 8
---------------------------------------------------------------------------------------------	----------------------------------------

Simulator Setup

IC#:

IC-01, 02, or 03 or any IC with Div 2 RHR in SDC.

Malfunctions:

Number	Title	Value	Delay	Ramp
E11MF0015*	Positioner Failure RHR Min Flow Bypass Valve	100	15	15
C97MF0186*	2D26 Div 2 RHR SYS Low Flow Byp Init alarm	1	15	0
C97MF0186*	2D26 Div 2 RHR SYS Low Flow Byp Init alarm	-1	16	0

*Step Condition = P602_A023_3 OR P602_A025_3 EQ 1 (*RHR Pump B or D in RUN*)

Remote Functions:

Number	Title	Value	Delay	Ramp
N/A				

Override Functions:

Number	Title	Value	Delay	Ramp
N/A				

Special Instructions:

1. **Initialize** simulator to IC-01, 02, or 03, and place the simulator in **RUN**.
2. Verify Div 2 RHR Pump B operating in SDC, Div 2 RHRSW in service, and Div 2 MDCT Fans running in high speed.
3. Install placard for E11-F003B "5 sec" OPEN.
4. Flip over the E1100-F008 de-energized placard.
5. **Open** and **Execute** Lesson 08-S-004.Isn.
6. When directed by the examiner or after examinee has shut down Div 2 RHR, trigger the malfunctions set above.

Cue Sheet

Initial Conditions:

- You are the Control Room NSO.
- The plant is in Mode 4
- Time to boil is >8 hours.
- Reactor Level band is 220-255 inches.
- A pre-job brief has been completed.
- Operators are in the field and have all required equipment to perform their evolutions.
- All prerequisites are met for the temporary removal and restoration of SDC.
- Another Operator is taking temperature data.
- All MDCT Fans are operating in high speed.
- E1100-F211 is open.

Initiating Cue(s):

- The CRS directs you to temporarily remove and restore Shutdown Cooling for I&C Surveillances.
- Another operator will address plant alarms **not** associated with this task.