JOB PERFORMANCE MEASURE
NRC EXAM 2004-301-B1.A

Job Position Nuclear Supervisory Operator	No. NRC EXAM 2004-301-B1.a	Revision 1
JPM Title RBCCW Temperature Controller Failure	Duration 15 Minutes	Page COVER SHEET

Examinee: _____ SRO / RO

Evaluator: _____

Evaluation Method: Perform / Simulator

Start Time _____

Stop Time _____

Total Time _____

PERFORMANCE EVALUATION							
Element	S	U	Comments	Element	S	U	Comments
1.							
*1a.							
*1b.							
1c.							
1d.							
2.							
*3.							
*4.							
5.							

_____ SATISFACTORY _____ UNSATISFACTORY

ORAL EVALUATION (Not Required for ILO Exams)							
Question #	S	U	Comments	Question #	S	U	Comments

_____ SATISFACTORY _____ UNSATISFACTORY

Evaluator Signature / Date: _____ / _____

JOB PERFORMANCE MEASURE

JPM Title RBCCW Temperature Controller Failure	No.: NRC EXAM 2004-301-B1.a Revision: 1 Page 1

References: Required (R) / Available (A)

23.127, Reactor Building Closed Cooling Water/Emergency Equipment Cooling Water System (R)

Tools and Equipment Required:

None

Preferred Evaluation Method:

Perform	X	Walkthrough		Discuss	
Plant		Simulator	X	Classroom	

Evaluator Notes:

Start the JPM in the Simulator Control Room at the CRS desk.

This JPM is performed in IC-15 at 75% power

K/A Reference:

400000 Component Cooling Water System
A2. Ability to (a) predict the impacts of the following on the CCWS and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those abnormal operation:
(CFR: 41.5 / 45.6)

A2.03 High/low CCW temperature RO 2.9 SRO 3.0

Task Standard:

Start standby RBCCW pump, temperature controller in manual and temperature returned to the operating green band.

Initial Conditions:

The plant is operating at 75% power

Initiating Cue(s):

You are the Control Nuclear Supervising Operator

The CRS directs you to shift RBCCW pumps from North and Center pumps running to South and Center pumps running.

PERFORMANCE EVALUATION

Time Start _____

	Elements		**Standards**
	NOTE: Unless otherwise noted, all controls and indication are located on COP H11-P601 and P602.		
	CAUTION An EECW actuation may occur during pump shifts due to transients on system.		
1.	To place standby RBCCW pump in service:	1.	Plant announcement made that pump will be starting
	NOTE: When standby RBCCW Pump is started P42-F403, RBCCW Differential Pressure Control Valve, will OPEN to compensate for the increased flow. *a. Start Standby RBCCW Pump.		*a. Start Standby RBCCW Pump.
	*b. Stop RBCCW Pump to be removed from service.		*b. Stop RBCCW Pump to be removed from service.
	c. Verify P42-F403, RBCCW Differential Pressure Control Valve, is maintaining a proper differential pressure by verifying Annunciators, clear: • 2D100, RBCCW PUMPS RECIRC VLV OPEN • 2D104, RBCCW PUMPS RECIRC VLV CLOSED		c. Verify P42-F403, RBCCW Differential Pressure Control Valve, is maintaining a proper differential pressure by verifying Annunciators, clear: • 2D100, RBCCW PUMPS RECIRC VLV OPEN • 2D104, RBCCW PUMPS RECIRC VLV CLOSED
	d. Periodically monitor temperatures and pressures in the system to ensure continued proper system operation using the following instruments: • P42-R802, RBCCW Press Ind • P42-R800, RBCCW Hx Outlet Temp Recorder		d. Periodically monitor temperatures and pressures in the system to ensure continued proper system operation using the following instruments: • P42-R802, RBCCW Press Ind • P42-R800, RBCCW Hx Outlet Temp Recorder
	NOTE: Insert automatic temperature controller failure here. Some High temperature alarms may come in on other panels. The Examiner should cue the examinee that another operator will address the ARPs for those alarms.		

	Elements		**Standards**
2.	Recognizes temperature increasing and failure of the controller in automatic	2.	References 2D120 and attempts to increase cooling water flow. Notices no response in automatic.
CUE: If manual control is not effective in the simulator, cue the examinee the valve is responding in Manual control.			
*3.	Takes manual control of the temperature controller	*3.	Temperature controller is in Manual.
*4.	Raises cooling water flow	*4.	Increases cooling water flow with controller in manual
CUE: RBCCW Heat Exchanger outlet temperature is lowering.			
5.	Monitors temperature until it returns to band	5.	Temperature returned band

End JPM

Time Stop _____

* Critical Steps

Terminating Cue(s):

RBCCW temperature is lowering with Controller in Manual.

JOB PERFORMANCE MEASURE

JPM Title RBCCW Temperature Controller Failure	No.: NRC EXAM 2004-301-B1.a Revision: 1 Page 4

FOLLOW-UP DOCUMENTATION QUESTIONS

Reason for Followup question(s):

Question:

Reference:

Response:

Question:

Reference

Response:

Simulator Setup

IC#:

15 - 75% power

Malfunctions:

Number	Title	Value
None		

Remote Functions:

Number	Title	Value
None		

Override Functions:

None

Special Instructions:

Type BATP:007,temp in the DEC term window to the load the necessary batch file.

After the batch file has run type:

BP:P42K803_1

This will bring up the screen for the temperature controller. Using the arrow keys, navigate to highlight the OFF tag. Then use **Number pad** Enter key to toggle the malfunction off and on.

JOB PERFORMANCE MEASURE
NRC EXAM 2004-301-B1.A

JPM B1.a Cue Sheet

Initial Conditions: The plant is operating at 75% power
Initiating Cue(s): You are the Control Room Nuclear Supervising Operator The CRS directs you to shift RBCCW pumps from North and Center pumps running to South and Center pumps running.

JOB PERFORMANCE MEASURE
NRC EXAM 2004-301-B1.B

Job Position Nuclear Supervising Operator	No. NRC EXAM 2004-301-B1.b	Revision 2
JPM Title Manually Initiate Core Spray System with E21-F005A Stuck Shut	Duration 5 Minutes	Page COVER SHEET

Examinee: _____ SRO / RO / NLO / SROC / STA

Evaluator: _____

Evaluation Method: Perform / Simulator / Alternate Path

Start Time _____

Stop Time _____

Total Time _____

PERFORMANCE EVALUATION

Element	S	U	Comments	Element	S	U	Comments
* 1.							
* 2.							
* 3.							
4.							
* 5.							
* 6.							
* 7.							
8.							
9.							

_____ SATISFACTORY _____ UNSATISFACTORY

ORAL EVALUATION (Not Required for ILO Exams)

Question #	S	U	Comments
			TIME:
			TIME:

_____ SATISFACTORY _____ UNSATISFACTORY

OVERALL EVALUATOR COMMENTS:

Evaluator Signature / Date: _____

JOB PERFORMANCE MEASURE

NRC EXAM 2004-301-B1.B

JPM Title	No.: NRC EXAM 2004-301-B1.b
Manually Initiate Core Spray System with E21-F005A Stuck Shut	Revision: 2 Page 1

References: Required (R) / Available (A)

23.203 (R)

Tools and Equipment Required:

None

Preferred Evaluation Method:

Perform	X	Walkthrough		Discuss	
Plant		Simulator	X	Classroom	

Evaluator Notes:

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

This JPM can be performed on either division of Core Spray.

Malfunction VO 00182 at 0% will trip the E21-F005A when opening is attempted.

Start this JPM at the CRS desk.

The simulator should be in a post-scram condition with the following conditions:

- RPV Level less than 30 inches
- RPV Pressure at about 250 psig
- Core Spray Automatic Initiation defeated

It is expected that the examinee use the Placard for manual initiation of Core Spray due to being in the EOPs.

K/A Reference:

209001 Low Pressure Core Spray System – 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: (CFR: 41.5 / 45.6)

A2.02 Valve closures RO 3.2 / SRO 3.2

Task Standard:

Division II Core Spray is injecting into the RPV at maximum flow in accordance with 23.203.

Initial Conditions:

You are the Control Room NSO.

The reactor has scrammed.

EOP 29.100.01 has been entered.

RPV Water level has decreased to less than 30 inches.

Initiating Cue(s):

The CRS directs you to initiate Division I Core Spray and inject water into the RPV at maximum flow.

PERFORMANCE EVALUATION

Time Start _____

	Elements		Standards
NOTE:	**The next two steps may be performed in any order.**		
	CUE: • **The RUN light is lit.** • **Annunciator 1D21 alarms and clears.** • **Motor amps initially peg high then decrease to 60 after 7 seconds.** • **Pump discharge pressure is 320 psig.** • **Annunciator 1D48 alarms.**		
* 1.	Start Core Spray Pump A.	* 1.	Core Spray Pump A is running.
	CUE: • **The RUN light is lit.** • **Annunciator 1D21 alarms and clears.** • **Motor amps initially peg high then decrease to 60 after 7 seconds.**		
* 2.	Start Core Spray Pump C.	* 2.	Core Spray Pump C is running.
	CUE: • **The OPEN light is Off and the CLOSE light is Off.** • **Annunciator 1D5 alarms.** • **Flow indicator reads 0 gpm.**		
* 3.	Throttle open E2150-F005A, CSS Loop A Inboard Isolation Valve.	* 3.	E2150-F005A is noted to have tripped on thermal overload.
NOTE:	**Ask examinee what his recommendation is. He should request to manually start Division II Core Spray and inject water into the RPV at maximum flow.**		
	CUE: Announcement acknowledged.		
4.	Announce to the CRS that Division I Core Spray System injection valve failed to open.	4.	Announcement made.

NOTE:	**The next two steps may be performed in any order.**		
	CUE: • **The RUN light is lit.** • **Annunciator 1D23 alarms and clears.** • **Motor amps initially peg high then decrease to 60 after 7 seconds.** • **Pump discharge pressure is 320 psig.** • **Annunciator 1D36 alarms.**		
* 5.	Start Core Spray Pump B.	* 5.	Core Spray Pump B is running.
	CUE: • **The RUN light is lit.** • **Annunciator 1D23 alarms and clears.** • **Motor amps initially peg high then decrease to 60 after 7 seconds.**		
* 6.	Start Core Spray Pump D.	* 6.	Core Spray Pump D is running.
	CUE: • **E2150-F005B OPEN light is lit and the CLOSE light is Off.** • **E21-F006B DISC OPEN light is lit and the DISC CLOSE light is Off.** • **Flow indicator reading is increasing.**		
* 7.	Throttle open E2150-F005B, CSS Loop B(A) Inboard Isolation Valve.	* 7.	E21-F005B is open.
	CUE: • **E2150-F031B CLOSE light is lit and OPEN light is Off.** • **RPV pressure is decreasing.** • **Core Spray Flow is increasing.**		
8.	As Reactor Pressure decreases and flow through each division exceeds 775 gpm, as indicated on E21-R601B, Div 2 Core Spray Flow Ind, verify E2150-F031B, Core Spray Minimum Flow Bypass, closes.	8.	Verifies E2150-F031B, closes.
	CUE: Acknowledge announcement.		
9.	Inform CRS that Division II Core Spray is injecting into the RPV at maximum flow.	9.	CRS is informed that Division II Core Spray is injecting into the RPV at maximum flow.

Time Stop _____

* Critical Steps

Terminating Cue(s):

Division II Core Spray System is injecting into the RPV at maximum flow.

FOLLOW-UP DOCUMENTATION QUESTIONS

Reason for Followup question(s):

Question:

Reference:

Response:

Question:

Reference

Response:

Simulator Setup

IC#:

Malfunctions:

Malfunction VO 00182 at 0% will trip the E21-F005A when opening is attempted

Remote Functions:

Override Functions:

Special Instructions:

The simulator should be in a post-scram condition with the following conditions:

- RPV Level less than 30 inches
- RPV Pressure at about 250 psig

Core Spray Automatic Initiation defeated

JOB PERFORMANCE MEASURE
NRC EXAM 2004-301-B1.B

JPM B1.b Cue Sheet

Initial Conditions:

You are the Control Room NSO.

The reactor has scrammed.

EOP 29.100.01 has been entered.

RPV Water level has decreased to less than 30 inches.

Initiating Cue(s):

The CRS directs you to initiate Division I Core Spray and inject water into the RPV at maximum flow.

JOB PERFORMANCE MEASURE

NRC EXAM 2004-301-B1.C

Job Position RO	No. NRC EXAM 2004-301-B1.c	Revision 0
JPM Title Returning a Turbine Control Valve to service	Duration 15 minutes	Page COVER SHEET

Examinee: _____ SRO / RO

Evaluator: _____

Evaluation Method: Perform / Simulator

Start Time _____

Stop Time _____

Total Time _____

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

_____ SATISFACTORY _____ UNSATISFACTORY

ORAL EVALUATION (Not Required for ILO Exams)							
Question #	S	U	Comments	Question #	S	U	Comments

_____ SATISFACTORY _____ UNSATISFACTORY

OVERALL EVALUATOR COMMENTS:

Evaluator Signature / Date: _____

JOB PERFORMANCE MEASURE

NRC EXAM 2004-301-B1.C

Returning a Turbine Control Valve to service	No.: NRC EXAM 2004-301-B1.c Revision: 0 Page 1

References: Required (R) / Available (A)

23.109 (R)

Tools and Equipment Required:

None

Preferred Evaluation Method:

Perform	X	Walkthrough		Discuss	
Plant		Simulator	X	Classroom	

Evaluator Notes:

Ensure IC is setup to with #1 HPCV shut with Reactor Power <93%

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

K/A

SYSTEM: 241000 Reactor/Turbine Pressure Regulating System - A4. Ability to manually operate and/or monitor in the control room:
A4.08 Control/governor valves (operation) (3.5/3.4)
Enter K/A number, title and rating

Task Standard:

#1 HPCV is restored to service

Initial Conditions:

#1 HPCV is closed due to failure of the Unitized Actuator Oil Pump
Maintenance has been completed and the Unitized Actuator is running.
All Prerequisites have been completed for returning the #1 HPCV to service.

Initiating Cue(s):

The CRS directs you to return the #1 HPCV to service.

Returning a Turbine Control Valve to service	No.: NRC EXAM 2004-301-B1.c Revision: 0 Page 2

Start Time _____

Stop Time _____

Total Time _____

Elements	Standards
PREREQUSITES: Complete	
NOTE: Unless otherwise noted, all controls and indications for the following steps are located at COP H11-P804.	
CUE: Associated Unitized Actuator (UA) is running. 1. Verify or start Associated Unitized Actuator operating in accordance with 23.110, "Unitized Actuator System".	1. Associated UA is running.
CUE: N3039-F616, HP TSV A Stm Chest Drain Valve is open 2. If #1 HPCV is closed, open N3039-F616, HP TSV A Stm Chest Drain Valve	2. N3039-F616, HP TSV A Stm Chest Drain Valve is open
CUE: Steam Valve On-Load Test Mode Select switch is at 10% 3. Place Steam Valve On-Load Test Mode Select switch to 10%	3. Steam Valve On-Load Test Mode Select switch is at 10%
CUE: • SELECT light is ON • White TRIP SOLENOID A is ON • White TRIP SOLENOID B is ON *4. Momentarily depress SELECT/LOCKED CLOSED pushbutton for the affected HPCV and verify: a. SELECT light is ON b. White TRIP SOLENOID A is ON c. White TRIP SOLENOID B is ON	*4. • SELECT light is ON for #1 HPCV • White TRIP SOLENOID A is ON • White TRIP SOLENOID B is ON
NOTE: If less than a 25% mismatch exists between Current Valve Position and End Valve position (~10%) when the VALVE TEST pushbutton is depressed, the white GOVERNOR FAULT light will not come ON and Annunciator 4D91, ELECTRIC GOVERNOR TROUBLE, will not alarm	
CUE: • Red VALVE TEST light is ON • Annunciator 4D91 is in alarm • White GOVERNOR FAULT light is ON	

*5. Depress Steam Valve On Load Test red VALVE TEST pushbutton and verify: a. Red VALVE TEST light comes on b. Annunciator 4D91 is in alarm c. White GOVERNOR FAULT light comes ON	*5. • Red VALVE TEST light is ON • Annunciator 4D91 is in alarm • White GOVERNOR FAULT light is ON
CUE: • Selected HPCV opens ~10% • White TRIP SOLENOID A light is OFF • White TRIP SOLENOID B light is OFF • Annunciator 3D89 is clear • Affected HPCV red LOCKED CLOSED light is OFF	
*6. Depress Steam Valve On Load Test green TRIP RESET pushbutton and verify: a. Selected HPCV opens to approximately 10% open b. White TRIP SOLENOID A light goes OFF c. White TRIP SOLENOID B light goes OFF d. Annunciator 3D89, TURBINE CONT VALVE TEST CLOSURE TRIP, clears e. Affected HPCV red LOCKED CLOSED light goes OFF	*6. • #1 HPCV opens ~10% • White TRIP SOLENOID A light is OFF • White TRIP SOLENOID B light is OFF • Annunciator 3D89 is clear, Affected HPCV • #1 HPCV red LOCKED CLOSED light is OFF
CUE: Half-Scram is Reset	
7. Reset half-scram as necessary	7. Half-scram is reset
CUE: N3039-F612 is closed	
8. Close N3039-F612, HP Turb Loop A Line A Drain Valve	8. N3039-F612 is closed
CUE: N3039-F616 is closed	
9. Close N3039-F616, HP TSV A Stm Chest Drain Valve	9. N3039-F616 is closed
10. Allow approximately 60 seconds before proceeding to allow Unitized Actuator to recharge	10. Waits ~60 seconds
CUE: • CANCEL TEST light is ON • HPCV open to controlling position	
*11. Depress Steam Valve On Load Test white CANCEL TEST pushbutton and verify: a. CANCEL TEST light comes ON b. Selected HPCV opens to controlling position	*11. • CANCEL TEST light ON • HPCV open to controlling position

Returning a Turbine Control Valve to service	No.: NRC EXAM 2004-301-B1.c Revision: 0 Page 4

CUE: • Red VALVE TEST light is OFF • White CANCEL TEST light is OFF • Associated TCV red SELECT light is OFF • White GOVERNOR FAULT light is OFF • Annunciator 4D91 is clear	
12. After 60 seconds verify:: a. Red VALVE TEST light goes OFF b. White CANCEL TEST light goes OFF c. Associated TCV red SELECT light goes OFF d. White GOVERNOR FAULT light goes OFF e. Annunciator 4D91 is clear	12. • Red VALVE TEST light is OFF • White CANCEL TEST light is OFF • Associated TCV red SELECT light is OFF • White GOVERNOR FAULT light is OFF • Annunciator 4D91 is clear
CUE: Speed/Load Demand limit set to ~100 MWe above actual Generator MWe	
13. Return Speed/Load Demand limit to approximately 100 MWe above actual Generator	13. Speed/Load Demand limit set to ~100 MWe above actual Generator MWe
CUE: Turbine Flow Limit set to 5% above Reactor Power, up to a maximum of 100%	
14. Return Turbine Flow Limit to 5% above Reactor Power, Up to a maximum of 100%	14. Turbine Flow Limit set to 5% above Reactor Power, up to a maximum of 100%

_____ SATISFACTORY _____ UNSATISFACTORY

Terminating Cue(s):

#1 HPCV has been returned to service.

FOLLOW-UP DOCUMENTATION QUESTIONS

Reason for Follow-up question(s):

Question:

Reference:

Response:

Question:

Reference

Response:

Returning a Turbine Control Valve to service	No.: NRC EXAM 2004-301-B1.c Revision: 0 Page 6

Simulator Setup

IC#:

Ensure IC is setup to with #1 HPCV shut with Reactor Power <93%

Malfunctions:

Remote Functions:

Number	Title	Value

Override Functions:

Special Instructions:

You must use the procedure to shut the #1 HPCV. Do not reset the half scram. Also, the UA must be running to complete this JPM.

Ensure that when you raise the speed/load demand that you do not leave the indicator reading +1. Lower just a little bit to have an actual reading on the digital indicator.

JPM B1.c Cue Sheet

Initial Conditions: **#1 HPCV is closed due to failure of the Unitized Actuator Oil Pump** **Maintenance has been completed and the Unitized Actuator is running.** **All Prerequisites have been completed for returning the #1 HPCV to service.**
Initiating Cue(s): **The CRS directs you to return the #1 HPCV to service.**

JOB PERFORMANCE MEASURE
NRC EXAM 2004-301-B1.D

Job Position RO / SRO	No. NRC EXAM 2004-301-B1.d	Revision 1
JPM Title Recognize, Respond to Uncontrolled Recirc Pump Speed Increase	Duration 5 ~~15~~ minutes	Page COVER SHEET

Note: Validation time was inappropriate. This was an immediate action response to an abnormal event. Reasonable completion time was actually about 5 minuets.

Examinee: _____ SRO / RO

Evaluator: _____

Evaluation Method: Perform / Simulator

Start Time _____

Stop Time _____

Total Time _____

PERFORMANCE EVALUATION SUMMARY			
Step #	S	U	Comments
*1			
2			
*3			

_____ SATISFACTORY _____ UNSATISFACTORY

ORAL EVALUATION (Not Required for ILO Exams)			
Question #	S	U	Comments
			TIME:
			TIME:

_____ SATISFACTORY _____ UNSATISFACTORY

OVERALL EVALUATOR COMMENTS:

Evaluator Signature / Date: _____

JOB PERFORMANCE MEASURE
NRC EXAM 2004-301-B1.D

Recognize, Respond to Uncontrolled Recirc Pump Speed Increase	No.: NRC EXAM 2004-301-B1.d Revision: 1 Page 1

References: Required (R) / Available (A)

20.138.03, "Uncontrolled Recirc Flow Increase" (R)
20.138.01, "Recirculation Pump Trip" (A)
23.138.01, "Reactor Recirculation System"

Tools and Equipment Required:

None

Preferred Evaluation Method:

Perform	X	Walkthrough		Discuss	
Plant		Simulator	X	Classroom	

Evaluator Notes:

Insert MF 3686 for Recirc Pump Walkaway with a 30 second ramp rate. Place plant ~75%.

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

K/A Reference:
202001 Recirculation System - A2. Ability to (a) predict the impacts of the following on the RECIRCULATION SYSTEM; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those abnormal conditions or operations: (CFR: 41.5 / 45.6)

A2.05 Inadvertent recirculation flow increase RO 3.8 / SRO 4.0

Task Standard:

Plant is stable with power at pre-transient level or in single loop with affected pump tripped.

Initial Conditions:

Plant is at 75% power and no equipment is out of service.
The "A" RRMG is being returned to service following maintenance. It was experiencing speed oscillations so the scoop tube was locked and it was placed in local manual control.

Initiating Cue(s):

You are the P603 operator. The CRS directs you to restore the "A" RRMG from a locked scoop tube condition.
All Prerequisites are complete.

Start Time _____

Stop Time _____

Total Time _____

Elements	Standards
NOTE: The "A" RRMG speed will start to increase shortly after resetting the scoop tube.	
*1. Place Scoop tube A Brake switch in RESET.	*1. Scoop tube is RESET.
NOTE: The "A" RRMG set speed may increase >10% by the time the examinee notices. The right action would be to trip the MG; therefore step 2 would be N/A. **CUE:** North RR MG Set speed is increasing slowly.	
2. Notices the north RRMG Set speed increasing, then Locks scoop tube for the "A" RRMG Set	2. "A" RRMG Set scoop tube locked.
CUE: North RRMG Set speed has increased >10% (use a number, not just >10%)	
*3. North RR MG Set speed increased >10%, then Trip **one** of the affected RR MG Sets	*3. The "A" RRMG set is tripped.

End JPM

_____ SATISFACTORY _____ UNSATISFACTORY

Terminating Cue(s):

Plant is stable with power at pre-transient level or in single loop with affected pump tripped.

JOB PERFORMANCE MEASURE
NRC EXAM 2004-301-B1.D

Recognize, Respond to Uncontrolled Recirc Pump Speed Increase	No.: NRC EXAM 2004-301-B1.d Revision: 1 Page 3

FOLLOW-UP DOCUMENTATION QUESTIONS

Reason for Followup question(s):

Question:

Reference:

Response:

Question:

Reference

Response:

Simulator Setup

IC#:

IC-15 (75%)

Malfunctions:

MF 3686 RRS Pump "A" at 100% with 10-second ramp rate

Remote Functions:

Number	Title	Value

Override Functions:

Special Instructions:

Ensure the ramp rate is such that the RRS Pump that walks away exceeds 10%.

JOB PERFORMANCE MEASURE
NRC EXAM 2004-301-B1.D

JPM B1.d Cue Sheet

Initial Conditions: Plant is at 75% power and no equipment is out of service. The “A” RRMG is being returned to service following maintenance. It was experiencing speed oscillations so the scoop tube was locked and it was placed in local manual control.
Initiating Cue(s): You are the P603 operator. The CRS directs you to restore the “A” RRMG from a locked scoop tube condition. All Prerequisites are complete.

JOB PERFORMANCE MEASURE
NRC EXAM 2004-301-B1.E

Job Position Nuclear Supervising Operator	No. NRC EXAM 2004-301-B1.e	Revision 1
JPM Title Restore Off-Site Power to an ESF and EDG Bus.	Duration 10 Minutes	Page COVER SHEET

Examinee: _____ SRO / RO

Evaluator: _____

Evaluation Method: Perform / Simulator

Start Time _____

Stop Time _____

Total Time _____

PERFORMANCE EVALUATION							
Element	S	U	Comments	Element	S	U	Comments
*1.							
2.							
*3.							
4.							
*5.							
6.							
7.							
*8.							
9.							

_____ SATISFACTORY _____ UNSATISFACTORY

ORAL EVALUATION (Not Required for ILO Exams)			
Question #	S	U	Comments
			TIME:
			TIME:

_____ SATISFACTORY _____ UNSATISFACTORY

OVERALL EVALUATOR COMMENTS:

Evaluator Signature / Date: _____

JOB PERFORMANCE MEASURE

NRC EXAM 2004-301-B1.E

Job Position Nuclear Supervising Operator	No. NRC EXAM 2004-301-B1.e	Revision 1
JPM Title Restore Off-Site Power to an ESF and EDG Bus.	Duration 10 Minutes	Page 1

References: Required (R) / Available (A)

23.321 (R)

Tools and Equipment Required:

None

Preferred Evaluation Method:

Perform	X	Walkthrough		Discuss	
Plant		Simulator	X	Classroom	

Evaluator Notes:

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

The EDG should be started and paralleled to the ESF Bus, then the **Normal Feed Breaker 64 B6 should then be opened**.

Cues are given as a precaution to allow the JPM to be completed even if the simulator is malfunctioning. The Cues will not need to be delivered if the Simulator is functioning properly..

K/A Reference :

262001 A.C. Electrical Distribution - A4. Ability to manually operate and/or monitor in the control room: (CFR: 41.7 / 45.5 to 45.8)
A4.04 Synchronizing and paralleling of different A.C. supplies RO 3.6 / SRO 3.7

Task Standard:

Off-Site power is restored to ESF and EDG bus in accordance with 23.321.

Initial Conditions:

You are the Control Room NSO. EDG 11 was started manually for post maintenance testing and is supplying the EDG and ESF Bus.

Off-Site power is available, and the System Service Transformers are available.

The SM has authorized returning the ESF and EDG Busses to off-site power.

Initiating Cue(s):

The CRS directs you to restore off-site power to EDG Bus 11EA and ESF Bus 64B in accordance with plant procedures.

JOB PERFORMANCE MEASURE

NRC EXAM 2004-301-B1.E

Job Position Nuclear Supervising Operator	No. NRC EXAM 2004-301-B1.e	Revision 1
JPM Title Restore Off-Site Power to an ESF and EDG Bus.	Duration 10 Minutes	Page 2

PERFORMANCE EVALUATION

Time Start _____

CUE: **Synchronize Switch is in the ON position.** ***1.** Place Synchronize Switch for Bus 64B Normal Feeder Breaker B6 to ON.	*1. Synchronize Switch is placed in ON.
CUE: **Secondary windings on SST #64 indicates 120V AC.** **64B Starting Volt Meter indicates voltage of 120V AC.** **The Synchroscope is operating.** 2. Verify: Div. I Syn. Bus Running Volt Meter indicates voltage on SST # 64 secondary windings (approximately 120V AC). Div. I Syn. Bus Starting Volt Meter indicates voltage on ESF Bus 64B (approximately 120V AC). Division I Synchroscope is operating.	2. The following items are verified: Div. I Syn. Bus Running Volt Meter indicates voltage on SST # 64 secondary windings (approximately 120V AC). Div. I Syn. Bus Starting Volt Meter indicates voltage on ESF Bus 64B (approximately 120V AC). Division I Synchroscope is operating.
CUE: **Synchroscope is rotating slowly in the FAST direction.** *3. With EDG Governor Control Switch, adjust EDG speed until synchroscope is rotating slowly in the FAST direction. Synchroscope may be in phase and only show slight movement at first. Change EDG frequency slightly to rotate the scope.	*3. Synchroscope is rotating slowly in the FAST direction.
CUE: **Running Volt meter reads 120VAC.** **Starting Volt meter reads 120VAC.** 4. With EDG Voltage Control Switch, adjust Starting Voltage until it is equal to or slightly higher than Running Bus Voltage indication.	4. Starting Voltage is adjusted until it is equal to or slightly higher than Running Bus Voltage

Job Position Nuclear Supervising Operator	No. NRC EXAM 2004-301-B1.e	Revision 1
JPM Title Restore Off-Site Power to an ESF and EDG Bus.	Duration 10 Minutes	Page 3

CAUTION: When the Normal Feeder Breaker B6 is closed, the operating mode of the EDG will be Speed Droop. Operator Action will be required to keep sufficient load on the EDG and thus prevent the EDG from tripping on Reverse Power.

CUE: **The Synchroscope is at 2 minutes till 12 o'clock.** *5. When Synchroscope is at approximately two minutes till 12 o'clock close ESF Bus 64B Normal Feeder Breaker B6.	*5. The Normal Feeder breaker is closed When Synchroscope is at approximately two minutes till 12 o'clock.
CUE: Synchronize Switch is in OFF. 6. Place Synchronize Switch for ESF Bus 64B Normal Feeder Breaker B6 to OFF.	6. Synchronize Switch for the Normal Feeder Breaker is placed in OFF.
CUE: **Load is reduced to 300kW.** **kVARS are kept positive.** 7. Reduce EDG load to approximately 300kW while maintaining kVARS positive.	7. EDG load is reduced to approximately 300kW while maintaining kVARS positive.
CUE: The Output Breaker is open.	
*8. Open EDG 11 Output Breaker EA3	*8. EDG Output Breaker is opened.
CUE: Acknowledge announcement.	
9. Inform the CRS that Offsite Power has been restored to the EDG and ESF bus.	9. CRS has been notified.

CUE: Another operator will be responsible for the shutdown of the EDG and placing it in standby.

Time Stop _____

* Critical Steps

Terminating Cue(s):

Offsite power restored to an EDG and ESF Bus in accordance with 23.321.

JOB PERFORMANCE MEASURE

NRC EXAM 2004-301-B1.E

Job Position Nuclear Supervising Operator	No. NRC EXAM 2004-301-B1.e	Revision 1
JPM Title Restore Off-Site Power to an ESF and EDG Bus.	Duration 10 Minutes	Page 4

FOLLOW-UP DOCUMENTATION QUESTIONS

Reason for Followup question(s):

Question:

Reference:

Response:

Question:

Reference

Response:

Job Position Nuclear Supervising Operator	No. NRC EXAM 2004-301-B1.e	Revision 1
JPM Title Restore Off-Site Power to an ESF and EDG Bus.	Duration 10 Minutes	Page 5

Simulator Setup

IC#:

IC-17

Malfunctions:

Number	Title	Value
None		

Remote Functions:

Number	Title	Value
None		

Override Functions:

None

Special Instructions:

The EDG(s) should be started and paralleled to the ESF Bus, then the Normal Feed **Breaker 64B should then be opened**.

JPM B1.e Cue Sheet

Initial Conditions: You are the Control Room NSO. EDG 11 was started manually for post maintenance testing and is supplying the EDG and ESF Bus. Off-Site power is available, and the System Service Transformers are available. The SM has authorized returning the ESF and EDG Busses to off-site power.
Initiating Cue(s): The CRS directs you to restore off-site power to EDG Bus 11EA and ESF Bus 64B in accordance with plant procedures.

JOB PERFORMANCE MEASURE
NRC EXAM 2004-301-B1.F

Job Position Nuclear Supervising Operator	No. NRC EXAM 2004-301-B1.f	Revision 0
JPM Title Perform Mode Switch in REFUEL and One Rod Out Interlock Verification	Duration 20 Minutes	Page COVER SHEET

Examinee: _____ SRO / RO

Evaluator: _____

Evaluation Method: Perform / Simulator

Start Time _____

Stop Time _____

Total Time _____

PERFORMANCE EVALUATION							
Element	S	U	Comments	Element	S	U	Comments
1.				* 11.			
2.				* 12.			
* 3.				* 13.			
* 4.				14.			
* 5.				15.			
* 6.				16.			
* 7.				17.			
* 8.				18.			
* 9.				19.			
* 10.				20.			
				21			

_____ SATISFACTORY _____ UNSATISFACTORY

ORAL EVALUATION (Not Required for ILO Exams)			
Question #	S	U	Comments
			TIME:
			TIME:

_____ SATISFACTORY _____ UNSATISFACTORY

OVERALL EVALUATOR COMMENTS:

Evaluator Signature / Date: _____

JOB PERFORMANCE MEASURE
NRC EXAM 2003-301-B1.F

JPM Title Perform Mode Switch in REFUEL and One Rod Out Interlock Verification	No.: NRC EXAM 2004-301-B1.f Revision: 0 Page 1

References: Required (R) / Available (A) 24.623 (R)
Tools and Equipment Required: None

Preferred Evaluation Method:

Perform	X	Walkthrough		Discuss	
Plant		Simulator	X	Classroom	

Evaluator Notes:

Establish an IC with the reactor shutdown in Mode 5. (Mode switch in shutdown)

Give student a copy of 24.623, section 5 with steps marked off up to step 5.1.2.

The examiner will act as verifier, but **CAN NOT** say if action is incorrect.

K/A Reference:
201002 Reactor Manual Control System - K4. Knowledge of REACTOR MANUAL CONTROL SYSTEM design feature(s) and/or interlocks which provide for the following: (CFR: 41.7)
K4.02 Control rod blocks RO 3.5 / SRO 3.5

Task Standard:

Mode Switch in Refuel and One Rod Out Interlock verified.

Initial Conditions:

You are the P603 Operator.

The reactor has been shutdown and is mode 5. The plant is about to begin refueling operations.

Initiating Cue(s):

The CRS directs you to perform Mode Switch in Refuel and One Rod Out Interlock Verification per 24.623 Section 5.1.

All prerequisites (Section 4.0) for the performance of this surveillance are satisfied.

PERFORMANCE EVALUATION

Time Start _____

	Elements	Standards
	Note: The examinee should go to step 5.1.2 in the procedure **CUE: The core is not off-loaded.**	
1.	If core is off loaded, install the following jumpers in RR panel H11-P606 to defeat SRM/IRM control rod block, otherwise N/A: a. Between terminals 62 and 63 of TB1B b. Between terminals 62 and 63 of TB4B	1. Core is verified to be not off-loaded. N/A is entered in the space provided.
	CUE: All operable control rods are FULLY INSERTED.	
2.	Verify all operable Control Rods are FULLY INSERTED by one of the following: • IPCS Control Rod Positions Report. **or** • A second Licensed Operator or technically qualified member of the unit Technical staff.	2. All operable Control Rods are verified FULLY INSERTED.
	CUE: The Rod Worth Minimizer Bypass switch is in BYPASS.	
* 3.	Ensure or place Rod Worth Minimizer Bypass switch in BYPASS.	* 3. The Rod Worth Minimizer Bypass switch is in Bypass.
	CUE: • **The Reactor Mode switch is locked in REFUEL.** • **The Refuel Mode One Rod Permissive light is On.** • **Annunciator 3D113 is lit and the horn sounds.**	
* 4.	Lock REACTOR MODE switch in REFUEL and verify: a. REFUEL MODE ONE ROD PERMISSIVE light on. b. Annunciator 3D113, CONTROL ROD WITHDRAWAL BLOCKED alarms.	* 4. REACTOR MODE switch is locked in REFUEL: a. Refuel Mode One Rod Permissive light is verified on b. Annunciator 3D113 is verified in alarm.

CUE:

- **The Rod Select Power switch is ON.**
- **The Refuel Mode One Rod Permissive light is lit.**
- **Annunciator 3D113 remains lit.**

* 5.	Place ROD SELECT POWER switch in ON and verify: a. REFUEL MODE-ONE ROD PERMISSIVE light remains on. b. Annunciator 3D113, CONTROL ROD WITHDRAWAL BLOCKED, remains in alarm.	* 5. Rod Select Power switch is ON. a. The Refuel Mode One Rod Permissive light is verified to remain lit b. Annunciator 3D113 is verified to remain lit

CUE:

- **The control rod select light on the Rod Select Matrix is lit.**
- **The Rod Out Perm light is lit.**
- **Annunciator 3D113 is not lit.**
- **The Refuel Mode One Rod Permissive light is not lit.**

* 6.	Select the desired control rod, record rod number, and verify: a. The control rod meets the requirements for withdrawal b. ROD OUT PERM light on c. Annunciator 3D113, CONTROL ROD WITHDRAWAL BLOCKED, clears d. REFUEL MODE ONE ROD PERMISSIVE light off	* 6 An edge control rod is selected, its number is recorded, and: a. Rod Out Perm light is verified on. b. Annunciator 3D113 is verified clear. c. Refuel Mode One Rod Permissive light is verified off.

CAUTION: In Mode 5, the shorting links shall be removed and all personnel shall remain out of the line-of-sight of the core when any control rod in a fueled region of a new core is withdrawn until both the following conditions have been satisfied:

1. The Core loading has been verified, including independent verification of videotapes.
2. The analytically determined strongest rod has been fully withdrawn and the reactor has been verified to remain subcritical.

CUE: Position 02 is indicated.

* 7.	Withdraw selected rod one notch (Position†02).	* 7. The control rod is withdrawn one notch to Position 02.

Note: The following step will de-energize the Select Matrix

CUE:

- **The Rod Select Power switch is OFF.**
- **Annunciator 3D113 is lit and the horn sounds.**
- **The Process Computer displays B535, ROD OUT ROD BLOCK-ON.**

* 8.	Place ROD SELECT POWER switch in OFF and verify: a. Annunciator 3D113, CONTROL ROD WITHDRAWAL BLOCKED, alarms. b. IPCS point C11DC0128 displays CONTROL ROD OUT ROD BLOCK - BLOCKED.	* 8. Rod Select Power switch is OFF, and: a. Annunciator 3D113 alarms b. IPCS displays CONTROL ROD OUT ROD BLOCK - BLOCKED

CUE: ROD SELECT POWER switch is ON.

* 9.	Place ROD SELECT POWER switch in ON.	* 9. The ROD SELECT POWER switch is ON.

NOTE: Do not select a control rod which has been withdrawn and bypassed IAW Tech Spec 3.10.6

CUE:

- **The control rod select light on the Rod Select Matrix is lit**
- **The Refuel Mode One Rod Permissive light is not lit.**
- **The Rod Out Perm light is not lit.**
- **Annunciator 3D113 is lit.**

* 10.	Select another control rod for withdrawal, record rod number, and verify: a. REFUEL MODE-ONE ROD PERMISSIVE light off. b. ROD OUT PERM light off. c. Annunciator 3D113, CONTROL ROD WITHDRAWAL BLOCKED remains in alarm.	* 10. An edge control rod is selected, its number is recorded, and: a. The Refuel Mode One Rod Permissive light is verified off b. Rod Out Perm light is verified off c. Annunciator 3D113 is verified to remain in alarm

CUE: The control rod indicates Position 00.

* 11.	Attempt to withdraw selected rod, and verify rod will not withdraw.	* 11. Verify the control rod does not withdraw when a drive out signal is applied.

CUE: The Rod Select Power switch is in OFF and Returned to ON.

* 12.	Place ROD SELECT POWER switch in OFF, then back to ON.	* 12.	The ROD SELECT POWER switch is placed in OFF and returned to ON.
	CUE: • **The control rod is selected at Position 02 and inserts to Position 00 when the ROD IN signal is given.** • **Annunciator 3D113 is not lit.** • **ROD OUT PERM light is lit.** • **REFUEL MODE-ONE ROD PERMISSIVE light not lit.** • **Process Computer displays B535, ROD OUT ROD BLOCK-OFF.**		
* 13.	Select and fully insert the previously withdrawn control rod to Position 00 and verify: a. Annunciator 3D113, CONTROL ROD WITHDRAWAL BLOCKED, clears. b. ROD OUT PERM light on. c. REFUEL MODE-ONE ROD PERMISSIVE light off. d. IPCS point C11DC0128 displays CONTROL ROD OUT ROD BLOCK - NORMAL.	* 13.	The correct control rod is selected and inserted to Position 00, and: a. Annunciator 3D113 verified clear b. Rod Out Perm light verified on b. Refuel Mode One Rod Permissive light verified off c. IPCS point C11DC0128 displays CONTROL ROD OUT ROD BLOCK - NORMAL
	CUE: All operable control rods are FULLY INSERTED.		
14.	Verify all control rods are FULLY INSERTED by one of the following: • IPCS Control Rod Positions Report **or** • Second Licensed Operator or technically qualified member of the unit Technical staff.	14.	All operable Control Rods are verified FULLY INSERTED.
	CUE: • **Rod Select Power switch is OFF.** • **Annunciator 3D113 is lit and the horn sounds.** • **The Refuel Mode One Rod Permissive light is lit.**		

15.	Place ROD SELECT POWER switch in OFF and verify: a. Annunciator 3D113, CONTROL ROD WITHDRAWAL BLOCKED, alarms. b. REFUEL MODE-ONE ROD PERMISSIVE lamp on.	15. The Rod Select Power switch is in OFF. a. Annunciator 3D113 is acknowledged b. Refuel Mode One Rod Permissive light is verified on
	CUE: Step 5.1.1 was not performed.	
16.	If step 5.1.1 was performed, remove the jumpers in RR panel H11-P606 to restore SRM/IRM control rod block function, otherwise N/A.	16. N/A is entered in the space provided.
	CUE: From the SM "Leave the Reactor Mode switch in the REFUEL Position."	
17.	Position the Reactor Mode switch as determined by the SM.	17. The Reactor Mode switch is left in the REFUEL Position.
	Note: The Next step should be marked N/A."	
18.	If directed by the SM, perform the following. Otherwise N/A. a. Place the Reactor Mode switch in SHUTDOWN b. Reset Reactor Scram IAW 23.610	18. N/A is entered in the space provided.
	CUE: Another Licensed Operator will perform the I.V.	
19.	Record Mode Switch Position	19. REFUEL is entered
	CUE: Rod Worth Minimizer Bypass Switch is in OPERATE.	
20.	If required by plant conditions, place Rod Worth Minimizer Bypass Switch in OPERATE.	20. Rod Worth Minimizer Bypass Switch is in OPERATE.
	CUE: Name, initials, and signature are recorded.	
21.	Record test personnel.	21. Printed Name, Initials, and Signature.

Time Stop _____

* Critical Steps

Terminating Cue(s):

Mode Switch in Refuel and One Rod Out Interlock Verification surveillance (24.623) is complete.

FOLLOW-UP DOCUMENTATION QUESTIONS

Reason for Followup question(s):

Question:

Reference:

Response:

Question:

Reference

Response:

Simulator Setup

IC#:

Shutdown and in Mode 5

Malfunctions:

Remote Functions:

Override Functions:

Special Instructions:

Establish an IC with the reactor shutdown in Mode 5

MUST OBTAIN MODE SWITCH KEY AND HAVE AVAILABLE FOR THIS JPM.

JOB PERFORMANCE MEASURE
NRC EXAM 2004-301-B1.F

JPM B1.f Cue Sheet

Initial Conditions:

You are the P603 Operator.

The reactor has been shutdown and is in mode 5. The plant is about to begin refueling operations.

Initiating Cue(s):

The CRS directs you to perform Mode Switch in Refuel and One Rod Out Interlock Verification per 24.623 Section 5.1.

All prerequisites (Section 4.0) for the performance of this surveillance are satisfied.

JOB PERFORMANCE MEASURE
NRC EXAM 2004-301-B1.G

Job Position RO / SRO	No. NRC EXAM 2004-301-B1.g	Revision 1
JPM Title SGTS Exhaust Damper Failure	Duration 10 minutes	Page COVER SHEET

Examinee: _____ SRO / RO

Evaluator: _____

Evaluation Method: Perform / Simulator/ Alternate Path

Start Time _____

Stop Time _____

Total Time _____

PERFORMANCE EVALUATION SUMMARY			
Step #	S	U	Comments
1			
*2			
*3			
4			
5			
6			
7			
8			
9			
10			
*11			
12			

_____ SATISFACTORY _____ UNSATISFACTORY

ORAL EVALUATION (Not Required for ILO Exams)			
Question #	S	U	Comments
			TIME:
			TIME:
			TIME:
			TIME:

_____ SATISFACTORY _____ UNSATISFACTORY

OVERALL EVALUATOR COMMENTS:

Evaluator Signature / Date: _____

JOB PERFORMANCE MEASURE
NRC EXAM 2004-301-B1.G

Job Position RO / SRO	No. NRC EXAM 2004-301-B1.g	Revision 1
JPM Title SGTS Exhaust Damper Failure	Duration 10 minutes	Page 1

References: Required (R) / Available (A)

23.404, "Standby Gas Treatment System" (R) ARP 8D35, "Div 1 Sgts Air Flow Stopped" (A)

Tools and Equipment Required:

None

Preferred Evaluation Method:

Perform	X	Walkthrough		Discuss	
Plant		Simulator	X	Classroom	

Evaluator Notes:
Simulator Setup:

- Any IC that will allow SGTS operation.
- Activate (T46)-RF1544 at the same time to cause T46F002A to fail closed.

When the operator is directed to start D1 SGTS there will be no flow. The operator will report this condition and start D2 SGTS, **IF** the operator asks for guidance, ask what the recommendation is. When D2 SGTS is operating, with normal airflow, the task is complete.

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

K/A Reference :

261000 Standby Gas Treatment System - A2. Ability to (a) predict the impacts of the following on the STANDBY GAS TREATMENT SYSTEM ; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those abnormal conditions or operations: (CFR: 41.5 / 45.6)
A2.01 Low system flow RO 2.9 / SRO 3.1

Task Standard:

Division 2 SGTS is running, with normal operating air flow.

Initial Conditions:

As observed in the Control Room.

Initiating Cue(s):

You are the Third NSO in the Control Room.
CRS directs you to start Div 1 SGTS, in preparation for RBHVAC fan work.

JOB PERFORMANCE MEASURE
NRC EXAM 2004-301-B1.G

Job Position RO / SRO	No. NRC EXAM 2004-301-B1.g	Revision 1
JPM Title SGTS Exhaust Damper Failure	Duration 10 minutes	Page 2

Start Time _____

Stop Time _____

Total Time _____

Elements	Standards
PREREQUSITES: Completed	
CAUTION: Operation of SGTS during any activity which involves a chemical release in the Reactor Building (such as paint vapors and cleaning solvents) should only be performed during an emergency, as this can affect the performance of the Charcoal Filters.	
CAUTION: If RBHVAC is shutdown while SGTS is running, radionuclide migration may occur during periods of elevated off-gas concentrations. This had the potential to initiate the standby division of SGTS and shift CCHVAC to recirc	
CUE: T4600-F407 is Open 1. Open or verify open T4600-F407, RBHVAC to SGTS Iso Vlv	1. T4600-F407 is Open.
CUE: T4600-C003 is running **T4600-F004A, F008A, F409 are open** *2. Start T4600-C003, Div 1 SGTS and verify: • T4600-F004A, F008A, F409 are open	*2. T4600-C003 is running T4600-F004A, F008A, F409 open
CUE: Div 1 SGTS has no flow (show on flow recorder) ***** 3. Verify T46-R800A, Div 1 SGTS Exh Gas Flow Recorder, indicates between 3420 and 4180 cfm.	*3. Examinee notices Div 1 SGTS flow is not proper and reports to CRS,
Note: If student asks you to respond as the field operator on damper positions (in response to 8D35), report that T46F002A is shut and T46F003A is throttled.	
CUE: If the examinee does not recommend shut down Div 1 SGTS and starting Div 2 SGTS, then ask him/her for their recommendation.	
Evaluator Note: Go to section 8.0 of 23.404 (Student may decide to leave division 1 running)	
4. If necessary, start RBHVAC	4. Step is N/A
CUE: T4600-F407 is Open 5. Open or verify open T4600-F407, RBHVAC to SGTS Iso Vlv	5. T4600-F407 is OPEN
6. If T4600-F406 is open	6. This step is N/A
7. If T4600-F410 is open	7. This step is N/A
CUE: T4600-C003 is in OFF/RESET 8. Place T4600-C003, Div 1 SGTS Exhaust Fan in OFF/RESET	8. T4600-C003 is in OFF/RESET
CUE: T4600-F004A, F008A. F409 are shut 9. Verify T4600-F004A, F008A, F409 close	9. T4600-F004A, F008A. F409 are shut

CUE: Standby mode is not desired at this time.

10. If desired, place SGTS in Standby Mode	10. This step is N/A
CUE: T4600-C004 is running **T4600-F004B, F008B, F408 are open**	
*11. Start T4600-C004, Div 2 SGTS Exhaust Fan and verify: • T4600-F004B, F008B, F408 are open	*11. T4600-C004 is running T4600-F004B, F008B, F408 open

CUE: Div 2 SGTS flow is 4000 cfm

12. Verify T46-R800B, Div 2 SGTS Exh Gas Flow Recorder, indicates between 3420 and 4180 cfm.	12. Div 2 SGTS flow is between 3420 and 4180 cfm

End JPM

_____ SATISFACTORY _____ UNSATISFACTORY

Terminating Cue(s):

D2 SGTS is in operation, with normal operating airflow.

FOLLOW-UP DOCUMENTATION QUESTIONS

Reason for Followup question(s):

Question:

Reference:

Response:

Question:

Reference

Response:

Simulator Setup

IC#:

Any IC that will allow SGTS operation.

Malfunctions:

Remote Functions:

Activate (T46)-RF1544 at the same time to cause T46F002A to fail closed

Override Functions:

Special Instructions:

JPM B1.g Cue Sheet

Initial Conditions: **As observed in the Control Room.**
Initiating Cue(s): **You are the Third NSO in the Control Room**. **CRS directs you to start Div 1 SGTS, in preparation for RBHVAC fan work.**

JOB PERFORMANCE MEASURE
NRC EXAM 2004-301-B1.H

Job Position Nuclear Supervising Operator	No. NRC EXAM 2004-301-B1.h	Revision 1
JPM Title Vent the Torus Irrespective of Offsite Release Rates	Duration 10 Minutes	Page COVER SHEET

Examinee: _____ SRO / RO

Evaluator: _____

Evaluation Method: Perform / Simulator / Alternate Path

Start Time _____

Stop Time _____

Total Time _____

PERFORMANCE EVALUATION							
Element	S	U	Comments	Element	S	U	Comments
1.				17.			
2.				*18.			
3.				19.			
4.				*20.			
5.				*21.			
6.				22.			
*10.				23.			
11.							
*12.							
*13.							
*14.							
*15.							
*16.							

_____ SATISFACTORY _____ UNSATISFACTORY

ORAL EVALUATION (Not Required for ILO Exams)							
Question #	S	U	Comments	Question #	S	U	Comments

_____ SATISFACTORY _____ UNSATISFACTORY

Evaluator Signature / Date: _____ /

JOB PERFORMANCE MEASURE
NRC EXAM 2004-301-B1.H

JPM Title	No.: NRC EXAM 2004-301-B1.h
Vent the Torus Irrespective of Offsite Release Rates (Alternate Path)	Revision: 1 Page 1

References: Required (R) / Available (A)

29.ESP.07, Primary Containment Venting

Tools and Equipment Required:

None

Preferred Evaluation Method:

Perform	X	Walkthrough		Discuss	
Plant		Simulator	X	Classroom	

Evaluator Notes:

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

This JPM will be performed in a Post-LOCA IC with Torus pressure >25#.

Start this JPM at the CRS Desk in the Simulator.

DO NOT FORGET TO RESET MSIV ISOLATIONS.

K/A Reference :

223001 Primary Containment System and Auxiliaries - A4. Ability to manually operate and/or monitor in the control room: (CFR: 41.7 / 45.5 to 45.8)
A4.07 Drywell pressure RO 4.2 / SRO 4.1

Task Standard:

Vent the Torus to maintain pressure less than the PCPL curve.

Initial Conditions:

The plant has experienced a Steam Leak inside containment. Containment pressure exceeded the PSP which caused the crew to Emergency depressurize.

Chemistry has been contacted to sample the Primary Containment atmosphere for activity.

29.ESP.22, Defeat of Primary Containment Vent Valve Isolations has been completed.

Initiating Cue(s):

You are the Control Room Nuclear Supervising Operator.

The CRS directs you to vent the Torus Irrespective of Offsite Release rates to maintain containment pressure less than the PCPL curve in accordance with 29.ESP.07

PERFORMANCE EVALUATION

Time Start _____

Elements	Standards
NOTE: All controls and indications are located on COP H11-P808 or COP-H11-P817 unless otherwise specified.	
PREREQUSITES: NONE	
CAUTION **Simultaneously venting the Drywell and Torus is prohibited.**	
1. If venting the Drywell, notify the SM and exit this section.	1. If venting the Drywell, notify the SM and exit this section.
2. If Torus Level is at or above 570 feet (H11-P602), exit this section.	2. Torus Level below 570 feet.
3. Contact Chemistry to sample the Primary Containment atmosphere for activity.	3. Chemistry has been contacted.
4. Direct Defeat Primary Containment Vent Valve isolations IAW 29.ESP.22	4. 29.ESP.22 has been ordered
5. Determine pressure to stop venting Torus as follows: 5.1 If venting to lower pressure below the PCPL curve, stop venting at 32 to 39 psig. 5.2 If venting for any other reason, lower pressure as required to achieved desired results as directed by EOP or Severe Accident Guideline Flowcharts.	5. Lowering pressure to maintain <PCPL, therefore pressure should be maintained less than 40 psig per the EOPs.
CAUTION **Venting the Primary Containment may release radioactive gas/steam into the Reactor Building.**	
6. If Torus Pressure is less than 1.68 psig, perform the following, otherwise continue at 2.10.	6. Torus pressure is >1.68 psig, therefore continue at 10
NOTE: The following step will have the candidate turning off the Div 1 and 2 SGTS Exhaust Fans.	
*10. Shutdown SGTS	*10. Shuts down SGTS

Elements	**Standards**
11. Isolates SGTS by closing or verifying closed: 2.11.1 T4600-F008A 2.11.2 T4600-F409 2.11.3 T4600-F008B 2.11.4 T4600-F408 2.11.5 T4600-F407 2.11.6 T4600-F406 2.11.7 T4600-F410	11. SGTS isolated
*12. Place keylock switch for T4600-F421, SC Hard Vent Otbd Isol Vlv, in OPER	*12. T4600-F421 Keylock switch in OPER
*13. Place keylock switch for T4600-F420, SC Hard Vent Inbd Isol Vlv, in OPER	*13. T4600-F420 Keylock switch in OPER
*14. Open or verify open T4600-F421, SC Hard Vent Otbd Iso Vlv.	*14. T4600-F421 is Open
*15. Open or verify open T4600-F420, SC Hard Vent Otbd Iso Vlv. **CUE: If the candidate reports to the CRS that T4600-F412 is not opening and requests direction, tell the candidate (as the CRS) to follow the procedure.**	*15. T4600-F420 is Open
*16. Open or verify open the following 6" Vent Path Valves 16.1 T4600-F412, Torus 6" Purge Iso Vlv 16.2 T4600-F400, Torus Exh iso Vlv **NOTE (1):** The Vent Path can be secured at any time (**Step 23**) to prevent Torus Pressure from going below 5 inches wc. **NOTE (2):** Torus Pressure may not be reduced immediately, plant conditions will have to be evaluated by the Shift Team to determine if the larger vent paths are required.	*16. **T4600-F412 fails shut**. Examinee should report this to the CRS and continue on with step 16.2, opening T4600-F400 to establish a vent path from the Torus
17. If Torus Pressure is reduced to the value determined above, proceed to step 2.23.	17. Torus Pressure will not be lowering
*18. If Torus Pressure is not being reduced as fast as necessary, open T4600-F401, Torus 20" Purge Iso Vlv	*18. Opens T4600-F401 and starts lowering Torus Pressure
19. If Torus Pressure is reduced to the value determined above, proceed to step 23, otherwise continue.	19. Either proceeds to step 23 or continues with step 20..

Elements		Standards	
NOTE:	The candidate may allow pressure to lower in the current configuration and then proceed to 23. He/she may also continue on with step 20.		
*20.	If Torus Pressure is not being reduced as fast as necessary, evacuate the Refuel Floor.	*20.	Makes an announcement to evacuate the Refuel Floor.
*21.	Open T4600-F410, RB5 Air inlet Iso Vlv.	*21.	T4600-F410 is Open.
22.	When Torus is reduced to the value determined above, continue.	22.	Continues with step 23.
23.	Close or verify closed the following valves as necessary to maintain desired Torus Pressure: 23.1 T4600-F410, RB5 Air Inlet Iso Vlv 23.2 T4600-F401, Torus 20” Purge Iso Vlv 23.3 T4600-F400, Torus Exh Iso Vlv 23.4 T4600-F412, Torus 6” Purge Iso Vlv	23.	The following valves are closed: 23.1 T4600-F410, RB5 Air Inlet Iso Vlv 23.2 T4600-F401, Torus 20” Purge Iso Vlv 23.3 T4600-F400, Torus Exh Iso Vlv 23.4 T4600-F412, Torus 6” Purge Iso Vlv .

Time Stop _____

* Critical Steps

Terminating Cue(s):

Torus pressure is 32-39 psig and the venting line is shut.

FOLLOW-UP DOCUMENTATION QUESTIONS

Reason for Followup question(s):

Question:

Reference:

Response:

Question:

Reference

Response:

Simulator Setup

IC#:

IC 17 – Need to establish an initial condition for this scenario. You have to insert a LARGE steam leak and an ATWS to get the simulator to reach the PSP.

Malfunctions:

Number	Title	Value
None		

Remote Functions:

Number	Title	Value
RF 2323	D1 L2/Hi DW Press PC Vent vlv isol	Defeat
RF 2324	D2 L2/Hi DW Press PC Vent vlv isol	Defeat
RF 1548	D1 DW Vent isol	Defeat
RF 1549	D2 DW Vent isol	Defeat
RF 1699	T46-F406 Override/Defeat of Auto Open Signal	Defeat
RF 1666	T46-F407 Hi DW Pressure Signal Open Seal in Defeat	ON
RF 1667	T46-F410 Hi DW Pressure Signal Open Seal in Defeat	ON

Override Functions:

None

Special Instructions:

You must RESET the MSIV isolation logic for the Vent valves to open!

To “Inactivate the Block” and prevent T4600-F412 from operating, go to the CETRAN window and type the following:

BP:T4600F412 <CR>

IA=

JOB PERFORMANCE MEASURE

NRC EXAM 2004-301-B1.H

JPM B1.h Cue Sheet

Initial Conditions:

The plant has experienced a Steam Leak inside containment. Containment pressure exceeded the PSP which caused the crew to Emergency depressurize.

Chemistry has been contacted to sample the Primary Containment atmosphere for activity.

29.ESP.22, Defeat of Primary Containment Vent Valve Isolations has been completed.

Initiating Cue(s):

You are the Control Room Nuclear Supervising Operator.

The CRS directs you to vent the Torus Irrespective of Offsite Release rates to maintain containment pressure less than the PCPL curve in accordance with 29.ESP.07