

JOB PERFORMANCE MEASURE

NRC EXAM 2003-301-B1.H

Job Position Nuclear Supervising Operator	No. NRC EXAM 2003-301-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 2003-301-B1.H

Job Position Nuclear Supervising Operator	No. NRC EXAM 2003-301-B1.e	Revision 1
JPM Title Restore Off-Site Power to an ESF and EDG Bus.	Duration 10 Minutes	Page 2

References: Required (R) / Available (A)

[23.321](#) (R)

Tools and Equipment Required:

None

Preferred Evaluation Method:

Perform	<u> X </u>	Walkthrough	<u> </u>	Discuss	<u> </u>
Plant	<u> </u>	Simulator	<u> X </u>	Classroom	<u> </u>

Evaluator Notes:

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

This JPM can be used for any ESF/EDG Bus

The EDG(s) should be started and paralleled to the ESF Bus, then the Normal Feed Breaker 64B(C)6, 65E(F)6 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 and is supplying the EDG and ESF Bus.

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

EDG **11**(12, 13, 14) is running, providing power to the EDG and ESF Bus.

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**(12EB, 13EC, 14ED) and ESF Bus **64B**(C, 65E, 65F).

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

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

Job Position Nuclear Supervising Operator	No. NRC EXAM 2003-301-B1.e	Revision 1
JPM Title Restore Off-Site Power to an ESF and EDG Bus.	Duration 10 Minutes	Page 3

PERFORMANCE EVALUATION

Time Start _____

<p>CUE:</p> <p>Synchronize Switch is in the ON position.</p> <p>*1. Place Synchronize Switch for Bus 64B (64C, 65E, 65F) Normal Feeder Breaker B6 (C6, E6, F6) to ON.</p>	<p>*1. Synchronize Switch is placed in ON.</p>
<p>CUE:</p> <p>Secondary windings on SST #64 (65) indicates 120V AC.</p> <p>64B (64C, 65E, 65F) Starting Volt Meter indicates voltage of 120V AC.</p> <p>The Synchroscope is operating.</p> <p>2. Verify:</p> <p>Div. I (II) Syn. Bus Running Volt Meter indicates voltage on SST # 64 (65) secondary windings (approximately 120V AC).</p> <p>Div. I (II) Syn. Bus Starting Volt Meter indicates voltage on ESF Bus 64B (64C, 65E, 65F)(approximately 120V AC).</p> <p>Division I (II) Synchroscope is operating.</p> <p>CUE:</p> <p>Synchroscope is rotating slowly in the FAST direction.</p> <p>3. With EDG Governor Control Switch, adjust EDG speed until synchroscope is rotating slowly in the FAST direction.</p> <p>Synchroscope may be in phase and only show slight movement at first. Change EDG frequency slightly to rotate the scope.</p>	<p>2. The following items are verified:</p> <p>Div. I (II) Syn. Bus Running Volt Meter indicates voltage on SST # 64 (65) secondary windings (approximately 120V AC).</p> <p>Div. I (II) Syn. Bus Starting Volt Meter indicates voltage on ESF Bus 64B (64C, 65E, 65F)(approximately 120V AC).</p> <p>Division I (II) Synchroscope is operating.</p> <p>3. Synchroscope is rotating slowly in the FAST direction.</p>
<p>CUE:</p> <p>Running Volt meter reads 120VAC.</p> <p>Starting Volt meter reads 120VAC.</p> <p>*4. With EDG Voltage Control Switch, adjust Starting Voltage until it is equal to or slightly higher than Running Bus Voltage indication.</p>	<p>*4. Starting Voltage is adjusted until it is equal to or slightly higher than Running Bus Voltage</p>

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

Job Position Nuclear Supervising Operator	No. NRC EXAM 2003-301-B1.e	Revision 1
JPM Title Restore Off-Site Power to an ESF and EDG Bus.	Duration 10 Minutes	Page 4

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 (64C, 65E, 65F) Normal Feeder Breaker B6 (C6, E6, F6).	*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 (64C, 65E, 65F) Normal Feeder Breaker B6 (C6, E6, F6) 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 (12, 13, 14) Output Breaker EA3 (EB3, EC3, ED3).	*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.

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 2003-301-B1.H

Job Position Nuclear Supervising Operator	No. NRC EXAM 2003-301-B1.e	Revision 1
JPM Title Restore Off-Site Power to an ESF and EDG Bus.	Duration 10 Minutes	Page 5

FOLLOW-UP DOCUMENTATION QUESTIONS

Reason for Followup question(s):

Question:

Reference:

Response:

Question:

Reference

Response:

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

Job Position Nuclear Supervising Operator	No. NRC EXAM 2003-301-B1.e	Revision 1
JPM Title Restore Off-Site Power to an ESF and EDG Bus.	Duration 10 Minutes	Page 6

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(C)6, 65E(F)6 should then be opened.

JPM B1.d Cue Sheet

Initial Conditions:

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

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

EDG 11(12, 13, 14) is running, providing power to the EDG and ESF Bus.

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(12EB, 13EC, 14ED) and ESF Bus 64B(C, 65E, 65F).

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

JOB PERFORMANCE MEASURE

NRC EXAM 2004-301-B1.A

Job Position Nuclear Supervising Operator	No. NRC EXAM 2004-301-B1.a	Revision 1
JPM Title Initiate the High Pressure Coolant Injection System Manually	Duration 15 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.							
* 2.							
* 3.							
* 4.							
* 5.							
* 6.							
* 7.							

_____ 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

JPM Title Initiate the High Pressure Coolant Injection System Manually (Alternate Path)	No.: NRC EXAM 2004-301-B1.a Revision: 1 Page 2
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References: Required (R) / Available (A)

[23.202](#) (R)

Tools and Equipment Required:

None

Preferred Evaluation Method:

Perform	X	Walkthrough		Discuss	
Plant		Simulator	X	Classroom	

Evaluator Notes:

If the examinee asks about Standby Gas Treatment System, RHR Torus Cooling operation, or notification of Radiation Protection, tell the examinee that this may be done after HPCI is injecting.

Set up the simulator at high power (75% or higher).

Initiate a reactor scram on Low Reactor Water Level by tripping both Reactor Feed Pumps (MF N21 3340 and 3341 set at 0), preventing automatic HPCI initiation (MF E41 1430).

Initiate a HPCI controller failure using PO 00004 at a target of 0%.

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

K/A Reference :

206000 High Pressure Coolant Injection System

A4.02 (4.0/3.8) Ability to manually operate and monitor the HPCI flow controller

Task Standard:

HPCI is injecting into the RPV with flow controller in manual in accordance with 23.202.

Use of the appropriate section of 23.202 or Enclosure C of 23.202 is acceptable.

Initial Conditions:

You are the CRNSO

The reactor has scrammed due to low reactor water level due to a complete loss of feedwater.

Reactor Water Level is 173 inches and decreasing.

EOP 29.100.01 has been entered (allowing use of Enclosure C).

Initiating Cue(s):

The CRS directs you to manually initiate HPCI and inject into the vessel, and informs you that Torus Cooling and Standby Gas Treatment System will be started later.

JOB PERFORMANCE MEASURE

JPM Title Initiate the High Pressure Coolant Injection System Manually (Alternate Path)	No.: NRC EXAM 2004-301-B1.a Revision: 1 Page 3
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PERFORMANCE EVALUATION

Time Start _____

<u>Elements</u>	<u>Standards</u>
NOTE: All controls and indications are located on H11-P602 unless otherwise specified.	Note: Examinee may use the placard for HPCI operation that is on the P602 panel.
CUE: HPCI Baro Cndr Vacuum Pump is running	
1. Place E4101-C003, HPCI Baro Cndr Vacuum Pump, in RUN, and verify pump starts	1 HPCI Baro Cndr Vacuum Pump is running.
CUE: E4150-F003 is OPEN	
*2 Open E4150-F003, HPCI Stm Sply Otbd Iso Vlv	*2 E4150-F003, HPCI Stm Sply Otbd is OPEN
CUE: E4150-F059 is OPEN	
*3 Open E4150-F059, HPCI Lube Oil Clg Wtr Sply Vlv	*3 E4150-F059, HPCI Lube Oil Clg Wtr Sply Vlv is OPEN
CUE: Aux Oil pump is running and the E4150-F001 is open	
*4 Initiate a start of HPCI System by performing the next two steps simultaneously: a. Place E4101-C005, HPCI Turbine Aux Oil Pump, in RUN, and verify pump starts b. Open E4150-F001, HPCI Turb Stm Supply Iso Vlv	*4 a. E4101-C005, HPCI Turbine Aux Oil Pump is running b. E4150-F001, HPCI Turb Stm Supply Iso Vlv is OPEN
CUE: E4150-F006 is Open	
*5 Open E4150-F006, HPCI Pmp Inbd Disch Iso Valve	*5 E4150-F006, HPCI Pmp Inbd Disch Iso Valve is OPEN
CUE: Flow is 0 gpm	
*6 Adjust flow as necessary on E41-K615, HPCI Pump flow controller	*6 The flow controller does not respond. Examinee informs the CRS that HPCI has failed to respond automatically
Note: The examinee should continue on with the procedure by taking Manual control of the HPCI flow controller.	
CUE: Flow is 5200 gpm	
*7. Place E41-K615, HPCI Pump flow controller in Manual and increase flow to 5200 gpm	*7. E41-K615, HPCI Pump flow controller is in Manual and flow is 5200 gpm

JOB PERFORMANCE MEASURE

JPM Title Initiate the High Pressure Coolant Injection System Manually (Alternate Path)	No.: NRC EXAM 2004-301-B1.a Revision: 1 Page 4
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Time Stop _____

* Critical Steps

Terminating Cue(s):

HPCI is injecting water into the RPV at 5200 gpm

JOB PERFORMANCE MEASURE

JPM Title Initiate the High Pressure Coolant Injection System Manually (Alternate Path)	No.: NRC EXAM 2004-301-B1.a Revision: 1 Page 5
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FOLLOW-UP DOCUMENTATION QUESTIONS

Reason for Followup question(s):

Question:

Reference:

Response:

Question:

Reference

Response:

JOB PERFORMANCE MEASURE

JPM Title Initiate the High Pressure Coolant Injection System Manually (Alternate Path)	No.: NRC EXAM 2004-301-B1.a Revision: 1 Page 6
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Simulator Setup

IC#:

Any IC with Power >75%

Malfunctions:

None

Remote Functions:

None

Override Functions:

None

Special Instructions:

Initiate a reactor scram on Low Reactor Water Level by tripping both Reactor Feed Pumps (MF N21 3340 and 3341 set at 0), preventing automatic HPCI initiation (MF E41 1430).

Initiate a HPCI controller failure using PO 00004 at a target of 0%.

**JOB PERFORMANCE MEASURE
NRC EXAM 2003-301-B1.A**

JPM B1.a Cue Sheet

Initial Conditions:

You are the CRNSO

The reactor has scrammed due to low reactor water level due to a complete loss of feedwater.

Reactor Water Level is 173 inches and decreasing.

EOP 29.100.01 has been entered

Initiating Cue(s):

The CRS directs you to manually initiate HPCI and inject into the vessel, and informs you that Torus Cooling and Standby Gas Treatment System will be started later.

JOB PERFORMANCE MEASURE

NRC EXAM 2003-301-B1.A

Job Position Nuclear Supervising Operator	No. NRC EXAM 2004-301-B1.a	Revision 1
JPM Title Feeding Reactor Vessel with SBFW during Reactor Vessel Low Level	Duration 15 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.							
2.							
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* 4.							
* 5.							
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_____ 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

JPM Title Feeding Reactor Vessel with SBFW during Reactor Vessel Low Level (Alternate Path)	No.: NRC EXAM 2004-301-B1.a Revision: 1 Page 2
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References: Required (R) / Available (A)

SOP 23.107.01 Standby Feedwater System (R)

Tools and Equipment Required:

None

Preferred Evaluation Method:

Perform	<u> X </u>	Walkthrough	<u> </u>	Discuss	<u> </u>
Plant	<u> </u>	Simulator	<u> X </u>	Classroom	<u> </u>

Evaluator Notes:

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

Start this JPM at the CRS Desk in the Simulator.

K/A Reference :

2.1 Generic Knowledge and Abilities:

2.1.17 Ability to make accurate, clear, and concise verbal reports. 3.5 / 3.6

2.1.20 Ability to execute procedure steps. 4.3 / 4.2

2.1.21 Ability to obtain and verify controlled procedure copy. 3.1 / 3.2

2.1.23 Ability to perform specific procedures during all modes of operation. 3.3 / 3.5

2.1.30 Ability to locate and operate components including local controls. 3.4 / 3.5

2.1.28 Knowledge of purpose and function of major system components and controls 3.2 / 3.3

295031 Reactor Low Water Level

EA1. Ability to operate and/or monitor the following as they apply to reactor low water level (CFR: 41.7 / 45.6):

EA1.08 Alternate injection systems 3.8 / 3.9

Task Standard:

It is realized that SBFW Pump A(B) is unable to inject to the vessel with the Keylock Mode Select Switch in the **TEST** position, reposition the Keylock Mode Select Switch and successfully inject to the RPV to restore RPV level to 173 to 214 inches.

Initial Conditions:

The plant has experienced a Reactor Scram.

HPCI, RCIC, and Feedwater are currently unavailable.

Initiating Cue(s):

You are the Control Room NSO.

The CRS has directed you to feed the RPV with Standby Feedwater and restore RPV level to 173 to 214 inches

The system is in Standby, IAW 23.107.01 section 5.0.

JOB PERFORMANCE MEASURE

JPM Title Feeding Reactor Vessel with SBFW during Reactor Vessel Low Level (Alternate Path)	No.: NRC EXAM 2004-301-B1.a Revision: 1 Page 3
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PERFORMANCE EVALUATION

Time Start _____

<u>Elements</u>	<u>Standards</u>
NOTE: All controls and indications are located on H11-P601 unless otherwise specified.	NOTE: The operator may Recognize and report to CRS the Keylock Mode Select Switch in TEST and request CRS concurrence to place in NORMAL prior to start of the procedure.
PREREQUISITES: NONE	NOTE: The operator may perform feeding of the RPV with Standby Feedwater from memory in accordance with Operations Department Expectation (ODE) 10, Emergency Operating Procedure Expectations.
6.2.1 Start N2103-C003A (B), West (East) Pump A (B) Aux Lube Oil Pump, if available.	6.2.1 Starts N2103-C003A (B), West (East) Pump A (B) Aux Lube Oil Pump, if available.
6.2.2 If Lube Oil Pump is running, dispatch an operator to verify lube oil pressure and flow as follows: <ol style="list-style-type: none"> 1. Lube oil pressure on N21-RA04 (RA03), SBFW Pump A (B) Lube Oil Supply Press Indicator, is greater than 15 psig. 2. There is oil flow through all four bull's eye flow indicators (two on pump and two on motor). NOTE: If SBFW pumps are needed for vessel inventory and Aux Lube Oil Pump is running, Step 6.2.2 can be omitted without damage to the SBFW Pump CUE: IF ASKED 6.2.2.1 Press>15psig 6.2.2.2 Flow through all four bull's eyes	NOTE: This Step can be omitted.
*6.2.3 Start N2103-C001 (2), West (East) Standby Feedwater Pump A (B).	*6.2.3 Starts N2103-C001 (2), West (East) Standby Feedwater Pump A (B).

JOB PERFORMANCE MEASURE

JPM Title Feeding Reactor Vessel with SBFW during Reactor Vessel Low Level (Alternate Path)	No.: NRC EXAM 2004-301-B1.a Revision: 1 Page 4
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<u>Elements</u>	<u>Standards</u>
<p>*6.2.4 Verify the following:</p> <ol style="list-style-type: none"> 1. N2103-F001, SBFW Disch To RPV Iso Valve, automatically opens (first pump). 2. If running, N2103-C003A (B), West (East) Pump A (B) Aux Lube Oil Pump, automatically stops. 3. Lube oil pressure on N21-RA04 (RA03), SBFW Pump A (B) Lube Oil Supply Press Indicator, is greater than 15 psig. 4. There is oil flow through all four bull's eye flow indicators (two on pump and two on motor) <p>CUE: IF ASKED:</p> <p>6.2.2.1 Press>15psig</p> <p>6.2.2.2 Flow through all four bull's eyes</p>	<p>*6.2.4 Recognize and report to CRS, N2103-F001 did not Open.</p> <p>Place Keylock Mode Select Switch in NORMAL with CRS concurrence.</p> <p>Verify N2103-F001 Opens.</p>
*6.2.5 Throttle N2103-F003, SBFW 4" Disch Flow Ctrl Vlv, to restore RPV level 173 to 214 inches.	6.2.5 RPV level restored to 173 to 214 inches
6.2.6 If more flow is desired, repeat Steps 6.2.1 through 6.2.5 for the second SBFW Pump.	6.2.6 If more flow is desired, repeat Steps 6.2.1 through 6.2.5 for the second SBFW Pump.
6.2.7 If more flow is necessary, throttle open N2103-F002, SBFW 6" Disch Flow Ctrl Vlv, to achieve desired flow.	6.2.7 If more flow is necessary, throttle open N2103-F002, SBFW 6" Disch Flow Ctrl Vlv, to achieve desired flow.

Time Stop _____

* Critical Steps

Terminating Cue(s):

After correcting position of the F001 Keylock Mode Select Switch, SBFW is injecting to the RPV, and RPV level is restored to 173 to 214 inches

JOB PERFORMANCE MEASURE

JPM Title Feeding Reactor Vessel with SBFW during Reactor Vessel Low Level (Alternate Path)	No.: NRC EXAM 2004-301-B1.a Revision: 1 Page 5
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FOLLOW-UP DOCUMENTATION QUESTIONS

Reason for Followup question(s):

Question:

Reference:

Response:

Question:

Reference

Response:

JOB PERFORMANCE MEASURE

JPM Title Feeding Reactor Vessel with SBFW during Reactor Vessel Low Level (Alternate Path)	No.: NRC EXAM 2004-301-B1.a Revision: 1 Page 6
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Simulator Setup

IC#:

Any shutdown IC with RPV level at approximately 150 inches

Malfunctions:

None

Remote Functions:

None

Override Functions:

None

Special Instructions:

1. Place Standby Feedwater Keylock Mode Switch in TEST
2. Trip HPCI, RCIC, and RFPs.

**JOB PERFORMANCE MEASURE
NRC EXAM 2003-301-B1.A**

JPM B1.a Cue Sheet

Initial Conditions:

The plant has experienced a Reactor Scram.

HPCI, RCIC, and Feedwater are currently unavailable to feed the RPV.

Initiating Cue(s):

You are the Control Room NSO.

The CRS has directed you to feed the RPV with Standby Feedwater and restore RPV level to 173 to 214 inches

The system is in Standby, IAW 23.107.01 section 5.0.

**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.							
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8.							
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_____ 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 Manually Initiate Core Spray System with E21-F005A Stuck Shut	No.: NRC EXAM 2004-301-B1.b Revision: 2 Page 1
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References: Required (R) / Available (A)

[23.203](#) (R)

Tools and Equipment Required:

None

Preferred Evaluation Method:

Perform	<u> X </u>	Walkthrough	<u> </u>	Discuss	<u> </u>
Plant	<u> </u>	Simulator	<u> X </u>	Classroom	<u> </u>

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-scrum 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.

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

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

Time Start _____

<u>Elements</u>	<u>Standards</u>
NOTE: The next two steps may be performed in any order.	
CUE: <ul style="list-style-type: none"> • 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: <ul style="list-style-type: none"> • 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: <ul style="list-style-type: none"> • 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: For one applicant the licensee failed to insert this malfunction. Required tripping both DIV I pumps to ensure alternate path to use DIV II system.

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

JPM Title Manually Initiate Core Spray System with E21-F005A Stuck Shut	No.: NRC EXAM 2004-301-B1.b Revision: 2 Page 3
----------------------------------------------------------------------------	------------------------------------------------------

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.

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

JPM Title Manually Initiate Core Spray System with E21-F005A Stuck Shut	No.: NRC EXAM 2004-301-B1.b Revision: 2 Page 4
-------------------------------------------------------------------------------	------------------------------------------------------

FOLLOW-UP DOCUMENTATION QUESTIONS

Reason for Followup question(s):

Question:

Reference:

Response:

Question:

Reference

Response:

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

JPM Title Manually Initiate Core Spray System with E21-F005A Stuck Shut	No.: NRC EXAM 2004-301-B1.b Revision: 2 Page 5
-------------------------------------------------------------------------------	------------------------------------------------------

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-scrum 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	<u> X </u>	Walkthrough	<u> </u>	Discuss	<u> </u>
Plant	<u> </u>	Simulator	<u> X </u>	Classroom	<u> </u>

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 Perquisites 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.C

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

PREREQUISITES: 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

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 3
----------------------------------------------	------------------------------------------------------

- *5. Depress Steam Valve On Load Test red VALVE TEST pushbutton and verify:
- Red VALVE TEST light comes on
 - Annunciator 4D91 is in alarm
 - 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:
- Selected HPCV opens to approximately 10% open
 - White TRIP SOLENOID A light goes OFF
 - White TRIP SOLENOID B light goes OFF
 - Annunciator 3D89, TURBINE CONT VALVE TEST CLOSURE TRIP, clears
 - 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-scrum as necessary

- *7. Half-scrum 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

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 4
----------------------------------------------	------------------------------------------------------

*11. Depress Steam Valve On Load Test white CANCEL TEST pushbutton and verify:

- CANCEL TEST light comes ON
- Selected HPCV opens to controlling position

*11.

- CANCEL TEST light ON
- HPCV open to controlling position

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::

- Red VALVE TEST light goes OFF
- White CANCEL TEST light goes OFF
- Associated TCV red SELECT light goes OFF
- White GOVERNOR FAULT light goes OFF
- 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.

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 5
----------------------------------------------	------------------------------------------------------

FOLLOW-UP DOCUMENTATION QUESTIONS

Reason for Follow-up question(s):

Question:

Reference:

Response:

Question:

Reference

Response:

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 6
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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.

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

JPM B1.f Cue Sheet

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

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 15 minutes	Page COVER SHEET

Examinee: _____ SRO / RO

Evaluator: _____

Evaluation Method: Perform / Simulator Start Time _____

Stop Time _____

Total Time _____

PERFORMANCE EVALUATION SUMMARY

[illegible]

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)

Tools and Equipment Required:

None

Preferred Evaluation Method:

Perform	<u> X </u>	Walkthrough	<u> </u>	Discuss	<u> </u>
Plant	<u> </u>	Simulator	<u> X </u>	Classroom	<u> </u>

Evaluator Notes:

Insert MF 3686 or MF 3687 for Recirc Pump Walkaway with a 30 second ramp rate. Place plant ~60%.

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 and the Immediate actions of 20.138.01 assessed.

Initial Conditions:

Plant is at power and no equipment is out of service.

Initiating Cue(s):

Plant is at power and you are the P603 operator. Respond in accordance with plant procedures.

**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 2
---------------------------------------------------------------	------------------------------------------------------

Start Time _____

Stop Time _____

Total Time _____

Elements

Standards

CUE: North(South) RR MG Set speed(s) is increasing slowly.

*1. North(South) RR MG Set speed(s) changing, then Lock scoop tube for **affected** RR MG Set(s)

*1. Affected RR MG Set scoop tube locked.

CUE: North(South) RR MG Set speed(s) has increased >10% (use a number, not just >10%)

*2. North(South) RR MG Set speed(s) increased >10%, then Trip **one** of the affected RR MG Sets and perform 20.138.01, Recirculation Pump Trip

*2. **One** of the affected RR MG sets is tripped and 20.138.01 is entered.

End JPM

_____ SATISFACTORY

_____ UNSATISFACTORY

Terminating Cue(s):

Plant is stable with power at pre-transient level or in single loop with affected pump tripped and the Immediate actions of 20.138.01 assessed.

**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:

**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 4
---------------------------------------------------------------	------------------------------------------------------

Simulator Setup

IC#:

IC-15

Malfunctions:

MF 3686 RRS Pump "A" at 100% with 30 second ramp rate OR

MF 3687 RRS Pump "B" at 100% with 30 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

<p>Initial Conditions:</p> <p>Plant is at power and no equipment is out of service.</p>
<p>Initiating Cue(s):</p> <p>Plant is at power and you are the P603 operator. Respond in accordance with plant procedures.</p>

JOB PERFORMANCE MEASURE

NRC EXAM 2004-301-B1.H

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.H

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

References: Required (R) / Available (A)

[23.321](#) (R)

Tools and Equipment Required:

None

Preferred Evaluation Method:

Perform	<u> X </u>	Walkthrough	<u> </u>	Discuss	<u> </u>
Plant	<u> </u>	Simulator	<u> X </u>	Classroom	<u> </u>

Evaluator Notes:

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

This JPM can be used for any ESF/EDG Bus

The EDG(s) should be started and paralleled to the ESF Bus, then the Normal Feed Breaker 64B(C)6, 65E(F)6 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 and is supplying the EDG and ESF Bus.

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

EDG **11**(12, 13, 14) is running, providing power to the EDG and ESF Bus.

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**(12EB, 13EC, 14ED) and ESF Bus **64B**(C, 65E, 65F).

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

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

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

PERFORMANCE EVALUATION

Time Start _____

<p>CUE:</p> <p>Synchronize Switch is in the ON position.</p> <p>*1. Place Synchronize Switch for Bus 64B (64C, 65E, 65F) Normal Feeder Breaker B6 (C6, E6, F6) to ON.</p>	<p>*1. Synchronize Switch is placed in ON.</p>
<p>CUE:</p> <p>Secondary windings on SST #64 (65) indicates 120V AC.</p> <p>64B (64C, 65E, 65F) Starting Volt Meter indicates voltage of 120V AC.</p> <p>The Synchroscope is operating.</p> <p>2. Verify:</p> <p>Div. I (II) Syn. Bus Running Volt Meter indicates voltage on SST # 64 (65) secondary windings (approximately 120V AC).</p> <p>Div. I (II) Syn. Bus Starting Volt Meter indicates voltage on ESF Bus 64B (64C, 65E, 65F)(approximately 120V AC).</p> <p>Division I (II) Synchroscope is operating.</p> <p>CUE:</p> <p>Synchroscope is rotating slowly in the FAST direction.</p> <p>3. With EDG Governor Control Switch, adjust EDG speed until synchroscope is rotating slowly in the FAST direction.</p> <p>Synchroscope may be in phase and only show slight movement at first. Change EDG frequency slightly to rotate the scope.</p>	<p>2. The following items are verified:</p> <p>Div. I (II) Syn. Bus Running Volt Meter indicates voltage on SST # 64 (65) secondary windings (approximately 120V AC).</p> <p>Div. I (II) Syn. Bus Starting Volt Meter indicates voltage on ESF Bus 64B (64C, 65E, 65F)(approximately 120V AC).</p> <p>Division I (II) Synchroscope is operating.</p> <p>3. Synchroscope is rotating slowly in the FAST direction.</p>
<p>CUE:</p> <p>Running Volt meter reads 120VAC.</p> <p>Starting Volt meter reads 120VAC.</p> <p>*4. With EDG Voltage Control Switch, adjust Starting Voltage until it is equal to or slightly higher than Running Bus Voltage indication.</p>	<p>*4. Starting Voltage is adjusted until it is equal to or slightly higher than Running Bus Voltage</p>

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

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

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 (64C, 65E, 65F) Normal Feeder Breaker B6 (C6, E6, F6).	*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 (64C, 65E, 65F) Normal Feeder Breaker B6 (C6, E6, F6) 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 (12, 13, 14) Output Breaker EA3 (EB3, EC3, ED3).	*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.

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.H

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

FOLLOW-UP DOCUMENTATION QUESTIONS

Reason for Followup question(s):

Question:

Reference:

Response:

Question:

Reference

Response:

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

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 6

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(C)6, 65E(F)6 should then be opened.

JPM B1.d Cue Sheet

Initial Conditions:

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

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

EDG 11(12, 13, 14) is running, providing power to the EDG and ESF Bus.

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(12EB, 13EC, 14ED) and ESF Bus 64B(C, 65E, 65F).

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

**JOB PERFORMANCE MEASURE
NRC EXAM 2003-301-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.							

_____ 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: 1 Page 2
--------------------------------------------------------------------------------------	------------------------------------------------------

References: Required (R) / Available (A)

[24.623](#) (R)

Tools and Equipment Required:

None

Preferred Evaluation Method:

Perform	<u> X </u>	Walkthrough	<u> </u>	Discuss	<u> </u>
Plant	<u> </u>	Simulator	<u> X </u>	Classroom	<u> </u>

Evaluator Notes:

Establish an IC with the reactor shutdown in Mode 5.

Give student a copy of 23.623, 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. 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 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: 1 Page 3
--------------------------------------------------------------------------------------	------------------------------------------------------

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-load. 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.

**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: 1 Page 4
--------------------------------------------------------------------------------------	------------------------------------------------------

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.
-

**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: 1 Page 5
--------------------------------------------------------------------------------------	------------------------------------------------------

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.

**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: 1 Page 6
--------------------------------------------------------------------------------------	------------------------------------------------------

- * 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.

**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: 1 Page 7
--------------------------------------------------------------------------------------	------------------------------------------------------

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.

**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: 1 Page 8
--------------------------------------------------------------------------------------	------------------------------------------------------

Time Stop _____

* Critical Steps

Terminating Cue(s):

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

**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: 1 Page 9
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FOLLOW-UP DOCUMENTATION QUESTIONS

Reason for Followup question(s):

Question:

Reference:

Response:

Question:

Reference

Response:

**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: 1 Page 10
--------------------------------------------------------------------------------------	-------------------------------------------------------

Simulator Setup

IC#:

Malfunctions:

Remote Functions:

Override Functions:

Special Instructions:

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

JPM B1.f Cue Sheet

<p>Initial Conditions:</p> <p>You are the P603 Operator.</p> <p>The reactor has been shutdown. The plant is about to begin refueling operations.</p>
<p>Initiating Cue(s):</p> <p>The CRS directs you to perform Mode Switch in Refuel and One Rod Out Interlock Verification per 24.623 Section 5.1.</p> <p>All prerequisites (Section 4.0) for the performance of this surveillance are satisfied.</p>

**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 3D35](#), "Div I/II FP Vent Exh Radn Monitor Upscale Trip" (A)

Tools and Equipment Required:

None

Preferred Evaluation Method:

Perform	<u> X </u>	Walkthrough	<u> </u>	Discuss	<u> </u>
Plant	<u> </u>	Simulator	<u> X </u>	Classroom	<u> </u>

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 direct the candidate to shutdown D1 SGTS and start D2 SGTS. When D2 SGTS is operating, with normal air flow, 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

PREREQUISITES: 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: <ul style="list-style-type: none"> • 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, |
|-----------------------------------------------------------------------------------------------|------------------------------------------------------------------------|

CUE: If the examinee does not recommend shut down Div 1 SGTS and starting Div 2 SGTS, then direct:

- Shutdown Div 1 SGTS
- Start Div 2 SGTS

Evaluator Note: Go to section 8.0 of 23.404

- | | |
|-------------------------------|----------------|
| 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 |
|------------------------------------------|--------------------------------------|

**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 3

CUE: Standby mode is not desired at this time.

9. If desired, place SGTS in Standby Mode

9. This step is N/A

CUE: T4600-C004 is running

T4600-F004B, F008B, F408 are open

*2. Start T4600-C004, Div 2 SGTS Exhaust Fan and verify:

- T4600-F004A, F008A, F409 are open

*2. T4600-C004 is running
T4600-F004B, F008B, F408 open

CUE: Div 2 SGTS flow is 4000 cfm

* 3. Verify T46-R800B, Div 2 SGTS Exh Gas Flow Recorder, indicates between 3420 and 4180 cfm.

*3. 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 air flow.

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 4

FOLLOW-UP DOCUMENTATION QUESTIONS

Reason for Followup question(s):

Question:

Reference:

Response:

Question:

Reference

Response:

**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 5

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:

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

JPM B1.g Cue Sheet

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

**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 3D35](#), "Div I/II FP Vent Exh Radn Monitor Upscale Trip" (A)

Tools and Equipment Required:

None

Preferred Evaluation Method:

Perform	<u> X </u>	Walkthrough	<u> </u>	Discuss	<u> </u>
Plant	<u> </u>	Simulator	<u> X </u>	Classroom	<u> </u>

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 direct the candidate to shutdown D1 SGTS and start D2 SGTS. When D2 SGTS is operating, with normal air flow, 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

PREREQUISITES: 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: <ul style="list-style-type: none"> • 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, |
|-----------------------------------------------------------------------------------------------|------------------------------------------------------------------------|

CUE: If the examinee does not recommend shut down Div 1 SGTS and starting Div 2 SGTS, then direct:

- Shutdown Div 1 SGTS
- Start Div 2 SGTS

Evaluator Note: Go to section 8.0 of 23.404

- | | |
|-------------------------------|----------------|
| 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 |
|------------------------------------------|--------------------------------------|

**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 3

CUE: Standby mode is not desired at this time.

9. If desired, place SGTS in Standby Mode

9. This step is N/A

CUE: T4600-C004 is running

T4600-F004B, F008B, F408 are open

*2. Start T4600-C004, Div 2 SGTS Exhaust Fan and verify:

- T4600-F004A, F008A, F409 are open

*2. T4600-C004 is running
T4600-F004B, F008B, F408 open

CUE: Div 2 SGTS flow is 4000 cfm

* 3. Verify T46-R800B, Div 2 SGTS Exh Gas Flow Recorder, indicates between 3420 and 4180 cfm.

*3. 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 air flow.

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 4

FOLLOW-UP DOCUMENTATION QUESTIONS

Reason for Followup question(s):

Question:

Reference:

Response:

Question:

Reference

Response:

**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 5

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:

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

JPM B1.g Cue Sheet

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

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.							
4.							
5.							
6.							
*10.							
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 Vent the Torus Irrespective of Offsite Release Rates (Alternate Path)	No.: NRC EXAM 2004-301-B1.h Revision: 1 Page 2
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References: Required (R) / Available (A)

[29.ESP.07](#), Primary Containment Venting

Tools and Equipment Required:

None

Preferred Evaluation Method:

Perform	<u> X </u>	Walkthrough	<u> </u>	Discuss	<u> </u>
Plant	<u> </u>	Simulator	<u> X </u>	Classroom	<u> </u>

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.

The CRS has directed performance of 29.ESP.22, Defeat of Primary Containment Vent Valve Isolations.

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

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

JPM Title Vent the Torus Irrespective of Offsite Release Rates (Alternate Path)	No.: NRC EXAM 2004-301-B1.h Revision: 1 Page 3
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PERFORMANCE EVALUATION

Time Start _____

<u>Elements</u>	<u>Standards</u>
NOTE: All controls and indications are located on COP H11-P808 or COP-H11-P817 unless otherwise specified.	
PREREQUISITES: NONE	
CAUTION Simultaneously venting the Drywell and Torus is prohibited.	
2.1 If venting the Drywell, notify the SM and exit this section.	2.1 If venting the Drywell, notify the SM and exit this section.
2.2 If Torus Level is at or above 570 feet (H11-P602), exit this section.	2.2 Torus Level below 570 feet.
2.3 Contact Chemistry to sample the Primary Containment atmosphere for activity.	2.3 Chemistry has been contacted.
2.4 Direct Defeat Primary Containment Vent Valve isolations IAW 29.ESP.22	2.4 29.ESP.22 has been ordered
2.5 Determine pressure to stop venting Torus as follows: 2.5.1 If venting to lower pressure below the PCPL curve, stop venting at 32 to 39 psig. 2.5.2 If venting for any other reason, lower pressure as required to achieved desired results as directed by EOP or Severe Accident Guidline Flowcharts.	2.5 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.	
2.6 If Torus Pressure is less than 1.68 psig, perform the following, otherwise continue at 2.10.	2.6 Torus pressure is >1.68 psig, therefore continue at 2.10
*2.10 Shutdown SGTS	*2.10 Shutdown SGTS
2.11 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	2.11 SGTS isolated
*2.12 Place keylock switch for T4600-F421, SC Hard Vent Otbd Isol Vlv, in OPER	*2.12 T4600-F421 Keylock switch in OPER

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

JPM Title Vent the Torus Irrespective of Offsite Release Rates (Alternate Path)	No.: NRC EXAM 2004-301-B1.h Revision: 1 Page 4
------------------------------------------------------------------------------------	------------------------------------------------------

<u>Elements</u>	<u>Standards</u>
*2.13 Place keylock switch for T4600-F420, SC Hard Vent Inbd Isol Vlv, in OPER	*2.13 T4600-F420 Keylock switch in OPER
*2.14 Open or verify open T4600-F421, SC Hard Vent Otbd Iso Vlv.	*2.14 T4600-F421 is Open
*2.15 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.	*2.15 T4600-F420 is Open
*2.16 Open or verify open the following 6" Vent Path Valves 2.16.1 T4600-F412, Torus 6" Purge Iso Vlv 2.16.2 T4600-F400, Torus Exh iso Vlv NOTE (1): The Vent Path can be secured at any time (Step 2.23) 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.	*2.16 T4600-F412 fails shut. Examinee should report this to the CRS and continue on with step 2.16.2, opening T4600-F400 to establish a vent path from the Torus
2.17 If Torus Pressure is reduced to the value determined above, proceed to step 2.23.	2.17 Torus Pressure will not be lowering
*2.18 If Torus Pressure is not being reduced as fast as necessary, open T4600-F401, Torus 20" Purge Iso Vlv	*2.18 Opens T4600-F401 and starts lowering Torus Pressure

Time Stop _____

* Critical Steps

Terminating Cue(s):

Torus pressure lowering and less than 40 psig.

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

JPM Title Vent the Torus Irrespective of Offsite Release Rates (Alternate Path)	No.: NRC EXAM 2004-301-B1.h Revision: 1 Page 5
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FOLLOW-UP DOCUMENTATION QUESTIONS

Reason for Followup question(s):

Question:

Reference:

Response:

Question:

Reference

Response:

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

JPM Title Vent the Torus Irrespective of Offsite Release Rates (Alternate Path)	No.: NRC EXAM 2004-301-B1.h Revision: 1 Page 6
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Simulator Setup

IC#:

IC 17 – Need to establish an initial condition for this scenario. You have to insert a LARGE steam leak 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

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.d 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.

The CRS has directed performance of 29.ESP.22, Defeat of Primary Containment Vent Valve Isolations.

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