

NRC JPM A
2008 Limerick Operating Exam

Facility: Limerick

Task Title: Perform Reactor Startup

Job Performance Measure: NRC JPM A

K/A Reference: 201001 A2.04 (3.8, 3.9)

Examinee: _____

NRC Examiner: _____

Date: _____

Method of testing:

Simulated Performance:

Actual Performance: X

Classroom

Simulator X

Plant

Read to the examinee:

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

Initial Conditions:

- Unit 1 is at 3% power and RPV pressure is 157 psig
- RPV level is 35 inches, being controlled by LIC-120 in automatic
- A plant startup is in progress per GP-2, Appendix 1, Reactor Startup and Heatup
- Control rods are being withdrawn per Control Rod Move Sheet Sequence 1D: LGS Sim U-1.0 on Step 17
- The next rod move step is to withdraw Control Rod 10-43
- There are no channel bow rods

Initiating Cue:

You are the Reactor Operator. You have been directed to continue with the startup by withdrawing control rods in accordance with the control rod move sheet.

Required Materials:

None

General References:

ON-107, CRD Problems
 ARC-MCR-108-F1, CRD Accumulator Trouble
 ARC-MCR-108-G4, CRD Drive Water Filter Hi Delta P
 ARC-MCR-108-H4, CRD Charging Water Low Pressure
 TS 3.1.3.5, Control Rod Scram Accumulators
 GP2 Appendix 1, Reactor Startup and Heatup, Revision 37
 S46.6.C, Placing Alternate Control Rod Water Filter In Service, Revision 08

JPM Origination: New

Task Standard:

Address the loss of CRD flow per ON-107 and respond to the subsequent resulting failure of two scram accumulators by tripping the reactor.

Alternate Path: Yes

Time Critical: No

Validation Time: 15 minutes

JPM Setup Instructions:

Summary Description of JPM:

The applicant will continue the startup by withdrawing control rods per the move sheets. The CRD drive water hi d/p annunciator will alarm 2 minutes after first rod notch out. The applicant respond per ARC and ON-107 and will direct placing the alternate drive water filter in service. Subsequently, the alternate drive water filter will also clog. During troubleshooting/initial response, alarms will be received for low CR accumulator pressure. An EO will be dispatched and will report of low nitrogen pressure in the CR accumulator. A second accumulator will exhibit the same symptoms shortly thereafter. The applicant will respond per ON-107 and ultimately initiate a manual reactor scram.

Simulator Setup:

1. Reset to a startup IC at RPV pressure of approximately 157 psig with 1A CRD Pump in operation.
2. Set up Trigger 1 to activate on depressing Control Rod Notch Out Pushbutton C11A-S46 on 10C603 Panel (WLCSWDR).
3. Set up a Manual Trigger 2 to time down for accumulator troubles.
4. Set up to actuate the drive water d/p alarm (108 G-4) 1 minute after Trigger 1 is activated by closing the running CRD pump discharge valve using the remote function.
5. Set up Malfunction MRC0016C for CR 22-35 Accumulator at 1 minute after Trigger 2 is activated.
6. Set up Malfunction MRC0016C for CR 46-19 Accumulator at 2minutes 45 seconds after Trigger 2 is activated.

Simulator Tables:

Performance Information

Critical steps denoted with an asterisk

Step	Element	Standard	Comment / Sat/Unsat
1	NOTCH withdraw control rods per CR Move Sheet Seq 1D: LGS Sim U-1.0.	Notch withdraws CRs 10-43, xx-xx and xx-xx from 04 to 06.	Note: Trigger 1 activates to start CRD trouble timing when notch withdraw pushbutton is depressed.
2	Observes indications of high d/p, clogged drive water filter.	<p>Informs supervisor of high filter d/p and alarm.</p> <p>Cue: Report acknowledged. <u>If necessary</u>, direct applicant to respond to alarm.</p>	Note: CRD Pump discharge valve is closed by remote function on trigger to simulate drive water filter clog.
3	Refers to ARC-MCR-108-G4, CRD Drive Water Filter Hi Delta P	<p>Refers to ARC. Informs supervisor of direction to enter ON-107.</p> <p>Cue: <u>When informed of ARC direction</u>, hand copy of ON-107 to applicant and direct him/her to perform the actions of ON-107.</p>	
4*	<p>IF 1A(B)P158, CRD Pump, is running but CRD drive flow is insufficient, THEN PERFORM one of the following as applicable:</p> <ol style="list-style-type: none"> 1. PLACE alternate 1B(A)F204, CRD Drive Water Filter, in service per S46.6.C. 2. PLACE alternate FV-46-1F002B(A), CRD Flow Control Valve, in service per S46.6.B 	<p>Directs EO to place alternate drive water filter in service per S46.6.C</p>	<p>Booth operator: Respond as EO, obtain S46.6.C. After 1 minute, open discharge valve on running CRD pump (to simulate valving in the alternate drive water filter) and report back that alternate drive water filter is in service.</p> <p>Booth operator: After another minute, reclose CRD pump discharge valve on ramp to simulate clogging of alternate drive water filter and initiate trigger to time down to accumulator alarms.</p>

Performance Information			
Step	Element	Standard	Comment / Sat/Unsat
5	Observes indications of high d/p, clogged drive water filter.	Informs supervisor of high filter d/p and alarm.	Booth operator: Report that FIN team is aware of filter problem and is expediting paperwork to replace the filter with hi d/p.
6	Responds to indications of 1 st failed accumulator.	Informs supervisor. Refers to ARC-MCR-108-F1, CRD Accumulator Trouble.	
7	<p><u>ARC Actions:</u></p> <ol style="list-style-type: none"> 1. Follow Tech. Spec 3.1.3.5, pertaining to control rod scram accumulators. 2. Dispatch Operator to inspect HCU. 3. IF Nitrogen pressure low THEN adjust per S47.8.B AND investigate for leakage. 4. IF water is suspected THEN blowdown instrument block using S47.8.B accumulator pressure reduction section as guidance. 5. IF HCU indications are normal THEN instruct operator to check spade connectors for looseness in HCU transponder box using S47.8.C Attachment 2 as a guide. 	<p>Performs ARC actions:</p> <ul style="list-style-type: none"> • Refers to TS • Dispatches EO to HCU • Investigates low N2 • Wtr not suspected • Chks spade connectors 	<p>Booth operator:</p> <p>If directed to investigate, report back as EO that cause of accumulator trouble is low nitrogen pressure.</p>

Performance Information			
Step	Element	Standard	Comment / Sat/Unsat
8	<p>(Responds to 1st Acc Alarm per ON-107)</p> <p>2.4 IF one CRD scram accumulator is inoperable, THEN PERFORM the following within 8 hours:</p> <p>1. RESTORE the inoperable accumulator to operable OR DECLARE associated control rod inoperable.</p> <p>2. IF step [1] is not completed, THEN TAKE action to be in at least HOT SHUTDOWN within the next 12 hours.</p>	<p>Informs CRS of required actions for single inoperable accumulator.</p> <p>Cue: CRS acknowledges.</p>	<p>Note: The ARC for accumulator trouble does not reference ON-107. However, ON-107 provides explicit guidance for addressing accumulator inoperability. The applicant is expected to perform ON-107 steps based on training and the fact that the applicant is already implementing the ON procedure for the drive water filter problem.</p>
9	<p>(Responds to 2nd Acc Alarm per ON-107):</p> <p>2.5 IF more than one CRD scram accumulator is inoperable THEN PERFORM the following:</p>	<p>Contacts EO for local evaluation and refers to ON-107.</p>	<p>Booth operator: If directed to investigate, report back as EO that cause of accumulator trouble is low nitrogen pressure.</p>
10	<p>2.5.1 DECLARE the associated control rods inoperable.</p>	<p>Informs CRS to declare CRD associated with 2nd accumulator inoperable.</p> <p>Cue: CRS acknowledges.</p>	

Performance Information			
Step	Element	Standard	Comment / Sat/Unsat
11	<p>2.5.2 IF the control rod associated with any inoperable CRD scram accumulator is withdrawn, THEN immediately VERIFY at least one CRD pump is operating:</p> <p>1. INSERT a withdrawn control rod one notch. <u>OR</u></p> <p>2. IF loss of RMCS prevents control rod motion, THEN CHECK charging water header pressure \geq 1400 psig on PSH-46*N600, "CHARGING WATER PRESSURE" (PX) at *0C603.</p>	Attempts to insert a withdrawn control rod one notch.	<p>Note: The selected rod will NOT insert. This action is used per procedure to define whether or not a CRD pump is operating. If attempt is unsuccessful (and it will be), then applicant will understand NO CRD pumps are operating for the purpose of the subsequent IF/THEN step in ON-107.</p> <p>Note: Applicant should <u>not</u> base his/her determination of CRD pump operating on the second part of this step because there is no loss of the RMCS. However, a check of the charging water header pressure will reveal low pressure.</p>
12	<p>2.5.3 IF no CRD pump is operating AND reactor pressure is greater than or equal to 900 psig, THEN PERFORM the following:</p> <p>1. START at least one CRD pump within 20 minutes <u>OR</u> manually SCRAM the reactor <u>AND</u> PLACE Reactor Mode Switch in "SHUTDOWN," <u>AND</u> ENTER T-100 <u>OR</u> T-101, as applicable.</p>	Not applicable. Reactor pressure is < 900 psig.	

Performance Information			
Step	Element	Standard	Comment / Sat/Unsat
13*	2.5.4 IF no CRD pump is operating AND reactor pressure is less than 900 psig, PERFORM the following: 1. Manually SCRAM the reactor <u>AND</u> PLACE Reactor Mode Switch in "SHUTDOWN," <u>AND</u> ENTER T-100 <u>OR</u> T-101, as applicable.	Depresses scram pushbuttons.	
Cue: JPM is complete.			

Verification of Completion

Job Performance Measure: NRC JPM A

Examinee's Name: _____

Examiner's Name: _____

Date Performed: _____

Number of Attempts:

Time to Complete:

Question Documentation:

Question: _____

Response: _____

Result: Satisfactory/Unsatisfactory

Examiner's signature and date: _____

Applicant JPM Cue Sheet

Initial Conditions:

- Unit 1 is at 3% power and RPV pressure is 151 psig
- RPV level is 60 inches, being controlled by LIC-120 in automatic
- A plant startup is in progress per GP-2, Appendix 1, Reactor Startup and Heatup
- Control rods are being withdrawn per Control Rod Move Sheet Sequence 1D: LGS Sim U-1.0 on Step 17
- The next rod move step is to withdraw Control Rod 10-43
- There are no channel bow rods

Initiating Cue:

You are the Reactor Operator. You have been directed to continue with the startup by withdrawing control rods in accordance with the control rod move sheet.

NRC JPM B

2008 Limerick Operating Exam

Facility: Limerick

Task Title: Manually Initiate Core Spray

Job Performance Measure: NRC JPM B

K/A Reference: 295031 EA1.03 (4.4, 4.4)

Examinee: _____

NRC Examiner: _____

Date: _____

Method of testing:

Simulated Performance:

Actual Performance: X

Classroom

Simulator X

Plant

Read to the examinee:

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

Initial Conditions:

- A seismic event has occurred, resulting in a LOCA with a loss of all offsite power.
- Reactor has scrammed, all rods inserted, all scram actions have been taken.
- Reactor vessel water level is minus (-)140" on Fuel Zone and lowering.
- Reactor pressure is 500 psig.
- Drywell pressure is 17 psig and rising.
- D11 and D13 Emergency Diesel Generators have tripped on ground fault.
- Suppression pool level is 21 feet and slowly lowering.
- Core spray has failed to automatically initiate.

Initiating Cue:

Shift Supervision directs you to manually initiate Core Spray System per S52.7.A. An additional RO is available to acknowledge alarms. Another RO has been briefed to perform SE-10 LOCA actions when the LOCA signal has been initiated.

Required Materials:

S52.7.A, Manual Initiation After Failure Of Automatic Injection During A LOCA
S52.7.B, Core Spray Injection with a Single Operable Pump

General References:

S52.7.A, Manual Initiation After Failure Of Automatic Injection During A LOCA, Rev. 009
S52.7.B, Core Spray Injection with a Single Operable Pump, Rev. 9

JPM Origination: Modified Limerick Bank JPM 128, Rev. 000

Task Standard:

Core spray manually initiated and throttled per S52.7.A.

Alternate Path: Yes

Time Critical: No

Validation Time: 8 minutes

JPM Setup Instructions:

Summary Description of JPM:

A major seismic event has occurred, where Loop B Core Spray is the only available injection source during a small LOCA. Loop A LPCI and CS are unavailable due to loss of power to Buses D11 and D13. RHR is unavailable because Loop B RHR Injection Isolation Valves F017B and F017D are jammed closed. A slow suppression pool leak has lowered pool level to less than 22 feet. A large LOCA occurs at the moment the applicant initiates a manual CS initiation signal. Core Spray Pump 1D fails to auto start and trips shortly after it is manually started. RPV pressure is low enough (~200 psig) that Core Spray Pump B will be near runout conditions. Per S52.7.B, the applicant must throttle Loop B Core Spray Inboard Valve F037 to maintain core spray flow as close as possible to the maximum of 3175 gpm while not exceeding the 3175 gpm limit in order to ensure pump runout (which could lead to pump damage) does not occur.

Simulator Setup:

1. Reset to normal at-power IC.
2. Insert the following malfunctions:
 - a. MHP447B HPCI Aux Oil Pump Trips
 - b. MRC466 Inadvertent Trip of RCIC Overspeed Mechanism
 - c. MSL559 SLC Injection Line Rupture Inside the Drywell
 - d. MFW244A Reactor Feed Pump A Trip
 - e. MFW245A Reactor Feed Pump B Trip
 - f. MFW246A Reactor Feed Pump C Trip
 - g. MVI237A Reference Leg 1D004A Level Defect at 60 severity
 - h. MVI237B Reference Leg 1D004B Level Defect at 60 severity
 - i. MVI237C Reference Leg 1D004C Level Defect at 60 severity
 - j. MVI237D Reference Leg 1D004D Level Defect at 60 severity
 - k. MCS183D Core Spray Pump 1D Fails to Auto Start
 - l. MCS182D Core Spray Pump 1D Trips
 - m. MCS184A Core Spray Inboard Valve 1F005 Fails As Is
 - n. MRH174B RHR Injection Valve (F017B) Fails As Is
 - o. MRH174D RHR Injection Valve (F017D) Fails As Is
 - p. MDG418A Diesel Generator D11 Trips
 - q. MDG418C Diesel Generator D13 Trips
 - r. MED261 Loss of Offsite Power
 - s. MPC257 Supp Pool Leak to Reactor Enclosure at 20,000 gpm severity
 - t. MRR440A Recirc Loop A Rupture at 2% severity
3. Override annunciators as needed to provide seismic event alarms.
4. Operate SRVs as needed to reduce and control pressure at approximately 500 psig.
5. When indicated RPV level is approximately minus (-)140, remove Malfunction MRR440A, Recirc Loop A Rupture.

6. Reduce Malfunction MPC257 severity to 2,000 gpm when indicated suppression pool level is approx equal to 21 feet.
7. Set up Trigger 1 to activate on illumination of Core Spray Loop D LOCA Initiation Indicating Lamp E21A-S17D on 10C601 Panel (ZLOB1(7540)).
8. Set up Malfunction MRR440A, Recirc Loop A Rupture at 50% severity on Trigger 1.
9. Set up Override on D124-G-D Supply Breaker Control Switch in CLOSE on Trigger 1 with 5 second delay to simulate operator performing SE-10 actions on LOCA initiation.
10. Set up Override on 10Y202 Reset on Trigger 1 with 7 second delay to simulate operator performing SE-10 actions on LOCA initiation.
11. Acknowledge alarms and freeze simulator.

Simulator Tables:

Malfunction Summary

Mal ID	Mux ID	Description	Current Value	Target Value	Rmptime	Actime	Dactime	Trig
MHP447B		HPCI Aux Oil Pump Trips		True	00:00:00	00:00:00	00:00:00	0
MRC466		Inadvertent Trip of RCIC Overspeed Mechanism		True	00:00:00	00:00:00	00:00:00	0
MSL559		SLC Injection Line Rupture Inside the Drywell		True	00:00:00	00:00:00	00:00:00	0
MFV244A		Reactor Feedpump A Trip		True	00:00:00	00:00:00	00:00:00	0
MFV245A		Reactor Feedpump B Trip		True	00:00:00	00:00:00	00:00:00	0
MFV246A		Reactor Feedpump C Trip		True	00:00:00	00:00:00	00:00:00	0
MVI237A		Reference Leg 1D004A Level Defect	60	60	00:00:00	00:00:00	00:00:00	0
MVI237B		Reference Leg 1D004B Level Defect	60	60	00:00:00	00:00:00	00:00:00	0
MVI237C		Reference Leg 1D004C Level Defect	60	60	00:00:00	00:00:00	00:00:00	0
MVI237D		Reference Leg 1D004D Level Defect	60	60	00:00:00	00:00:00	00:00:00	0
MCS183D		Core Spray Pump 1D Fails to Auto Start	True	True	00:00:00	00:00:00	00:00:00	0
MCS184A		Core Spray Injection Valve HV52-1F005 Fails As-Is	True	True	00:00:00	00:00:00	00:00:00	0
MRH174B		RHR Valve HV51-1F017B Fails As-Is	True	True	00:00:00	00:00:00	00:00:00	0
MRH174D		RHR Valve HV51-1F017D Fails As-Is	True	True	00:00:00	00:00:00	00:00:00	0
MDG418A		Diesel Generator D11 Trips	True	True	00:00:00	00:00:00	00:00:00	0
MDG418C		Diesel Generator D13 Trips	True	True	00:00:00	00:00:00	00:00:00	0
MED261		Loss of Offsite Power	True	True	00:00:00	00:00:00	00:00:00	0
MPC257		Leak From Suppression Pool (1-100,000 gpm)	2000	2000	00:00:00	00:00:00	00:00:00	0
MRR440A		Recirculation Loop A Rupture	50	50	00:00:00	00:00:00	00:00:00	1
MCS182D		Core Spray Pump 1D Trips	True	True	00:00:00	00:00:00	00:00:00	0

Override Summary

Tag ID	Description	Position / Target	Actual Value	Override Value	Rmptime	Actime	Dactime	Trig
52-20224/CS	Safeguard Bus D124-G-D Supply Breaker Control Switch	CLOSE		ON		00:00:05	00:00:00	1
52-20224/CS	Safeguard Bus D124-G-D Supply Breaker Control Switch	NACLOSE		OFF		00:00:05	00:00:00	1
52-20224/CS	Safeguard Bus D124-G-D Supply Breaker Control Switch	NATRIP		OFF		00:00:05	00:00:00	1
52-20224/CS	Safeguard Bus D124-G-D Supply Breaker Control Switch	TRIP		OFF		00:00:05	00:00:00	1
43-22422/CS	Breaker Trip RESET for 120 VAC Panel 10Y202	RESET		ON		00:00:07	00:00:00	1

Performance Information

Critical steps denoted with an asterisk

Step	Element	Standard	Comment / Sat/Unsat
1	TURN collar of the following MANUAL INITIATION pushbuttons to "ARMED":	Not applicable	
2	a. (INITIATION 1) E21-S22A	Rotates core spray manual initiation pushbutton collar S22A clockwise to the ARMED position.	Not critical since D11 de-energized.
3*	b. (INITIATION 2) E21-S22B	Rotates core spray manual initiation pushbutton collar S22B clockwise to the ARMED position.	
4	c. (INITIATION 3) E21-S22C	Rotates core spray manual initiation pushbutton collar S22C clockwise to the ARMED position.	Not critical since D13 de-energized.
5	d. (INITIATION 4) E21-S22D	Rotates core spray manual initiation pushbutton collar S22D clockwise to the ARMED position.	Not critical since CS Pump D will not auto start on init signal. Must be manually started.
6	VERIFY the following annunciator alarms:	Not applicable	
7	DIV 1 CORE SPRAY MANUAL INITIATION SWITCH ARMED <u>AND</u> DIV 3 CORE SPRAY MANUAL INITIATION SWITCH ARMED, annunciator alarms on *13 COOL A	DIV 1 and DIV 3 Core Spray manual initiation switch armed annunciators are verified lit on 113 COOL A.	
8	DIV 2 CORE SPRAY MANUAL INITIATION SWITCH ARMED <u>AND</u> DIV 4 CORE SPRAY MANUAL INITIATION SWITCH ARMED, annunciator alarms on *15 COOL A	DIV 2 and DIV 4 Core Spray manual initiation switch armed annunciators are verified lit on 115 COOL B.	

Performance Information			
Step	Element	Standard	Comment / Sat/Unsat
9	DEPRESS AND RELEASE all four of the following MANUAL INITIATION pushbuttons to initiate Core Spray System:	N/A	
10	a. (INITIATION 1) E21- S22A	Momentarily depresses and then releases MANUAL INITIATION pushbutton S22A.	Not critical since D11 de- energized.
11*	b. (INITIATION 1) E21- S22B	Momentarily depresses and then releases MANUAL INITIATION pushbutton S22B.	
12	c. (INITIATION 1) E21- S22C	Momentarily depresses and then releases MANUAL INITIATION pushbutton S22C.	Not critical since D13 de- energized.
	d. (INITIATION 1) E21- S22D	Momentarily depresses and then releases MANUAL INITIATION pushbutton S22D.	Not critical since CS Pump D will not auto start on init signal. Must be manually started.
13		Cue: If necessary, inform applicant that another RO has been directed to perform SE-10 actions upon LOCA signal initiation.	
14*	Start the "1D" Core Spray Pump.	Recognizes only 1B Core Spray started. Informs supervisor and manually starts 1D Core Spray Pump.	Pump trips on start. However, step is critical since required two-pump operation could not be established without attempting a start.
15	ENSURE the following Core Spray Pump minimum flow bypass valves are open: • -HV-52-*F031A, MIN FLOW • -HV-52-*F031B, MIN FLOW	Determines F031A has no power. Verifies minimum flow valve HV-52-1F031B is closed as expected with flow greater than 775 gpm after 3 second delay.	

Performance Information			
Step	Element	Standard	Comment / Sat/Unsat
16	WHEN Reactor Pressure is between 435 to 475 psig, THEN VERIFY the following:	Determines following actions are required because pressure is already less than 435 psig.	
17	HV 52 *F005, OUTBOARD, open.	Verifies HV-52-1F005 is open Note: Loop A pumps are not running so F005 position verification not important.	
18	HV 52 *F037, INBOARD DISCHARGE, open.	Verifies HV-52-1F037 is open.	
19	NOTE: Two pump operation is required to prevent pump damage due to run out. IF only one Core Spray Pump in a loop is running, THEN GO TO S52.7.B, Core Spray Injection with a Single Operable Pump.	Recognizes only 1B CS Pump running. Refers to S52.7.B.	Begins Alternate Path
20	IF single operable Core Spray Pump in loop is not essential to maintain reactor level, THEN PERFORM the following: 1. TRIP pump 2. EXIT procedure	Not applicable. CS Pump operation is essential.	
21	IF single operable Core Spray Pump in loop is essential to maintain reactor level, THEN VERIFY all three of the following conditions for operation are satisfied: 1. Pump is run no longer than one hour. 2. Suppression pool temperature less than 198°F. 3. Suppression pool level greater than 22 feet.	Verifies pump has not run >1 hr. Verifies SP temp <198°F. Determines SP level is <u>NOT</u> > 22 feet. Informs supervisor that all three conditions are NOT met. Pool level is <22 feet.	Note: SP level indicated on L152-140A at 10C626 will continue to indicate 23.6' due to the power failures. Applicant will need to realize this is not a valid indication based on LR55-115 at 10C648 (20.8') and also plant computer (21')

Performance Information			
Step	Element	Standard	Comment / Sat/Unsat
22*	IF all three conditions are not met, THEN OBTAIN SSV approval AND THROTTLE HV 52 *F005(A Loop)/HV-52- *F037(B Loop), DISCHARGE to less than 3,175 gpm on FI 52 *R601A(B), FL, at panel *0C601.	Requests approval to throttle HV-52-1F037 to < 3175 gpm on FI-52-1R601B, FL, at panel 10C601. <u>AND</u> Throttles flow to <3175 gpm. [Acceptable range is 2900 gpm to 3175 gpm]	
Cue: JPM is complete.			

Verification of Completion

Job Performance Measure: NRC JPM B

Examinee's Name: _____

Examiner's Name: _____

Date Performed: _____

Number of Attempts:

Time to Complete:

Question Documentation:

Question: _____

Response: _____

Result: Satisfactory/Unsatisfactory

Examiner's signature and date: _____

Applicant JPM Cue Sheet

Initial Conditions:

- A seismic event has occurred, resulting in a LOCA with a loss of all offsite power
- Reactor has scrammed, all rods inserted, all scram actions have been taken.
- Reactor vessel water level is minus (-)140" on Fuel Zone and lowering.
- Reactor pressure is 500 psig.
- Drywell pressure is 17 psig and rising.
- D11 and D13 Emergency Diesel Generators have tripped on ground fault.
- Suppression pool level is 21 feet and slowly lowering.
- Core spray has failed to automatically initiate.

Initiating Cue:

Shift Supervision directs you to manually initiate Core Spray System per S52.7.A. An additional RO is available to acknowledge alarms. Another RO has been briefed to perform SE-10 LOCA actions when the LOCA signal has been initiated.

NRC JPM C
2008 Limerick Operating Exam

Facility: Limerick

Task Title: Open An MSIV

Job Performance Measure: NRC JPM C

K/A Reference: 239001 A2.03 (4.0, 4.2)

Examinee: _____

NRC Examiner: _____

Date: _____

Method of testing:

Simulated Performance:

Actual Performance: X

Classroom

Simulator X

Plant

Read to the examinee:

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

Initial Conditions:

- Unit 1 is at 35% power.
- Outboard MSIV HV-41-1F028B closed due to a rupture of the air exhaust line from the MSIV.
- The MSIV air exhaust line has been repaired.
- A second RO is available to monitor reactor power.

Initiating Cue:

You have been directed to open the MSIV per S41.3.B.

Required Materials:

None

General References:

S41.3.B, Reopening A Single Isolated MSIV, Revision 11

JPM Origination: New

Task Standard:

Reopen a spuriously closed MSIV at power.

Alternate Path: No

Time Critical: No

Validation Time: 8 minutes

JPM Setup Instructions:

Summary Description of JPM:

The applicant will open the MSIV in accordance with S41.3.B.

Simulator Setup:

1. Reset to approximately 35% power.
2. Insert Malfunction MMS064B to fail closed Inboard MSIV HV-41-1F022B.
3. Place HV-41-1F028B in TEST on 10C601.
4. Remove Malfunction MMS064B.
5. Allow plant to stabilize.
6. Place simulator in Freeze.

Performance Information

Critical steps denoted with an asterisk

Step	Element	Standard	Comment / Sat/Unsat
1	<p>CAUTION Steps 4.3.2 through 4.3.9 removes condensate from Main Steam lines prior to opening MSIV AND placing Main Steam line inservice, AND may change dose rates in the vicinity.</p> <p>(Step 4.3.1) INFORM HP that the valves listed in step 4.3.2 will be operated AND another steam flow path is being established.</p>	<p>Informs HP.</p> <p>Cue: HP has been notified.</p>	
2	<p>(Step 4.3.2) ENSURE alignment of the following Main Steam System valves at panel *0C601:</p>		
3*	<ul style="list-style-type: none"> HV-C-41-*F020, Main Steam Line Pressure Equalizing Valve - OPEN 	Ensure HV-C-41-1F020 is open.	
4*	<ul style="list-style-type: none"> HV-41-*42 Bypass Leakage Barrier Block OPEN 	Ensure HV- 41-142 is open.	
5*	<ul style="list-style-type: none"> HV-41-*43 Bypass Leakage Barrier Block OPEN 	Ensure HV- 41-143 is open.	

Performance Information		
Step	Element	Standard
Comment / Sat/Unsat		
<u>CAUTION</u>		
Reactor power must be closely monitored while performing steps 4.3.3 through 4.3.12.		
6	(Step 4.3.3) ALIGN the following Main Steam System valves to drain condensate from upstream <u>AND</u> downstream piping around outboard MSIV at panel *0C601:	
7*	• HV-41-*F016, Main Steam Drain -OPEN	Opens HV-41-1F016.
8*	• HV-41-*F019, Main Steam Drain - OPEN	Opens HV-41-1F019.
9	• HV-41-*F021, Main Steam Drain To Cond - OPEN	Opens HV-41-1F021.
10*	(Step 4.3.4) OPEN HV-01-*04, Main Steam Line Startup Drain (STARTUP DRAIN), at panel *0C653.	Opens HV-01-104 at Panel 10C653.

Performance Information			
Step	Element	Standard	Comment / Sat/Unsat
	<p>NOTE</p> <p>S06.1.1 U/*, Accessing Information At The Feedwater Level Control System Operator Station, provides directions on how to access screens at FWLCS Operator Station.</p>	<p>Cue:</p> <p>If asked, inform applicant that MSIV was NOT isolated IAW S41.3.C.</p>	
11	<p>CAUTION</p> <p>1. Only equipment associated with the main steam line with the MSIV being reopened is to be operated.</p> <p>2. MSIV's are designed to open with no more than 200 psid.</p> <p>(Step 4.3.5) IF MSIV was not isolated in accordance with S41.3.C, Isolation of One Main Steam Line at Power (i.e. unplanned MSIV closure), THEN PERFORM the following:</p>		
12*	<p>1. DEPRESS white SINGLE pushbutton on LIC-M1-*R600, Reactor Level Controller (MASTER, LV), at panel *0C603.</p>	<p>Depresses SINGLE pushbutton on LIC-M1-1R600 on 10C603.</p>	
13	<p>2. VERIFY white SINGLE pushbutton is lit on LIC-M1-*R600, Reactor Level Controller (MASTER, LV), at panel *0C603.</p>	<p>Verifies SINGLE pushbutton is lit.</p>	
14	<p>3. MARK steps 4.3.6.1, 4.3.6.2 and 4.3.6.3 as N/A AND CONTINUE.</p>	<p>Marks steps as N/A.</p>	

Performance Information			
Step	Element	Standard	Comment / Sat/Unsat
15	(Step 4.3.6) VERIFY MSIV Test Mode is activated at FWLCS Operator Station as follows...	Not applicable.	
16*	NOTE The outboard MSIV should be opened soon after inboard MSIV is fully closed.	Closes HV-41-1F022B (INBOARD) at Panel 10C601.	
17*	(Step 4.3.7) CLOSE HV-41-*F022A(B, C, D), Inboard MSIV, at panel *0C601.	Places handswitch in AUTO for HV-41-1F028B (OUTBOARD) at Panel 10C601. Observes valve open.	
18	(Step 4.3.9) WAIT 5 to 10 minutes before proceeding to the next step to allow condensate to drain.	Cue: 10 minutes have elapsed.	
19*	(Step 4.3.10) OPEN HV-41-*F022A(B, C, D), Inboard MSIV, at panel *0C601.	Places handswitch in AUTO for HV-41-1F022B (INBOARD) at Panel 10C601. Observes valve open.	
20	(Step 4.3.11) ALIGN the following Main Steam System drain valves, unless otherwise directed by GP-2, Normal Plant Startup, at panel *0C601:		
21*	• HV-41-*F016, Main Steam Drain- CLOSED	Closes HV-41-1F016.	
22*	• HV-41-*F019, Main Steam Drain - CLOSED	Closes HV-41-1F019.	
23*	• HV-41-*F021, Main Steam Drain To Cond - CLOSED	Closes HV-41-1F021.	

Performance Information			
Step	Element	Standard	Comment / Sat/Unsat
24*	(Step 4.3.12) CLOSE HV-01-*04, Main Steam Line Startup Drain (STARTUP DRAIN), at panel *0C653.	Closes HV-01-104 at Panel 10C653.	
NOTE			
S06.1.1 U/*, Accessing Information At The Feedwater Level Control System Operator Station, provides directions on how to access screens at FWLCS Operator Station.			
CAUTION			
25	IF MSIV Test Mode is deactivated with an inboard MSIV or outboard MSIV closed, THEN an RPV level transient will occur.		
(Step 4.3.13) IF MSIV was not isolated in accordance with S41.3.C, Isolation of One Main Steam Line at Power (i.e. unplanned MSIV closure), THEN PERFORM the following:			
26*	1. DEPRESS white THREE pushbutton on LIC-M1- *R600, Reactor Level Controller (MASTER, LV), at panel *0C603.	Depresses THREE pushbutton on LIC-M1- 1R600 on Panel 10C603.	
27	2. VERIFY white THREE pushbutton is lit on LIC- M1-*R600, Reactor Level Controller (MASTER, LV), at panel *0C603.	Verifies THREE pushbutton is lit.	
28	3. MARK step 4.3.14 as N/A AND CONTINUE	Marks the step N/A.	
Cue: JPM is complete.			

Verification of Completion

Job Performance Measure: NRC JPM C

Examinee's Name: _____

Examiner's Name: _____

Date Performed: _____

Number of Attempts:

Time to Complete:

Question Documentation:

Question: _____

Response: _____

Result: Satisfactory/Unsatisfactory

Examiner's signature and date: _____

Applicant JPM Cue Sheet

Initial Conditions:

- Unit 1 is at 35% power.
- Outboard MSIV HV-41-1F028B closed due to a rupture of the air exhaust line from the MSIV.
- The MSIV air exhaust line has been repaired.
- A second RO is available to monitor reactor power.

Initiating Cue:

You have been directed to open the MSIV per S41.3.B.

NRC JPM D
2008 Limerick Operating Exam

Performance Information

Facility: Limerick

Task Title: Manually Start HPCI

Job Performance Measure: NRC JPM D

K/A Reference: 206000 A2.06 (3.3, 3.5)

Examinee: _____

NRC Examiner: _____

Date: _____

Method of testing:

Simulated Performance:

Actual Performance: X

Classroom

Simulator X

Plant

Read to the examinee:

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

Initial Conditions:

- Unit 1 is at 100% power
- No equipment is out of service
- Steam Leak Detection System is available
- Suppression Pool Cooling is in service
- HPCI Oil Reservoir is filled to high in the normal operating range on sightglass
- HPCI is lined-up for automatic operation per S55.1.A
- Reactor Enclosure Equipment Compartment Exhaust is in service
- ST-6-060-390-1 is currently being performed by the Reactor Operator
- No maintenance has been performed on the Turbine oil system or governor control system
- No water was drained from any part of the system
- The Vibration Monitoring System is in service

Initiating Cue:

You are directed by Shift Supervision to place Unit 1 HPCI in full flow test, CST to CST, with pump discharge pressure at least 120 psig greater than reactor pressure, using the manual quick start method for a 1 hour PMT per S55.1.D.

Required Materials:

S55.1.D, HPCI System Full Flow Functional Test, Rev. 34, with prerequisites signed off.

General References:

S55.1.D, HPCI System Full Flow Functional Test, Rev. 34
 HU-AA-104-101, Procedure Use and Adherence, Rev 03

Performance Information

JPM Origination: Modified Limerick Bank JPM 19 Revision 008

Task Standard:

Starts HPCI in full flow test (CST to CST) lineup, with pump discharge pressure at least 120 psig greater than reactor pressure, using manual quick start method. Trips turbine within 3 minutes after start due to lack of min flow protection.

Alternate Path: Yes

Time Critical: No

Validation Time: 7 minutes

JPM Setup Instructions:

Summary Description of JPM:

The applicant is directed to perform full flow HPCI test from CST back to CST. He/she will partially align HPCI full flow path back to CST by opening Condensate Return Valve HV-55-1F011. Min Flow Valve HV-55-1F012 is in normal pre-start closed position, but is failed as-is, such that it will not open when demanded by pump discharge pressure >125 psig and pump flow <550 gpm. The applicant will start the HPCI turbine and, per procedure, will attempt to open HPCI Test Loop Shutoff HV-55-1F008 to establish full flow conditions. However, the valve is thermally bound and will not open. The applicant will announce unexpected indications and will attempt to open Min Flow Valve HV-55-1F012. Per precautions, HPCI is not allowed to run without min flow protection for greater than 60 seconds. The applicant will recognize the challenge to this limitation and trip the HPCI turbine within 3 minutes from the time pump discharge pressure exceeds 125 psig.

The 3 minute time limit was established based on a response time of no more than 3 times the value stated in the precaution. A 3 minute response is reasonable as a *maximum acceptable time*, given the procedural emphasis on actions to attempt to open the F008 full flow line isolation valve. As soon as the applicant realizes F008 is not going to open, it is expected they will assess the pump alignment, determine the min flow valve is closed and trip the HPCI pump.

Simulator Setup:

1. Reset to a full power IC
2. Place Suppression Pool Cooling in service
3. Place B Loop ESW in service
4. Override HPCI Min Flow Valve HV55-1F012 indicating lights (green-ON, red-OFF) to indicate valve closed.
5. Override HPCI Test Bypass to CST, HV55-1F008 handswitch to PTS.
6. Override HPCI Pump Disch Pressure Indication (PI55-1R601) to 1500 on trigger 1.
7. Activate trigger 1 on HPCI speed ≥ 4500 (HPNT ≥ 4500).
8. Acknowledge alarms and freeze simulator.

Performance Information

Critical steps denoted with an asterisk

Step	Element	Standard	Comment / Sat/Unsat
1	IF required to limit Suppression Pool temperature anytime during this procedure, then refer to S51.8.A Suppression Pool Cooling Operation (Startup and Shutdown) and Level Control, and PLACE Suppression Pool Cooling Mode of RHR System in Service	Not applicable	
2	If Vibration Monitoring System is available, then verify in service Cue: Vibration Monitoring system is in service.	Not applicable	
3	Ensure the following valves are CLOSED: <ul style="list-style-type: none"> • HV-55-1F071, "HPCI/RCIC Flush Line to Suppression Pool" (TEST OUTBOARD) • HV-55-1F008, "Test Loop Shutoff" (TEST ISOL) • HV-55-1F011, "HPCI/RCIC Test Return to CST" (CONDENSATE RETURN) • HV-49-1F022, "RCIC Test Loop Isolation"(TEST ISOL) 	Verifies valves closed by position indication: Green lights ON Red lights OFF	
4*	Open HV-55-*F011, Condensate Return.	Places handswitch in OPEN. Observes valve indicates full open.	
5	START 10P0216, "Barometric Condenser Vacuum Pump" (VACUUM PUMP).	Takes handswitch to start. 10P216 indicates running.	

Performance Information			
Step	Element	Standard	Comment / Sat/Unsat
6	Monitor Suppression Pool temperature per ST-6-060-390-1, Suppression Pool Temperature Check. Cue: ST-6-060-390-1 is being performed by an additional operator.	Not applicable.	
7	INFORM HP of changing radiological conditions due to HPCI System start.	HP notified HPCI start is imminent.	
8	ENSURE FIC-55-*R600, "HPCI Pump Discharge Flow Controller" (FL), set to 5600 gpm in "AUTO"	FIC-55-1R600 M/A selector switch in the "A" position. Flow controller FIC-55-1R600 set between 5,500 and 5,700 GPM.	
9	Make Plant Announcement for HPCI startup.	Plant Announcement for HPCI startup performed.	
10*	Simultaneously open HV-55-1F001, "HPCI Steam Supply" (INLET) AND Start 10P213, "Auxiliary Oil Pump" (AUX OIL PUMP).	Simultaneously positions handswitches. HV-55-1F001 is open and 10P213 is running.	Examiner Note: Begin timer when F001 handswitch is placed in OPEN. Start time: _____
11*	When SI-56-161, "Turbine Speed" (S), starts to go up, then immediately throttle open HV-55-1F008, "HPCI Test Loop Shutoff" (TEST ISOL), until desired flow is obtained, while maintaining turbine speed greater than 2,200 rpm.	Observes speed increase. Immediately opens F008 Valve. Maintains speed > 2200 rpm.	

Performance Information			
Step	Element	Standard	Comment / Sat/Unsat
12	Recognizes pump flow is not increasing.	<p>Observes pump flow is not increasing. Informs supervisor.</p> <p>Cue: Acknowledge report.</p>	<p>Note: Will not be able to establish flow because 1F008 is thermally bound and will not move.</p> <p>Note: HU-AA-104-101 (Procedure Use and Adherence) Step 3.1.7 requires test procedure stopped at current step because procedure cannot be performed as written (cannot get flow to increase) and because continuation would result in an unsafe condition (running pump without min flow).</p>
13*	Attempts to open Min Flow Valve HV-55-1F012.	<p>Observes min flow valve F012 is not open. Informs supervisor. Attempts to open HV-55-1F012.</p> <p>Cue: Acknowledge report.</p>	<p>Note: F012 is failed closed, however by design it should automatically open at <550 gpm with disch pressure > 125 psig. S55.1.D, Precaution 3.7 states in part, "Operator action may be required to open HV-55-1F012, MIN FLOW valve".</p>

Performance Information

Step	Element	Standard	Comment / Sat/Unsat
14*	Trips the HPCI turbine.	<p>Trips the HPCI turbine within 3 minutes and 10 seconds after opening 1F001 Steam Supply Valve.</p> <p>Cue: <u>IF</u> applicant recommends tripping HPCI turbine, then acknowledge report and direct the applicant to trip the HPCI turbine.</p>	<p>Note: "Do <u>not</u> allow HPCI to operate without min flow protection for greater than 60 seconds." (S55.1.D, Step 3.7). Takes approximately 10 seconds for HPCI discharge pressure to increase to > 125 psig following the positioning of 1F001 handswitch to open.</p> <p>Examiner Note: Stop time: _____</p> <p>Elapsed time from 1F001 handswitch operation must be approximately \leq 190 seconds (10 seconds for pump discharge pressure to increase > 125 psig and 180 seconds to respond to the abnormal flow indications by tripping the HPCI pump).</p>
Cue: JPM is complete.			

Verification of Completion

Job Performance Measure: NRC JPM D

Examinee's Name: _____

Examiner's Name: _____

Date Performed: _____

Number of Attempts:

Time to Complete:

Question Documentation:

Question: _____

Response: _____

Result: Satisfactory/Unsatisfactory

Examiner's signature and date: _____

Applicant JPM Cue Sheet

Initial Conditions:

- Unit 1 is at 100% power
- No equipment is out of service
- Steam Leak Detection System is available
- Suppression Pool Cooling is in service
- HPCI Oil Reservoir is filled to high in the normal operating range on sightglass
- HPCI is lined-up for automatic operation per S55.1.A
- Reactor Enclosure Equipment Compartment Exhaust is in service
- ST-6-060-390-1 is currently being performed by the Reactor Operator
- No maintenance has been performed on the Turbine oil system or governor control system
- No water was drained from any part of the system
- The Vibration Monitoring System is in service

Initiating Cue:

You are directed by Shift Supervision to place Unit 1 HPCI in full flow test, CST to CST, with pump discharge pressure at least 120 psig greater than reactor pressure, using the manual quick start method for a 1 hour PMT per S55.1.D.

NRC JPM E

2008 Limerick Operating Exam

Facility: Limerick

Task Title: Initiate Containment Spray

Job Performance Measure: NRC JPM E

K/A Reference: 226001 A4.03 (3.5, 3.4)

Examinee: _____

NRC Examiner: _____

Date: _____

Method of testing:

Simulated Performance:

Actual Performance: X

Classroom

Simulator X

Plant

Read to the examinee:

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

Initial Conditions:

- The reactor is shutdown due to a large steam leak inside primary containment.
- Reactor water level is being maintained by the RO using S/U level control.
- Cooling water is not required to the Post LOCA Recombiners and the HV57-168A valve has been verified closed.
- 1A and 1B RHR Pumps have both tripped.

Initiating Cue:

You are directed by Shift Supervision to establish to initiate drywell spray using the fire protection system cross-tie per T-225.

Required Materials:

Copy of T-225, Startup And Shutdown Of Suppression Pool And Drywell Spray Operation

General References:

T-225, Startup And Shutdown Of Suppression Pool And Drywell Spray Operation, Rev. 20

JPM Origination: Modified Limerick Bank JPM 32, Rev. 005

Task Standard:

Establish Drywell Spray with Fire Water

Alternate Path: No

Time Critical: No

Validation Time: 10 min

JPM Setup Instructions:

Summary Description of JPM:

The applicant is directed to spray the drywell using fire water. The applicant will perform Section 4.7 to align fire water for drywell spray. This JPM has applicant perform different actions than those performed during Part C scenarios. Use of fire water requires operation of the F048B, F003B and F004B valves and also includes fire protection system verifications.

Simulator Setup:

1. Reset the simulator to IC 17.
2. Insert Steam Leak in Drywell - Malfunction MMS067 at 2000 gpm.
3. The following actions should be taken:
 - a. Mode switch to SHUTDOWN
 - b. Insert SRM's & IRM's
 - c. Line up Condensate System to STARTUP level control with 138A in AUTO
 - d. Bypass and restore D/W Cooling
4. Reduce the steam leak to 300 gpm when drywell pressure reaches 25 psig.

NOTE: This will keep reactor pressure high enough to prevent the LOCA signal from coming in while the JPM is being performed.

5. Set up Malfunction MRH171B to trip 1B RHR Pump on Manual Trigger 1.
6. Set up Remote RTR267 for YES to open FW cross-tie on Manual Trigger 2.
7. Acknowledge and reset Alarms and FREEZE the simulator.

Simulator Tables:

Malfunction Summary

Mal ID	Mult ID	Description	Current Value	Target Value	Rmptime	Actime	Dactime	Trig
MMS067		Steam Leak in Drywell (0-5000 gpm)		300	00:00:00	00:00:00	00:00:00	0
MRH171B		RHR Pump 1B Trips		True	00:00:00	00:00:00	00:00:00	1

Remotes Summary

Rem ID	Mult ID	Description	Current Value	Target Value	Rmptime	Actime	Trig
RTR267		T-225 Fire Water Cross-tie to RHR		YES	00:00:00	00:00:00	2

Performance Information

Critical steps denoted with an asterisk

Step	Element	Standard	Comment / Sat/Unsat
1	ENSURE the following valves closed:	Refers to Section 4.7 of T-225, Fire Water Crosstie.	
2*	HV-51-1F004B, 1B RHR Pump Suction PCIV (SUCTION B)	Closes valve.	
3	<ul style="list-style-type: none"> • HV-51-1F006B, 1B RHR Pp S/D Clg Suct Intertie Vlv (SUCTION B) • HV-51-1F015B, 1B Shutdown Clg Injection PCIV (OUTBOARD) • HV-51-1F016B, 1B RHR Cntmt Spray Line Outboard PCIV (OUTBOARD) • HV-51-1F017B, 1B RHR LPCI Inj PCIV (OUTBOARD) 	Verifies valves closed.	
4*	HV-51-1F024B, 1B RHR Pp Full Flow Test Return Vlv (SUPP POOL CLG B)	Closes valve.	
5	HV-51-1F027B, 1B RHR Supp Pool Spray Line PCIV (SUPP POOL SPRAY)	Verifies valve is closed	
6*	HV-51-1F047B, 1B RHR Htx Shell Side Inlet Vlv (INLET)	Closes valve.	
7*	HV-51-1F048B, 1B RHR Htx Shell Side Bypass Vlv (HEAT EXCH BYPASS)	Closes valve.	
8	051-1F098, Cond Trans Fill Isol Vlv to 1A & 1B RHR Loops (402- R11-253) (ATTACHMENT 6)	Directs EO to verify valve closed. Cue: Valve is closed.	

Performance Information			
Step	Element	Standard	Comment / Sat/Unsat
	PERFORM the following in 402-R16-253 (ATTACHMENT 5):	Directs EO to perform local fire water alignment.	Booth operator: Activate Manual Trigger #2 to locally align fire water.
9*	<ol style="list-style-type: none"> 1. CONNECT hose at 51-1179, 1B RHR Fire Protection Crosstie Connection Drain Valve AND Route to drain THEN CYCLE 51-1179 open AND closed to ensure piping vented. 2. CONNECT hose at 22-1430, Fire Protection/RHR Interconnection Drain Valve AND Route to drain THEN CYCLE 22-1430 open AND closed to ensure piping vented. 3. CONNECT hose to fitting downstream of 22-1429, Fire Protection/RHR Interconnection Isolation Valve. 4. CONNECT other end of hose to 51-1178, 1B RHR Fire Protection Crosstie Connection Isolation Valve. 5. OPEN 22-1429. 6. OPEN 51-1178. 		Report back as EO that fire water aligned as directed.

Performance Information			
Step	Element	Standard	Comment / Sat/Unsat
10*	REQUEST SSV verify drywell temperature AND drywell pressure are on SAFE side of Drywell Spray Initiation Limit curve per T-102, Primary Containment Control OR SAMP-1, RPV and Primary Containment Flooding Control.	D/W pressure and temperature readings are given to the CRS prior to Spraying and confirmation is received from the CRS that it is Safe to spray the drywell. Cue for SRO Applicant: You are directed to determine if on safe side of Drywell Spray Initiation Curve. Cue for RO Applicant: Request drywell temperature and pressure. After being given D/W temperature and pressure readings, state that it is safe to spray the drywell.	Note: Step is critical for SRO applicants only.
11	Trip Reactor Recirc Pumps.	Verifies pumps tripped.	
12*	REMOVE Drywell Cooling Fans from service by placing all 16 Drywell Cooler Fan switches to OFF.	Turns fans OFF.	
13	MONITOR Drywell pressure.	Drywell pressure is observed.	
14	PERFORM the following to initiate LOCA signal for B Loop:		
15*	Place E11A-S61B, INITIATION, switch for B Loop operation at panel 10?C601 (Main Control Room) to "ARM".	Places switch in ARM.	
16*	DEPRESS AND RELEASE E11A-S61B.	Depresses and releases switch.	
17	VERIFY LOOP B INJECTION white indicating light Lit.	Verifies white light lit.	

Performance Information			
Step	Element	Standard	Comment / Sat/Unsat
18*	OPEN HV-51-1F021B, 1B RHR Cntmt Spray Line Inboard PCIV, (INBOARD) AND HV-51-1F016B, 1B RHR Cntmt Spray Line Outboard PCIV, (OUTBOARD), at 10C601.	Per Step 4.7.10, opens valves.	
19	ENSURE 00P512, Motor Driven Fire Pump, OR 00P511, Diesel Driven Fire Pump, running.	Verifies Motor OR Diesel Driven Fire Pump running.	
Cue: JPM is complete.			

Verification of Completion

Job Performance Measure: NRC JPM E

Examinee's Name: _____

Examiner's Name: _____

Date Performed: _____

Number of Attempts:

Time to Complete:

Question Documentation:

Question: _____

Response: _____

Result: Satisfactory/Unsatisfactory

Examiner's signature and date: _____

Applicant JPM Cue Sheet

Initial Conditions:

- The reactor is shutdown due to a large steam leak inside primary containment.
- Reactor water level is being maintained by the RO using S/U level control.
- Cooling water is not required to the Post LOCA Recombiners and the HV57-168A valve has been verified closed.
- 1A and 1B RHR Pumps have both tripped

Initiating Cue:

You are directed by Shift Supervision to establish to initiate drywell spray using the fire protection system cross-tie per T-225.

NRC JPM F

2008 Limerick Operating Exam

Facility: Limerick

Task Title: Transfer Loads to Unit Aux Trans

Job Performance Measure: NRC JPM F

K/A Reference: 262001 A4.04 (3.6, 3.7)

Examinee: _____

NRC Examiner: _____

Date: _____

Method of testing:

Simulated Performance:

Actual Performance: X

Classroom

Simulator X

Plant

Read to the examinee:

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

Initial Conditions:

- GP-2 is being performed on Unit 1.
- 11 and 12 Unit Auxiliary Busses are being powered from offsite sources.

Initiating Cue:

You are directed by Shift Supervision to transfer house loads for Unit 1 to the Unit Aux. Transformer per S91.6.A.

Required Materials:

None

General References:

S91.6.A, Transferring House Loads To Unit Auxiliary Transformer, Rev. 15

JPM Origination: Limerick Bank JPM 25, Rev. 004

Task Standard:

11 and 12 Unit Auxiliary Busses being supplied by the Main Generator.

Alternate Path: No

Time Critical: No

Validation Time: 10 minutes

JPM Setup Instructions:

Simulator Setup:

1. Reset simulator to any power IC.
2. Transfer 11 and 12 busses to offsite.

3. Ensure that only one 13.2 kV aux bus is selected for fast transfer to a given offsite source.

Performance Information

Critical steps denoted with an asterisk

Step	Element	Standard	Comment / Sat/Unsat
1	Obtain current revision of S91.6.A. Cue: Provide copy of S91.6.A to applicant after applicant demonstrates the ability to locate the current revision of the procedure.	Current revision of S91.6.A obtained.	
	Determining section to perform.	Refers to Section 4.2.	
2	Perform the appropriate section as follows: 1. Perform Section 4.2 to transfer 11 Aux Bus 2. Perform Section 4.3 to transfer 12 Aux Bus. 3. Perform Section 4.4 to transfer 21 Aux. Bus. 4. Perform Section 4.5 to transfer 22 Aux Bus.		
3*	Place 225-10113/SS synchronization switch to ON.	Places Sync Switch to ON.	
4	Verify incoming voltmeter AND running voltmeter read approximately 110V.	Observes that V/I-UAS and V/R-UAS are both approximately 110V.	
5	IF incoming / running voltages differ by greater than 8 volts, THEN adjust startup bus voltage to obtain less than 8 volts difference.	Observes that V/I-UAS and V/R-UAS voltages are within 8 volts of each other.	
6*	CLOSE and HOLD 252-10113/CS, Aux Feed.	Holds 252-10113/CS in CLOSE when incoming and running voltages are both approximately 110 and within 8 volts of each other.	

Performance Information			
Step	Element	Standard	Comment / Sat/Unsat
7*	When 252-10113/CS, Aux Feed indicates closed, then release 252-10113C/CS.	Releases 252-10113C when Aux. Feed indicates closed. Red light lit, green light out.	
8	Verify 252-10102/CS, 10/11 Feed AND 252-10106/CS, 20/11 Feed OPEN	Verifies 10/11 and 20/11 feeds OPEN.	
9	Acknowledge Alarm 175 GEN 1 F1	Depresses alarm acknowledge pushbutton.	
10	Place 225-10113/SS synchronization switch to OFF.	Sync Switch 225-10113/SS handle OFF	
11	Ensure 252-10102/CS, 10/11 Feed AND 252-10106/CS, 20/11 Feed in NORMAL AFTER TRIP	Verifies 252-10102/CS and AND 252-10106/CS in NORMAL AFTER TRIP.	
12	Reset Alarm 125 GEN 1 F1	Depresses Reset Pushbutton.	
13	Place 243-101/CS, Fast Transfer Select to 10-11	Places 243-101/CS in 10-11 position.	
14*	Place 225-10213/SS synchronization switch to ON.	Refers to Section 4.4. Inserts synch switch handle and turns clockwise to ON position then releases.	
15	Verify incoming voltmeter and running voltmeter read approximately 110V.	Observes that V/I-UAS and V/R-UAS voltages are both approximately 110V.	
16*	Close and hold 252-10213/CS, Aux Feed.	Holds 252-10213/Cs in CLOSE when incoming and running voltages are both approximately 110 and within 8 volts of each other .	
17*	WHEN 252-10213/CS, Aux Feed indicates closed, then release 252-10213/CS.	Releases 252-10213/CS when AUX. FEED indicates closed.	
18	Acknowledge alarm 125 GEN 1 F-24.	Depress alarm acknowledge pushbutton.	

Performance Information			
Step	Element	Standard	Comment / Sat/Unsat
19	Verify 252-10202/CS, 10/12 Feed and 252-10206/CS, 20/12 Feed open.	Verifies 10/12 and 20/12 feeds open.	
20	Place 225-10213/SS Synchronization Switch to OFF.	Places 225-10213/SS handle in OFF.	
21	Ensure 252-10202/CS, 10/12 Feed and 252-10206/CS, 20/12 Feed in NORMAL AFTER TRIP.	Verifies 252-10202/CS AND 252-10206/CS in NORMAL AFTER TRIP.	
22*	Place 243-102/CS, Fast Transfer Select to 20-12	Places 242-102/CS in 20-12 position.	
Cue: JPM is complete.			

Verification of Completion

Job Performance Measure: NRC JPM F

Examinee's Name: _____

Examiner's Name: _____

Date Performed: _____

Number of Attempts:

Time to Complete:

Question Documentation:

Question: _____

Response: _____

Result: Satisfactory/Unsatisfactory

Examiner's signature and date: _____

Applicant JPM Cue Sheet

Initial Conditions:

- GP-2 is being performed on Unit 1
- 11 and 12 Unit Auxiliary Busses are being powered from offsite sources

Initiating Cue:

You are directed by Shift Supervision to transfer house loads for Unit 1 to the Unit Aux. Transformer per S91.6.A.

NRC JPM G

2008 Limerick Operating Exam

Facility: Limerick

Task Title: Align RECW For Drywell Cooling

Job Performance Measure: NRC JPM G

K/A Reference: 400000 K1.02 (3.2, 3.4)

Examinee: _____

NRC Examiner: _____

Date: _____

Method of testing:

Simulated Performance:

Actual Performance: X

Classroom

Simulator X

Plant

Read to the examinee:

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

Initial Conditions:

- DW Chilled Water has been lost due to trips on both Drywell Chiller Units.
- The reactor was manually scrammed.
- DW temperature is 148°F and rising.
- DW pressure is 1.8 psig and rising.
- The CRS has entered T-102, Primary Containment Control.
- RWCU has been shutdown per S.44.2.A, Reactor Water Cleanup Shutdown.

Initiating Cue:

You are directed by Shift Supervision to align RECW operation to cool the drywell, using A Loop first per S13.6.D.

Required Materials:

None

General References:

T-102, Primary Containment Control Bases, Rev. 22

S13.6.D, RECW Operation with Loss of Drywell Chilled Water, Rev. 14

S44.2.A, Reactor Water Cleanup Shutdown, Rev. 23

ARC-MCR-118-H5, REAC ENCL COOLING WATER HEAD TANK HI/LO LEVEL

JPM Origination: New

Task Standard:

Leaking DW Loop A is isolated from RECW. RECW is aligned to cool the drywell using DW Loop B.

Alternate Path: Yes

Time Critical: No

Validation Time: 10 minutes

JPM Setup Instructions:

Summary Description of JPM:

Both drywell chiller units have tripped and efforts to restore have been unsuccessful. The reactor has been manually scrammed. Drywell temperature is 148°F and rising. The applicant is directed to align RECW to the A Loop of the drywell chill water system. When aligned, the Loop will begin leaking inside primary containment. The applicant will recognize multiple indications of RECW leakage and recognize the challenge to the RECW system. The applicant will isolate Loop A Drywell Cooling from RECW and then align RECW to Loop B Drywell Chill Water. JPM is complete when the leak is isolated and the drywell is being cooled by RECW via the B Loop.

Simulator Setup:

1. Reset the simulator to any at-power IC
2. Insert Malfunctions MPC482A and MPC482B to trip DW Chillers
3. Manually scram the reactor, take immediate scram actions.
4. Trip both RRP's.
5. Allow DW temperature to rise to 148°F.
6. Shutdown RWCU per S44.2.A.
7. Set up [malfunctions/remotes to simulate DW Loop leak on RECW, automatically triggered off of switch actions described in S13.6.D Step 4.2.8 "PLACE HSS-87-121A, Loop Drywell Water Source Mode Switch (LOOP), in RE CLG WTR"]
 - a. Malfunction MPC500B, Drywell Chill Water Leak Loop B (30%) triggered when HSS-87-121A in RE CLG WTR.
 - b. Remote Function RCW034, RECW Head Tank Drain Valve to OPEN triggered when HSS-87-121A in RE CLG WTR.
 - c. Time delayed overrides on RECW Head Tank alarm and system pressure instrument, triggered when HSS-87-121A in RE CLG WTR position.
 - d. Time delayed override on pump motor indicating lights to indicate motor is running.
 - e. Time delayed override on pump handswitch to stop to simulate pump cavitating and no longer providing flow to system.
 - f. Malfunction MCW483A or B to trip the running RECW pump, as appropriate, and remove override on pump indicating lights.
8. Freeze simulator

Performance Information

Critical steps denoted with an asterisk

Step	Element	Standard	Comment / Sat/Unsat
1	Obtain a current revision of S13.6.D, RECW Operation With Loss of Drywell Chilled Water	Obtains a current revision of S13.6.D.	
	Reviews precautions.	Reviews precautions.	
2		<p>Cue: If necessary, inform applicant that Precaution 3.1 does not apply to the current plant condition. Shift manager has confirmed that alignment of RECW cooling to the drywell is required by T-102.</p>	
3	(Step 4.2.1) SHUTDOWN RWCU system per S44.2.A, Reactor Water Cleanup Shutdown.	Not applicable. RWCU system already shutdown.	
		<p>Cue: If necessary, inform applicant that RWCU has already been shutdown IAW S44.2.A.</p>	
4*	(Step 4.2.2) CLOSE HV-13-*02, Cooling Water to Reactor Building Isolation (SUPPLY ISOL).	Closes HV-13-102.	
5	(Step 4.2.3) IF loss of instrument air prohibits closure of HV-13-*02, SUPPLY ISOL, THEN CLOSE 13-*039, RECW Header Valve to RWCU Non-Regen Heat Exchanger.	Not applicable	

Performance Information			
Step	Element	Standard	Comment / Sat/Unsat
6	(Step 4.2.4) Block CLOSE the following sample point isolation valves:	Not applicable. Cue: If asked, a clearance is being processed to block the sample point isolation. You are directed to continue.	
7	HV-51-*F080A, RHR Sample Line Downstream Isolation (SAMPLE OUTBOARD)	Blocks HV-51-1F080A closed.	
8	HV-51-*F080B, Main Steam Line Outboard Sample (SAMPLE OUTBOARD)	Blocks HV-51-1F080B closed.	
9	HV-41-*F085, RHR Sample Line Downstream Isolation (DRAIN SAMPLE OUTBOARD)	Blocks HV-41-1F085 closed.	
10	HV-43-*F020, Recirc Sample Line Outboard Isolation (SAMPLE)	Blocks HV-43-1F020 closed.	
11	023-1246, FW to Rx Sump Isol Vlv	Blocks 023-1246 closed.	
12*	(Step 4.2.5) CLOSE the following breakers: • D*14-R-C-15 (124A) • D*14-R-C-19 (124B) • D*14-R-C-16 (125A) • D*14-R-C-20 (125B)	Directs EO to close following breakers: D114-R-C-15 D114-R-C-19 D114-R-C-16 D114-R-C-20	Booth operator: Close breakers locally using Remote Function RPC306. Report breakers are closed.
13	(Step 4.2.7) IF required THEN BYPASS isolations per GP-8.5.	Not applicable.	

Performance Information			
Step	Element	Standard	Comment / Sat/Unsat
12*	<p>(Step 4.2.8) PLACE HSS-87-*21A(B), Loop Drywell Water Source Mode Switch (LOOP), in "RE CLG WTR" for loop to be supplied by RECW AND VERIFY the following:</p> <ul style="list-style-type: none"> • Red indicating lights RECW IN <u>AND</u> RECW OUT Lit • Green indicating lights CHLD WTR IN <u>AND</u> CHLD WTR OUT Lit 	<p>Places HSS-87-121A in RE CLG WTR position for LOOP A. Verifies valves indicate flow path open from RECW and closed from Chill Water.</p>	<p>Note: The RECW leak into the drywell through the Loop A Drywell Cooling line will be simulated by initiating a Loop B (not Loop A) leak triggered when HSS- 87-121A is placed in RE CLG WTR position.</p>
13	<p>(Step 4.2.9) VERIFY Drywell Isolation Loop A(B) (LOOP) red indicating lights DRYWELL INLET <u>AND</u> DRYWELL OUTLET Lit for loop to be supplied by RECW.</p> <ul style="list-style-type: none"> • LOOP A HS-87-*28 • LOOP B HS-87-*22 	<p>Verifies valves open:</p> <ul style="list-style-type: none"> • LOOP A HS-87-128 • LOOP B HS-87-122 	
14	<p>(Step 4.2.10) IF RECW flow is insufficient for adequate cooling, THEN PLACE standby RECW Heat Exchanger in service AND ...</p>	Not applicable.	
15	<p>Responds to RECW Head Tank level alarm.</p>	<p>Refers to ARC for Alarm Panel 118 Window H-5, REAC ENCL COOLING WATER HEAD TANK HI/LO LEVEL.</p> <p>Cue: If necessary, direct applicant to respond to alarms.</p>	<p>Note: THIS BEGINS THE ALTERNATE PATH.</p>

Performance Information			
Step	Element	Standard	Comment / Sat/Unsat
16	Verify RECW Head Tank 10T201 level locally using LG-13-101.	Directs EO to check level locally.	Booth operator: Report back as EO that level is 11 inches and lowering approximately 6 inches every 30 seconds. If asked, report that demin water supply valve LV-13-101 is fully opened.
17	IF losing excessive water inventory, THEN have Operator walkdown system to check for leaks.	Directs EO to walkdown system looking for leaks.	
18*	Recognizes likely leak location is on Loop A of Drywell Cooling and isolates Loop A Drywell Cooling Loop from RECW.	<p>Isolates the leak from RECW by placing HSS-87-121A in the DWCW position.</p> <p>Cue: If necessary, CRS should ask applicant to identify the location of the leak and take necessary actions to isolate and to maintain the RECW system.</p>	<p>Booth operator: Remove Malfunction for Loop B leak (MPC500B) after handswitch is returned to DWCW position.</p> <p>Booth operator: Report as EO, RECW Head Tank level is rising.</p> <p>Booth operator: Restore normal RECW indications (Head Tank Level Alarm, system pressure).</p>

Performance Information			
Step	Element	Standard	Comment / Sat/Unsat
19*	(Step 4.2.11) IF other Drywell Chilled Water loop is needed, THEN PLACE HSS-87-*21B(A), Loop Drywell Water Source Mode Switch (LOOP), in RE CLG WTR AND VERIFY the following: <ul style="list-style-type: none"> • Red indicating lights RECW IN AND RECW OUT Lit. • Green indicating lights CHLD WTR IN AND CHLD WTR OUT Lit. • Drywell Isolation Loop B(A) (LOOP) red indicating lights DRYWELL INLET AND DRYWELL OUTLET Lit. <ul style="list-style-type: none"> - LOOP A HS-87-*28 - LOOP B HS-87-*22 	Places HSS-87-121B, Loop Drywell Water Source Mode Switch (LOOP) in RE CLG WTR position and verifies proper indicating lights. Cue: If necessary, cue the applicant to proceed with establishing drywell cooling by having the CRS ask applicant to report the status of establishing drywell cooling with RECW. If necessary, direct applicant to continue with the procedure to establish drywell cooling.	
Cue: JPM is complete.			

Verification of Completion

Job Performance Measure: NRC JPM G

Examinee's Name: _____

Examiner's Name: _____

Date Performed: _____

Number of Attempts:

Time to Complete:

Question Documentation:

Question: _____

Response: _____

Result: Satisfactory/Unsatisfactory

Examiner's signature and date: _____

Applicant JPM Cue Sheet

Initial Conditions:

- DW Chilled Water has been lost due to trips on both Drywell Chiller Units.
- The reactor was manually scrammed.
- DW temperature is 148°F and rising.
- DW pressure is 1.8 psig and rising.
- The CRS has entered T-102, Primary Containment Control.
- RWCU has been shutdown per S.44.2.A, Reactor Water Cleanup Shutdown.

Initiating Cue:

You are directed by Shift Supervision to align RECW operation to cool the drywell, using A Loop first per S13.6.D.

NRC JPM H
2008 Limerick Operating Exam

Facility: Limerick

Task Title: Control Room Ventilation High Radiation Reset

Job Performance Measure: NRC JPM H

K/A Reference: 290003 A4.01 (3.2, 3.2)

Examinee: _____

NRC Examiner: _____

Date: _____

Method of testing:

Simulated Performance: Actual Performance: X

Classroom Simulator X Plant

Read to the examinee:

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

Initial Conditions:

- Manual Control Room ventilation high rad isolation was inhibited in response to instrument failure
- Repairs are complete and all rad alarms are clear

Initiating Cue:

You are directed by Shift Supervision to reset the Control room HVAC high radiation isolations per S78.7.A

Required Materials:

None

General References:

S78.7.A, Control Room HVAC system Restoration from an Isolation, Revision 14

JPM Origination: Limerick Bank JPM 74, Rev. 011

Task Standard:

Control room HVAC High Radiation isolation reset with CREFAS aligned for normal automatic operation

Alternate Path: No

Time Critical: No

Validation Time: 15 minutes

JPM Setup Instructions:

Simulator Setup:

1. Place the HS-78-017A,B,C and D keylock switches to RESET
2. Rotate the arming collars for HSS-78-017A,B,C and D to RAD.
3. Place the HS-78-017A,B,C and S keylock switches to AUTO
4. Depress the pushbuttons on HSS-78-017A,B,C and D
5. Leave HSS-078-017A,B,C, and D collars in RAD
6. Ensure the HI RAD ISLN light lit and the CHLOR ISLN NOT lit for all four isolation channels.
7. Remove the four PA2235 keys from HS-78-017A,B,C and D.
8. Reset any annunciators that will reset

Performance Information

Critical steps denoted with an asterisk

Step	Element	Standard	Comment / Sat/Unsat
1	IF required THEN manually ACKNOWLEDGE chlorine detectors locally at detector (625-08-350).	N/A	
2	IF required, THEN RESET toxic chemical alarms per S78.1.F, Alignment of Toxic Chemical Detection System for Normal Operation.	N/A	
3	IF required, THEN ACKNOWLEDGE radiation condition by depressing ACK on RM-11 console, MCR.	N/A	
4	PLACE the following control room Isolation Valve Reset keylock Switches to "RESET":	N/A	
4a*	HS-78-017C, RESET C	Places HS-78-017C is in RESET	
4b*	HS-78-017A, RESET A	Places HS-78-017A is in RESET	
4c*	HS-78-017B, RESET B	Places HS-78-017B is in RESET	
4d*	HS-78-017D, RESET D	Places HS-78-017D is in RESET	
5	ENSURE the following control room Isolation valve Trip Switches to "NOR":	N/A	Note: collar left in RAD per Main Rad Isolation procedure S78.8.A. Not critical to enable reset but required by procedure
5a	HSS-78-017C, TRIP C	Places HSS-78-017C in NOR	
5b	HSS-78-017C, TRIP A	Places HSS-78-017A in NOR	
5c	HSS-78-017C, TRIP B	Places HSS-78-017B in NOR	

Performance Information			
Step	Element	Standard	Comment / Sat/Unsat
5d	HSS-78-017C, TRIP D	Places HSS-78-017D in NOR	
6	PLACE the following Control Room Isolation Valve Reset Keylock Switches to AUTO:	N/A	
6a	HS-78-017C, RESET C	Places HS-78-017C in AUTO	
6b	HS-78-017C, RESET A	Places HS-78-017A in AUTO	
6c	HS-78-017C, RESET B	Places HS-78-017B in AUTO	
6d	HS-78-017C, RESET D	Places HS-78-017D in AUTO	
7	VERIFY status of 0A(B)V127, EMERGENCY AIR FAN A (B) as follows	N/A	
7a	If a single subsystem isolation remains, THEN verify 0AV127 or 0B127 is running as appropriate	N/A	
7b	If all subsystems reset, THEN verify 0AV127 and 0B127 are NOT running (Cue: you can stop here. You have met the termination criteria for this JPM)	0AV127 and 0BV127 are not running.	

Verification of Completion

Job Performance Measure: NRC JPM H

Examinee's Name: _____

Examiner's Name: _____

Date Performed: _____

Number of Attempts:

Time to Complete:

Question Documentation:

Question: _____

Response: _____

Result: Satisfactory/Unsatisfactory

Examiner's signature and date: _____

Applicant JPM Cue Sheet

Initial Conditions:

- Manual Control Room ventilation high rad isolation was inhibited in response to instrument failure
- Repairs are complete and all rad alarms are clear

Initiating Cue:

You are directed by Shift Supervision to reset the Control room HVAC high radiation isolations per S78.7.A. All prerequisites are met.

NRC JPM I
2008 Limerick Operating Exam

Facility: Limerick

Task Title: Alt Injection From The Fire System Job Performance Measure: NRC JPM I

K/A Reference: 295031 EA1.08 (3.8, 3.9)

Examinee: _____

NRC Examiner: _____

Date: _____

Method of testing:

Simulated Performance: X

Actual Performance:

Classroom

Simulator

Plant X

Read to the examinee:

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

Initial Conditions:

- Unit 2 reactor level is low and injection is being established
- Reactor pressure is 50 psig
- The Motor Driven Fire Pump is out of service and unavailable

Initiating Cue:

Shift Supervision directs you to perform T-244 to supply Fire Water to increase Unit 2 reactor level.

Required Materials:

BL-840 Key for T-225 Hose Storage Cabinet (475-R17-253)

General References:

T-244, Alternate Injection from the Fire System, Rev. 14

JPM Origination: Limerick Bank JPM 260, Rev. 006

Task Standard:

Backup Diesel Driven Fire Pump started locally.

Alternate Path: No

Time Critical: No

Validation Time: 23 min

JPM Setup Instructions:

Performance Information

Critical steps denoted with an asterisk

Step	Element	Standard	Comment / Sat/Unsat
1	Obtain current revision of Unit 2 T-244.	Current revision of Unit 2 T-244 obtained.	
2	Obtain necessary Tools/Equipment from Unit 2 T-225 Hose Storage Cabinet(475-R17-253), BL-840 key required. Cue: You have the necessary tools/equipment in your possession.	Necessary tools/equipment obtained.	
3*	CONNECT hose at 51-2179 2A RHR/Fire Protection Interconnection Drain Vlv. AND ROUTE to drain THEN CYCLE 51-2179 open AND closed to ensure pipe vented. Cue: Connected as described.	Connects hose at 51-2179 AND routes to drain. 51-2179 cycled to vent pipe.	
4*	CONNECT hose at 22-2430 Fire Protection/RHR Interconnection Isolation Vlv AND ROUTE to drain THEN CYCLE 22-2430 open AND closed to ensure pipe vented. Cue: Connected as described.	Connects hose at 22-2430 AND routes to drain. 22-2430 cycled to vent pipe.	
5*	CONNECT hose to fitting downstream of 22-2429, Fire Protection/RHR Interconnection Isolation Valve. Cue: Connected as described.	Connects one end of hose to downstream side of 22-2429.	

Performance Information			
Step	Element	Standard	Comment / Sat/Unsat
6*	CONNECT other end of hose to 51-2178, 2A RHR Fire Protection Crosstie Connection Isolation Valve. Cue: Connected as described.	Connects other end of hose to 51-2178.	
7*	OPEN 22-2429 Cue: Valve handwheel turns in the counterclockwise direction and stops.	Turns 22-2429 handwheel fully counterclockwise.	
8*	UNLOCK AND OPEN 51-2178 Cue: Handwheel turns in counterclockwise direction and stops.	Turns 51-2178 handwheel fully counterclockwise.	
9	START available Fire Pump:	Not Applicable	
10	IF starting 00P512, Motor Driven Fire Pump, THEN DEPRESS HS-22-002-1 at 00C650 (Main Control Room) AND VERIFY pump starts. Cue: If asked, reply that MDFP is not available.	Recognize from task conditions that the Motor Driven Fire Pump is unavailable and proceed to Step 4.2.2.	
11	IF starting 00P511, Diesel Driven Fire Pump, THEN DEPRESS HS-22-6-1 at 00C650 (Main Control Room) AND VERIFY pump is running. Cue: MCR reports the Diesel Driven Fire Pump is running Cue: JPM is complete.	Contacts main control room and requests start of DDFP.	

Verification of Completion

Job Performance Measure: NRC JPM I

Examinee's Name: _____

Examiner's Name: _____

Date Performed: _____

Number of Attempts:

Time to Complete:

Question Documentation:

Question: _____

Response: _____

Result: Satisfactory/Unsatisfactory

Examiner's signature and date: _____

Applicant JPM Cue Sheet

Initial Conditions:

- Unit 2 reactor level is low and injection is being established
- Reactor pressure is 50 psig
- The Motor Driven Fire Pump is out of service and unavailable

Initiating Cue:

Shift Supervision directs you to perform T-244 to supply Fire Water to increase Unit 2 reactor level.

NRC JPM J
2008 Limerick Operating Exam

Facility: Limerick

Task Title: Transfer RWST to CST

Job Performance Measure: NRC JPM J

K/A Reference: 203000 A2.04 (3.5, 3.6)

Examinee: _____

NRC Examiner: _____

Date: _____

Method of testing:

Simulated Performance: X

Actual Performance:

Classroom

Simulator

Plant X

Read to the examinee:

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

Initial Conditions:

A station blackout has occurred. Procedure E-1, Loss of All AC Power (Station Blackout), is being implemented.

Initiating Cue:

You are directed to initiate gravity feed from the RWST to #1 CST in accordance with E-1, Step 3.20. There is sufficient RWST inventory for this transfer.

Required Materials:

Pages from E-1, Loss of All AC Power (Station Blackout) containing Step 3.20.

General References:

E-1, Loss of All AC Power (Station Blackout), Rev. 033

JPM Origination: New

Task Standard:

Initiate gravity feed from the U1 RWST to the U1 CST.

Alternate Path: No

Time Critical: No

Validation Time: 5 min

JPM Setup Instructions:

None

Performance Information

Critical steps denoted with an asterisk

Step	Element	Standard	Comment / Sat/Unsat
1	ENSURE 08-0008 closed. Cue: Valve is closed.	Verifies 08-0008 is closed.	
2	ENSURE 08-0029 closed. Cue: Valve is closed.	Verifies 08-0029 is closed.	
3	ALIGN the following valves:	Not applicable	
4*	1. 08-0001, Tie Between RWST and Manifold – OPEN Cue: Valve is open.	Opens 08-0001.	
5*	2. 08-0003, Tie Between #1 CST and Manifold – OPEN Cue: Valve is open.	Opens 08-0003.	
6*	3. 08-0004, Manifold Stop Valve – OPEN Cue: Valve is open. You hear flow noise.	Opens 08-0004.	
7	Inform control room that gravity feed has been initiated from RWST to #1 CST. Cue: JPM is complete.	Informs control room.	

Verification of Completion

Job Performance Measure: NRC JPM J

Examinee's Name: _____

Examiner's Name: _____

Date Performed: _____

Number of Attempts:

Time to Complete:

Question Documentation:

Question: _____

Response: _____

Result: Satisfactory/Unsatisfactory

Examiner's signature and date: _____

Applicant JPM Cue Sheet

Initial Conditions:

A station blackout has occurred. Procedure E-1, Loss of All AC Power (Station Blackout), is being implemented.

Initiating Cue:

You are directed to initiate gravity feed from the RWST to #1 CST in accordance with E-1, Step 3.20. There is sufficient RWST inventory for this transfer.

NRC JPM K

2008 Limerick Operating Exam

Facility: Limerick

Task Title: Supply Emer Power to RCIC Isolation Job Performance Measure: NRC JPM K

K/A Reference: 600000 AK3.04 (2.8, 3.4)

Examinee: _____

NRC Examiner: _____

Date: _____

Method of testing:

Simulated Performance: X

Actual Performance:

Classroom

Simulator

Plant X

Read to the examinee:

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

Initial Conditions:

- A fire in the Main Control Room has required evacuation and control of the plant from the RSP.
- Division 3 power is not available.
- RCIC is required but has failed to inject.
- HV-49-2F007, RCIC Main Steam Supply Inboard PCIV has NO position indication.
- Personnel are stationed at the RSP.

Initiating Cue:

You are directed to supply Div 1 power to HV-49-2F007, in preparation for placing Unit 2 RCIC in service from the RSP in accordance with SE-1, Section 4.3.8 Reactor Level Control.

Required Materials:

SE-1, Remote Shutdown, Pages 14 & 15, Step 4.3.8

General References:

SE-1, Remote Shutdown, Rev. 59

JPM Origination: Limerick Bank JPM 0250, Rev. 007

Task Standard:

Division 1 power supplied to HV-49-2F007, RCIC Main Steam Supply Inboard PCIV

Alternate Path: No

Time Critical: No

Validation Time: 5 min

JPM Setup Instructions:

Inform Unit 2 Main Control Room that Terminal Box 2OTB49-2F007 will be opened for training. Ensure locked valve entry is made.

Performance Information

Critical steps denoted with an asterisk

Step	Element	Standard	Comment / Sat/Unsat
1	Obtain current revision of SE-1, Remote Shutdown. Cue: Provide a copy of SE-1	Not applicable	
	<p style="text-align: center;">CAUTION</p> <p>Steps 4.3.8.1 through 4.3.8.7 are Prompt Actions, requiring completion within 14 minutes.</p> <p style="text-align: center;">NOTE</p> <p>Step 4.3.8 indicates HV-49-*F007 has failed closed.</p>		
2	<p>IF the following conditions exist: Div 3 power has been disrupted RCIC fails to inject on manual OR auto start signal HV-49-*F007 has no position indication THEN PERFORM the following to supply Div 1 power to HV-49-2F007, AND PLACE RCIC in service:</p>		
3*	(Step 4.3.8.1) OPEN D*34-R-E-13. (Unit 1: 402-R15-253, Unit 2: 475-R13-253).	Opens D234-R-E-13 (Unit 2: 475-R13-253) Cue: D234-R-E-13 is open.	

Performance Information			
Step	Element	Standard	Comment / Sat/Unsat
4*	<p>NOTE A screwdriver AND LV-*00 key are required for step 4.3.8.2.</p> <p>(Step 4.3.8.2) UNLOCK AND OPEN terminal box *OTB49-*F007 (Unit 1: 402-R15-253, Unit 2: 475-R14-253).</p>	<p>Obtains a screwdriver and LV-200 key. SIMULATES unlocking and opening Terminal Box 2OTB49-2F007 (Unit 2: 475-R14-253).</p> <p>Cue: Terminal box is unlocked and opened.</p> <p>Cue: If asked, inform applicant that both lamps are out in the cabinet.</p>	<p>Note: Normal power is de-energized (the reason for the task) and the alternate power supply breaker has not been closed yet). The lamps indicate the status of power just upstream of the molded case breakers in the cabinet.</p>
5*	<p>(Step 4.3.8.3) PLACE 43-CB22313, Manual Transfer Switch (located in terminal box *OTB491*F007), in EMERGENCY.</p>	<p>Places 43-CB22313, Manual Transfer Switch in EMERGENCY. Applicant simulates pulling down on the red handle lever.</p> <p>Cue: Switch is in the DOWN position.</p> <p>Cue: If asked, lights remain OUT.</p>	<p>Note: USE PHOTO of cabinet. Do not open cabinet.</p>
6*	<p>(Step 4.3.8.4) UNLOCK AND CLOSE D*14-R-C-31, RCIC Main Steam Inbd PCIV (EMERGENCY POWER). (Unit 1: 506-R11-283 Unit 2: 580-R17-283)</p>	<p>Unlocks and closes D214-R-C-31, RCIC Main Steam Inboard PCIV (EMERGENCY POWER) (Unit 2: 580-R17-283)</p> <p>Cue: D214-R-C-31 is closed.</p>	
7*	<p>(Step 4.3.8.5) OPEN HV-49-*F007 (INBOARD) at *0C201</p>	<p>Calls operator at 20C201 and directs him to open HV-49-2F007.</p> <p>Cue: Operator reports HV-49-2F007 is open.</p>	

Performance Information			
Step	Element	Standard	Comment / Sat/Unsat
8*	(Step 4.3.8.6) LOCK OPEN D*14-R-C-31.	Locks open D214-R-C-31. Cue: D214-R-C-31 is open.	
9*	(Step 4.3.8.7) RETURN 43-CB22313, Manual Transfer Switch, to NORMAL.	Returns 43-CB22313, Manual Transfer Switch, to NORMAL. Cue: 43-CB22313, Manual Transfer Switch is in the UP position. Cue: Both lights are still out.	
10*	(Step 4.3.8.8) PLACE RCIC in service per step 4.3.3	Informs operator at RSP that procedure directs placing RCIC in service per Step 4.3.3.	
Cue: JPM is complete.			

Verification of Completion

Job Performance Measure: NRC JPM K

Examinee's Name: _____

Examiner's Name: _____

Date Performed: _____

Number of Attempts:

Time to Complete:

Question Documentation:

Question: _____

Response: _____

Result: Satisfactory/Unsatisfactory

Examiner's signature and date: _____

Applicant JPM Cue Sheet

Initial Conditions:

- A fire in the Main Control Room has required evacuation and control of the plant from the RSP.
- Division 3 power is not available.
- RCIC is required but has failed to inject.
- HV-49-2F007, RCIC Main Steam Supply Inboard PCIV has NO position indication.
- Personnel are stationed at the RSP.

Initiating Cue:

You are directed to supply Div 1 power to HV-49-2F007, in preparation for placing Unit 2 RCIC in service from the RSP in accordance with SE-1, Section 4.3.8 Reactor Level Control.