JOB PERFORMANCE MEASURE

TASK CONDITIONS:

1. You are the Unit 1 NSO.
2. The Unit is in mode 1.

INITIATING CUES:

1. Both Main FW pumps have tripped.
2. The US directs you to trip the U1 Reactor and perform your immediate actions.
3. This is a **time critical JPM**.

JOB PERFORMANCE MEASURE

TASK CONDITIONS:

1. You are the Unit 1 NSO.
2. The Unit is in mode 1.

INITIATING CUES:

1. Both Main FW pumps have tripped.
3. The US directs you to trip the U1 Reactor and perform your immediate actions.
3. This is a **time critical JPM**.

JOB PERFORMANCE MEASURE Rev. 3, 04/26/2006

TASK TITLE: Respond to an ATWS (Anticipated Transient Without Scram) – AF Pumps Fail to Start JPM No.: N-13at

TPO No: 4D.FR-01 K&A No.: 013A4.01 K&A IMP. 4.5/4.8

EXAMINEE: _____ DATE: ___/___/___

The Examinee: PASSED_____ this JPM TIME STARTED: _____

FAILED _____ TIME FINISHED: _____

EVALUATION METHOD: PERFORM_____ SIMULATE_____

LOCATION: IN PLANT_____ SIMULATOR___X___

MATERIALS:

Batch file mlscrew

GENERAL REFERENCES:

1. 1BEP-0, Reactor Trip or Safety Injection (Rev. 108)
2. 1BFR-S.1, Response to Nuclear Power Generation/ATWS (Rev. 102)

TASK STANDARDS:

From memory, perform the steps necessary to complete the immediate actions of 1BEP-0 and 1BFR-S.1.

TASK CONDITIONS:

1. You are the Unit 1 NSO.
2. The Unit is in mode 1.

INITIATING CUES:

1. Both Main FW pumps have tripped.
2. The US directs you to trip the U1 Reactor and perform your immediate actions.
3. This is a **time critical JPM**.

CRITICAL ELEMENTS: (*) 6 & 8

CRITICAL COMPLETION TIME: 30 seconds to complete JPM step 6 & 60 seconds to complete JPM step 8

APPROXIMATE COMPLETION TIME: 5 minutes

PERFORMANCE CHECKLIST	STANDARDS	SAT	UNSAT	N/A

NOTE

If this JPM is performed in the simulator, only the cues underlined are required to be provided to the examinee.

This JPM correlates with the immediate action steps of the procedure. The examinee is expected to perform these steps from memory without aid of the procedure.

RECORD START TIME _____

NOTE: JPM step 1 is after the first attempt to trip and may be performed after JPM step 2.

1. Manually trip reactor		o	o	o
Cue: Reactor trip switch at 1PM05J had NO EFFECT	• MANUALLY trip reactor from 1PM05J			

NOTE

The examinee is to transition to 1BFR-S.1, continuing without use of a procedure. JPM Steps 3 and 4 need not be performed if previously performed as Steps 1 and 2. The failure of the reactor to trip both automatically and manually has been previously verified.

PERFORMANCE CHECKLIST	STANDARDS	SAT	UNSAT	N/A
NOTE: Reference cues as required.	At 1PM05J, VERIFY:	o	o	o
2. Verify reactor trip ***Cue: Rod bottom lights are NOT LIT*** ***Cue: Reactor trip breakers 'GREEN' lights are LIT*** ***Cue: Reactor trip bypass breakers lights are 'DARK' (including TSLB)*** ***Cue: Neutron flux is 98% on all power range NIS***	o Rod bottom lights LIT o Reactor Trip and Bypass breakers OPEN o Reactor Trip and Bypass breakers OPEN o RTA and BYA o RTB and BYB o Neutron Flux DROPPING			
3. Manually trip reactor ***Cue: Reactor trip switch at 1PM06J had NO EFFECT***	o MANUALLY trip reactor from 1PM06J	o	o	o

NOTE TIME: _ _ : _ _ : _ _ (INCLUDE SECONDS)

(This is the START time to measure the Turbine Trip and AF Pump Start from.)

PERFORMANCE CHECKLIST	STANDARDS	SAT	UNSAT	N/A
NOTE: Reference cues as required.	At 1PM05J, VERIFY:	o	o	o
4. Verify reactor trip ***Cue: Rod bottom lights are NOT LIT*** ***Cue: Reactor trip breakers 'GREEN' lights are LIT*** ***Cue: Reactor trip bypass breakers lights are 'DARK' (including TSLB)*** ***Cue: Neutron flux is 98% on all power range NIS***	o Rod bottom lights LIT o Reactor Trip and Bypass breakers OPEN o Reactor Trip and Bypass breakers OPEN o RTA and BYA o RTB and BYB o Neutron Flux DROPPING			

CUE: Another operator is manning and performing all of the actions at the (1PM05J) Panel.

5. Verify turbine trip ***Cue: All turbine throttle valves 'GREEN' lights are LIT*** ***Cue: All turbine governor valves 'GREEN' lights are LIT***	At 1PM02J: o All turbine throttle valves CLOSED o All turbine governor valves CLOSED	o	o	o
*6. Manually trip the turbine ***Cue: The turbine trip pushbutton is depressed*** **NOTE TIME: _ _: _ _: _ _** ***Cue: All turbine throttle valves 'RED' lights are LIT*** ***Cue: All turbine governor valves 'RED' lights are LIT***	At 1PM02J: ● Depress the Turbine trip pushbutton o Verify All turbine governor valves CLOSED o Verify All turbine governor valves CLOSED	o	o	o

PERFORMANCE CHECKLIST	STANDARDS	SAT	UNSAT	N/A
Time from start to Turbine Trip = _____ **seconds**	**≤ 30 seconds**	o	o	
7. Check AF pumps running ***Cue: AF pumps 'GREEN' lights are LIT***	At 1PM06J: o CHECK AF pump run lights LIT	o	o	o
*8. Manually start the AF pumps ***Cue: Both AF pumps 'RED' lights are lit*** **NOTE TIME (when the first AF pump starts):** _ _: _ _: _ _	At 1PM06J: • PLACE control switches for both AF pumps to START	o	o	o
Time from start to the first AF pump start = _____ seconds	**≤ 60 seconds**	o	o	
Cue: This JPM is completed **RECORD STOP TIME_____**				

COMMENTS:

JOB PERFORMANCE MEASURE

TASK CONDITIONS:

1. You are the Unit 1 NSO.

2. RCS is in Mode 3, with Tave = 557°F and pressure = 2235 psig.

3. All plant systems and controls are normal for this condition, with Shutdown Banks fully withdrawn.

4. Recently calculated ECC for S/U is Bank D at 150 steps, and boron = 830 ppm.

5. Most recent confirmed boron sample = 890 ppm.

INITIATING CUES:

1. The Unit Supervisor directs you to set up a dilution to dilute half of the amount to the critical boron concentration.

2. The Unit Supervisor directs you to add the calculated amount of Primary Water over a 45 minute period of time using the Dilute Mode per BOP CV-5.

JOB PERFORMANCE MEASURE

TASK CONDITIONS:

1. You are the Unit 1 NSO.

2. RCS is in Mode 3, with Tave = 557°F and pressure = 2235 psig.

3. All plant systems and controls are normal for this condition, with Shutdown Banks fully withdrawn.

4. Recently calculated ECC for S/U is Bank D at 150 steps, and boron = 830 ppm.

5. Most recent confirmed boron sample = 890 ppm.

INITIATING CUES:

1. The Unit Supervisor directs you to set up a dilution to dilute half of the amount to the critical boron concentration.

2. Add the amount over a 45 minute period using the Dilute Mode per BOP CV-5.

JOB PERFORMANCE MEASURE Rev. 8, 4/28/2006

TASK TITLE: Perform 60 PPM Boron Dilution (S/D) JPM No.: N-25

TPO No: 4C.CV-04 K&A No.: 004A4.07 K&A IMP. 3.9 / 3.7

EXAMINEE: _____ DATE: ___/___/___

The Examinee: PASSED_____ this JPM TIME STARTED: _____

FAILED _____ TIME FINISHED: _____

EVALUATION METHOD: PERFORM_____ SIMULATE_____

LOCATION: SIMULATOR_**X**___

MATERIALS:

1. Copy of BOP CV-5
2. Copy of BCB-1 Book

GENERAL REFERENCES:

1. BOP CV-5, Operation of the Reactor Makeup System in the Dilute and Alternate Dilute Mode (Rev. 27)
2. BCB-1 Table 3-1, Byron Boration Dilution Tables (Rev. 1)

TASK STANDARDS:

1. Calculate the amount of primary water necessary to lower the RCS boron concentration by 60 PPM.
2. Add the correct amount of primary water to the RCS.

TASK CONDITIONS:

1. You are the Unit 1 NSO.
2. RCS is in Mode 3, with Tave = 557°F and pressure = 2235 psig.
3. All plant systems and controls are normal for this condition, with Shutdown Banks fully withdrawn.
4. Recently calculated ECC for S/U is Bank D at 150 steps, and boron = 830 ppm.
5. Most recent confirmed boron sample = 890 ppm.

INITIATING CUES:

1. The Unit Supervisor directs you to set up a dilution to dilute **half** of the amount to the critical boron concentration.
2. Add the amount over a 45 minute period using the Dilute Mode per BOP CV-5.

CRITICAL ELEMENTS: (*) 2, 3, 5, 6, 7, & 10

APPROXIMATE COMPLETION TIME: 25 minutes

PERFORMANCE CHECKLIST	STANDARDS	SAT	UNSAT	N/A

RECORD START TIME _____

NOTE

If this JPM is performed on the simulator, only the cues underlined are required to be provided to the examinee.

1. Refer to BOP CV-5, Operation of the Reactor Makeup System in the Dilute and Alternate Dilute Mode **Note: Step 1 may be performed at any time.** ***Cue: All prerequisites are met***	° LOCATE and OPEN BOP CV-5	o	o	o

NOTE

The expected calculated range of dilution is:

2352.9 gallons if the candidate calculates a dilution from 890 ppm to 860 ppm, to

2395 gallons if the candidate calculates a dilution from 890 ppm to 830 ppm, then divides the number in half.

*2. Determine amount of PW to be added **Note: Must use 557°F Table**	• DETERMINE desired gallons of PW using BCB-1 Table 3-1: ~2353 gallons to ~2395 gallons (half of ~ 4789 gallons total)	o	o	o

PERFORMANCE CHECKLIST	STANDARDS	SAT	UNSAT	N/A
*3. Determine PW flow rate **Note: May be performed in step 6**	° DETERMINE PW flow rate: 2353 to 2395 gallons/45 minutes = ~ 52.3 to 53.2 gpm	o	o	o
4. Stop makeup	At 1PM05J: ° PLACE makeup control switch in STOP	o	o	o
5. Set makeup mode	At 1PM05J: • PLACE mode select switch in DILUTE	o	o	o
*6. Set flow rate **Note: If initially set wrong, flow rate may be corrected in step 10** ***Note: The primary water flow control pot should be set to ~3.3 turns***	At 1PM05J: • ADJUST 1FK-111 to ~3.3 turns 52.3 to 53.2 gpm/16 gpm per turn = 3.27 to 3.33 turns	o	o	o

PERFORMANCE CHECKLIST	STANDARDS	SAT	UNSAT	N/A
*7. SET PW/Total Flow Counter: ***Note: A range of 2353 to 2395 gallons is an acceptable range.***	At 1PM05J: • PRESS "RST" • PRESS "PST" • PRESS "→" • PRESS "+" or "-" to insert 2353 to 2395 • PRESS "ENT" ◦ VERIFY 2353 to 2395	o	o	o

NOTE

The examinee **may** lower the pot setting for 1CV112A per Step F.8, mark JPM step 8 N/A if not performed

8. Lower POT setting to maintain VCT pressure ***Note: VCT Pressure will be increasing and should be adjusted)***	At 1PM05J: ◦ VERIFY 1CV112A in AUTO ◦ RECORD POT setting of 1LK112 ◦ ADJUST 1LK112 to maintain VCT pressure in desired band	o	o	o

PERFORMANCE CHECKLIST	STANDARDS	SAT	UNSAT	N/A
9. Verify valve alignment	VERIFY/PLACE in AUTO: ∘ 1CV111A ∘ 1CV111B ∘ 1CV110B	o	o	o
*10. Start dilution	• PLACE makeup control switch to START	o	o	o
11. Verify flow	At 1PM05J, ENSURE OPENS: ∘ 1CV111A ∘ 1CV111B ∘ VERIFY 1FR-110 indicates expected flow rate	o	o	o
12. Equalize boron concentration	At 1PM05J: ∘ VERIFY/PLACE at least two backup heater groups A/B/D to ON ∘ VERIFY pressurizer spray valves modulate open	o	o	o

Cue: <u>This JPM is completed</u>

RECORD STOP TIME _____

PERFORMANCE CHECKLIST	STANDARDS	SAT	UNSAT	N/A

COMMENTS:

JOB PERFORMANCE MEASURE

TASK CONDITIONS:

1. You are the Unit NSO.
2. The unit is in Mode 1, steady state power.

INITIATING CUES:

1. Respond to alarms on 1PM05J.

JOB PERFORMANCE MEASURE

TASK CONDITIONS:

1. You are the Unit NSO.
2. The unit is in Mode 1, steady state power.

INITIATING CUES:

1. Respond to alarms on 1PM05J.

JOB PERFORMANCE MEASURE Rev. 9, 04/27/2005

TASK TITLE: Respond to a Pressurizer Pressure Control Channel Malfunction JPM No.: Sim JPM c

TPO No: IV.D.OA-11 K&A No.: 010A4.01 K&A IMP. 3.7/3.5

EXAMINEE: _____ DATE: ___/___/___

The Examinee: PASSED_____ this JPM TIME STARTED: _____

FAILED _____ TIME FINISHED: _____

EVALUATION METHOD: PERFORM_____ SIMULATE_____

LOCATION: IN PLANT_____ SIMULATOR__**X**___

MATERIALS:

1. Copy of 1BOA INST-2, Attachment B
2. Simulator malfunction rx21a to 1700

GENERAL REFERENCES:

1. 1BOA INST-2, Operation with a Failed Instrument (Rev. 103)
2. BAR 1-12-A1 PZR PRESS LOW RX TRIP STPT ALERT (Rev. 1)
3. BAR 1-12-B1 PZR PRESS LOW (Rev. 1)

TASK STANDARDS:

1. Identify a failed pressurizer pressure channel.
2. Restore pressurizer pressure to normal.

TASK CONDITIONS:

1. You are the Unit NSO.
2. The unit is in Mode 1, steady state power.

INITIATING CUES:

1. Respond to alarms on 1PM05J.

CRITICAL ELEMENTS: (*) 3, 4, & 8

APPROXIMATE COMPLETION TIME: 18 minutes

PERFORMANCE CHECKLIST	STANDARDS	SAT	UNSAT	N/A

RECORD START TIME _____

NOTE

If this JPM is performed on the simulator, only the cues underlined are required to be provided to the examinee.

Cue (once the examinee has the Unit):
Annunciator 1-12-A1 PZR PRESS LOW RX TRIP STPT ALERT is LIT
Annunciator 1-12-B1 PZR PRESS LOW is LIT.
Annunciator 1-12-C1 PZR PRESS CONT DEV LOW HTRS ON
Annunciator 1-10-C5 OTDT HIGH ROD STOP ALERT C-3
Annunciator 1-14-B1 OTDT HIGH RX TRIP ALERT

1. Refer to 1BOA INST-2, Operation with a Failed Instrument **Note: Provide the examinee with a copy of 1BOA INST-2, Attachment B.** **Note: The examinee may perform this step after the unit is stable** ***Cue: (if needed) The Unit Supervisor is unavailable.***	° LOCATE and OPEN 1BOA INST-2, Attachment B	❑	❑	❑

PERFORMANCE CHECKLIST	STANDARDS	SAT	UNSAT	N/A
2. Check pressurizer pressure	At 1PM05J, CHECK pressurizer pressure NORMAL: ◦ 1PI 455 is 1700# ◦ 1PI 456 >2235# rising ◦ 1PI 457 >2235# rising ◦ 1PI 458 >2235# rising	❑	❑	❑
*3. Manual control of pressure ***Note: Pressure is decreasing slowly to 2235 psig***	At 1PM05J, Take manual control to restore pressure: • PLACE master pressurizer pressure controller in MANUAL • REDUCE pressurizer pressure to NORMAL	❑	❑	❑
*4. Manual control of pressure ***Note: Channel 457/458 should be selected***	At 1PM05J: • SELECT an operable pressurizer pressure control channel on pressurizer pressure control channel select switch	❑	❑	❑
5. Check PORVs	At 1PM05J, CHECK PORVs CLOSED: • 1RY455A • 1RY456	❑	❑	❑

PERFORMANCE CHECKLIST	STANDARDS	SAT	UNSAT	N/A
6. Check Spray valves ***Note: 1RY455B&1RY455C indicate an INTERMEDIATE position***	At 1PM05J, CHECK spray valves NORMAL: • 1RY455B • 1RY455C	❑	❑	❑
7. Check heaters ***Note: All backup heaters are in AUTO***	At 1PM05J: • CHECK heaters NORMAL	❑	❑	❑

NOTE

The examinee may have previously placed the master pressurizer pressure controller in AUTO once pressure was returned to normal.

*8. Restore the master controller to auto	At 1PM05J: • Verify the PZR PORVs and Spray valves are in AUTO • PLACE the master pressurizer pressure controller in AUTO	❑	❑	❑
9. Operable channels to recorders	At 1PM05J: • SELECT channel 456,457, or 458 on pressurizer pressure recorder selector switch • Select 1B, 1C, or 1D on the ΔT recorder	❑	❑	❑

PERFORMANCE CHECKLIST	STANDARDS	SAT	UNSAT	N/A

NOTE

Placement of dots is a method to ensure coincidences are not met. The evaluator should apply discretion in accepting alternate methods since no specific method is stated in 1BOA INST-2.

NOTE

An extra NSO will be required, ensure the examinee can discuss how the tripping of the bistables would be verified.

10. Trip associated bistables	Direct a second NSO to trip bistables: ° 1PB455A ° 1PB455B ° 1PB455C ° 1PB455D ° 1TB411C ° 1TB411D	❑	❑	❑

Cue: ***The US will hold a PJB for tripping bistables.***

Cue: ***That completes this JPM***

RECORD STOP TIME _____

COMMENTS:

JOB PERFORMANCE MEASURE

TASK CONDITIONS:

1. You are the Unit 1 NSO.
2. The Unit is at 100% power. .

INITIATING CUES:

1. Annunciator 1-7-B3 “RCP SEAL LEAKOFF FLOW HIGH” has just gone into alarm.

JOB PERFORMANCE MEASURE Rev. 2, 3/5/08

TASK TITLE: **Respond to High RCP Seal Leakoff Flow** JPM No.: Sim JPM D

TPO No: IV.D.OA.05 K&A No.: 003 A2.01 K&A IMP. 3.5/3.9

Examinee:_____ DATE: ___/___/___

The Trainee: PASSED_____ this JPM TIME STARTED: _____

FAILED _____ TIME FINISHED: _____

EVALUATION METHOD: PERFORM___X___ SIMULATE _____

LOCATION: IN PLANT _____ SIMULATOR___X____

MATERIALS:

1BOA RCP-1, Rev. 102, Reactor Coolant Seal Failure

GENERAL REFERENCES:

1. 1BOA RCP-1, Rev. 102, Reactor Coolant Seal Failure
2. BAR 1-7-B3, Rev 10, RCP Seal Leakoff Flow High

TASK STANDARDS:

Respond to RCP Leakoff from No. 1 Seal.

TASK CONDITIONS:

1. You are the Unit 1 NSO.
2. The Unit is at 100% power.

INITIATING CUES:

Annunciator 1-7-B3 “RCP SEAL LEAKOFF FLOW HIGH” has just gone into alarm.

CRITICAL ELEMENTS: (*)

3, 4, 7, 8

APPROXIMATE COMPLETION TIME: 5 minutes

PERFORMANCE CHECKLIST	STANDARDS	SAT	UNSAT	N/A
RECORD START TIME_____				
1. Refer to BAR 1-7-B3, and perform Immediate Operator Actions. **Cue: The extra NSO will take care of subsequent actions** **Cue: US Directs NSO to Implement 1BOA RCP-1**	Locate and Open BAR 1-7-B3 and perform the following Immediate Operator Actions: • CHECK Seal Injection Flows. • DETERMINE which pump is alarming by SER printout. • REFER to 1BOA RCP-1.	o	o	o
Note: Provide examinee a copy of 1BOA RCP-1				
2. Enter 1BOA RCP-1 and Check No. 1 Seal DP.	• STEP 1: CHECK 1B RCP No. 1 Seal DP GREATER THAN 200 PSID.	o	o	o

PERFORMANCE CHECKLIST		STANDARDS	SAT	UNSAT	N/A
*3.	Check No. 1 Seal Leakoff Flow **Note: No. 1 seal leakoff flow should be 5.5 gpm.**	STEP 2: Perform the following to DETERMINE RCP Seal Leakoff Flow is HIGH:	o	o	o
		° DETERMINE Seal DP by comparing Charging Header Pressure to VCT Pressure.	o	o	o
		• CHECK 1B RCP No. 1 Seal Leakoff Flows.	o	o	o
		• DETERMINE Actual 1B RCP No. 1 Seal Leakoff Flow is HIGH by comparing to Figure 1BOA RCP-1-1 and **GO TO 1BOA RCP-1 step 6.**	o	o	o
*4.	Monitor RCP Seal Parameters	• Step 6: Determine 1B RCP No. 1 seal leakoff flow is less than 6 GPM and **GO TO 1BOA RCP-1 step 7**	o	o	o
5.	Check No. 2 seal leakoff high flow alarm on sequence of events recorder	• 1BOA RCP-1 Step 7a: Determine 1B RCP No. 2 seal leakoff flow is NOT IN ALARM.	o	o	o
6.	Dispatch EO to locally check No. 2 seal leakoff flow: 1B RCP 1FIS-CV0191.	• 1BOA RCP-1 Step 7b: Determines No. 2 seal leakoff flow is 0.8 gpm.	o	o	o
Cue:	**EO reports No. 2 seal leakoff flow at 0.8 gpm**				

PERFORMANCE CHECKLIST	STANDARDS	SAT	UNSAT	N/A
*7. Sum of No. 1 and No. 2 seal leakoff flows Greater than 6 gpm.	• 1BOA RCP-1 Step 7c: Determines Total seal leakoff flow is 6.3 gpm which is greater than 6 gpm.	o	o	o
*8. Sum of No. 1 and No. 2 seal leakoff flows Greater than 7 gpm.	• 1BOA RCP-1 Step 7d: Maintain at least 9 gpm seal injection flow.	o	o	o
	• Initiate a Unit shutdown per 1BGP 100-4, Power Descension.	o	o	o
	• Monitor RCP parameters.	o	o	o

Cue: US acknowledges the need to shutdown the Rx

Cue: This completes the JPM.

RECORD STOP TIME _____

COMMENTS:

SIMULATOR SETUP INSTRUCTIONS

JPM NO: Sim JPM D

REQUIRED SIMULATOR MODE(S): 100% power steady state

MALFUNCTION #'S:

1) IMF CV27B Ramp to 4.2 gpm over 20 seconds.

COMMENTS:

1) Insert malf and freeze simulator, go to run after examinee has been cued.

2) Ensure SER is on and the correct SER point (2072) is visible on the terminal at the NSO desk.

3) VCT level at top of green band.

4) 1B RCP Leakoff recorder should indicate greater than 5.5 gpm.

JOB PERFORMANCE MEASURE

TASK CONDITIONS:

1. You are the extra NSO.

2. Unit 1 is starting to increase RCS temperature and needs to start the 1B Containment Chiller to maintain containment temperatures within limits.

3. All procedural prerequisities, precautions, limitations and actions have been verified.

4. An NLO has been briefed and is standing by to assist you with starting the 1B VP Chiller.

INITIATING CUES:

The Unit Supervisor directs you to start the 1B Containment Chiller from the main control room in accordance with BOP VP-1, RCFC Refrigeration Unit and Chilled Water System Startup.

PERFORMANCE CHECKLIST STANDARDS SAT UNSAT N/A

JOB PERFORMANCE MEASURE Rev. 6, 04/27/2006

TASK TITLE: Start the 1B VP Chiller and Chilled water pump. JPM No.: Sim JPM e

TPO No: K&A No.: 022A4.02 K&A IMP. 3.2/3.1

EXAMINEE:_____ DATE: ___/___/___

The Examinee: PASSED_____ this JPM TIME STARTED: _____

FAILED _____ TIME FINISHED: _____

EVALUATION METHOD: PERFORM_____ SIMULATE_____

LOCATION: IN PLANT_____ SIMULATOR__X__

MATERIALS:

1. Batch file mlsmetrostars
2. Copy of BOP DG-11

GENERAL REFERENCES:

1. BOP VP-1, RCFC Refrigeration Unit and Chilled Water System Startup.

TASK STANDARDS:

Perform the actions necessary to start the 1B Containment Chiller.

TASK CONDITIONS:

1. You are the extra NSO.
2. Unit 1 is starting to increase RCS temperature and needs to start the 1B Containment Chiller to maintain containment temperatures within limits.
3. All procedural prerequisities, precautions, limitations and actions have been verified.
4. An NLO has been briefed and is standing by to assist you with starting the 1B VP Chiller.

INITIATING CUES:

The Unit Supervisor directs you to start the 1B Containment Chiller from the main control room in accordance with BOP VP-1, RCFC Refrigeration Unit and Chilled Water System Startup.

CRITICAL ELEMENTS: (*) 10, 17, 18

PERFORMANCE CHECKLIST	STANDARDS	SAT	UNSAT	N/A

APPROXIMATE COMPLETION TIME: 15 minute

Start Time: _____

NOTE: Provide applicant with a copy of BOP VP-1 and remind them that all prerequisites, precautions and limitations & actions are complete.

1. Obtain a copy of BOP VP-1, RCFC Refrigeration Unit and Chilled Water System Startup	Obtain BOP VP-1, RCFC Refrigeration Unit and Chilled Water System Startup	___	___	___
2. Verify/Open 1SX016B RCFC SX Supply Isol Valve (1PM06J)	Open 1SX016B, RCFC SX Supply Isol Valve (1PM06J)	___	___	___
3. Verify/Open 1SX027B, RCFC SX Return Hdr Isol Valve (1PM06J)	Open 1SX027B, RCFC SX Return Hdr Isol Valve (1PM06J)	___	___	___
4. Verify/Open 1SX112B, Cnmt Chiller SX supply valve (0PM02J)	Open 1SX112B, Cnmt Chiller SX supply valve (0PM02J)	___	___	___
5. Verify/Open 1SX114B, Cnmt Chiller SX return valve (0PM02J)	Open 1SX114B, Cnmt Chiller SX return valve (0PM02J)	___	___	___
6. Verify/Open 1WO006B, RCFC cooling coil inlet Cnmt isol valve (1PM06J)	Open 1WO006B, RCFC cooling coil inlet Cnmt isol valve (1PM06J)	___	___	___
7. Verify/Open 1WO020B, RCFC cooing coil outlet Cnmt isol valve (1PM06J)	Open 1WO020B, RCFC cooing coil outlet Cnmt isol valve (1PM06J)	___	___	___
8. Verify/Open 1WO056B, RCFC cooling coil outlet Cnmt isol valve (1PM06J)	Open 1WO056B, RCFC cooling coil outlet Cnmt isol valve (1PM06J)	___	___	___

Cue:
An NLO locally informs you that the "1B Chilled water pump suction pressure is 35 psig"

PERFORMANCE CHECKLIST	STANDARDS	SAT	UNSAT	N/A
9. Verify chilled water pump suction pressure > 10 psig	Chilled water pump suction pressure is 35 psig locally	___	___	___
*10. Start 1WO01PB chilled water pump	1WO01PB pump started from main control room	___	___	___
Cue: Chilled water flow is 3000 gpm				
11. Locally Verify chilled water flow is above 2700 gpm	NLO asked to determine if chilled water flow > 2700 gpm	___	___	___
Cue: Oil level is visible in sight glass				
12.Locally verify chiller oil level is visible in sight glass	NLO asked to verify chiller oil level is visible	___	___	___
Cue: Oil temperature is 145°F				
13. Locally verify oil reservoir temperature is 135°F - 150°F	NLO asked to verify chiller oil temp is 135°F - 150°F	___	___	___
Cue: Capacity Control Switch is in Auto				
14. Locally Place Capacity Control Switch to Auto	NLO asked to place capacity control switch to AUTO	___	___	___
Cue: Electrical demand selector is at 60%				
15. Locally place electrical demand selector switch at 60%	NLO asked to place electrical demand selector switch to 60%	___	___	___
Cue: Local control switch is in STOP				
16. Locally place the local control switch to STOP	NLO asked to place local control switch to STOP	___	___	___
Cue: Local/Remote transfer switch is in REMOTE				
*17. Place local/remote transfer switch to REMOTE	NLO asked to place local/remoter transfer switch to REMOTE	___	___	___

PERFORMANCE CHECKLIST	STANDARDS	SAT	UNSAT	N/A
*18. Place control switch for 1WO01CB on 0PM02J to CLOSE	PLACE control switch for 1WO01CB on 0PM02J to CLOSE	___	___	___
Cue: Reset button depressed and released for safety indicators				
19. Locally Push reset button for safety indicators at the local control panel and release	Ask NLO to push reset button for safety indicators at local control panel and release	___	___	___
20. Locally Program timer light comes on at local control panel	Program timer light illuminates on local control panel	___	___	___
Cue: The oil pump has started.				
21. Oil pump starts in approximately 25 seconds	Oil pump start after approximately 25 seconds	___	___	___
22. Verify Compressor starts approximately 30 seconds after oil pump starts.	Chiller compressor starts approximately 55 seconds after control switch is taken to CLOSE	___	___	___

This completes this JPM

Completion Time _____

COMMENTS:

JOB PERFORMANCE MEASURE

TASK CONDITIONS:

1. You are the extra NSO.

2. Unit 1 is starting to increase RCS temperature and needs to start the 1B Containment Chiller to maintain containment temperatures within limits.

3. All procedural prerequisities, precautions, limitations and actions have been verified.

4. An NLO has been briefed and is standing by to assist you with starting the 1B VP Chiller.

INITIATING CUES:

The Unit Supervisor directs you to start the 1B Containment Chiller from the main control room in accordance with BOP VP-1, RCFC Refrigeration Unit and Chilled Water System Startup

JOB PERFORMANCE MEASURE

TASK CONDITIONS:

1. You are the extra NSO.

2. The unit's ESF busses are being supplied by the SATs.

3. The 1A Diesel Generator has been running unloaded for approximately fifteen minutes after a manual start.

4. Jacket water and lube oil temperatures are acceptable for loading the diesel generator.

5. BOP DG-11 steps F.1 through F.4 have been completed as indicated.

INITIATING CUES:

The Unit Supervisor directs you to parallel and load the 1A Diesel Generator to 5400 KW per step F.5 of BOP DG-11.

JOB PERFORMANCE MEASURE

TASK CONDITIONS:

1. You are the extra NSO.
2. The unit's ESF busses are being supplied by the SATs.
3. The 1A Diesel Generator has been running unloaded for approximately fifteen minutes after a manual start.
4. Jacket water and lube oil temperatures are acceptable for loading the diesel generator.
5. BOP DG-11 steps F.1 through F.4 have been completed as indicated.

INITIATING CUES:

The Unit Supervisor directs you to parallel and load the 1A Diesel Generator to 5400 KW per step F.5 of BOP DG-11.

JOB PERFORMANCE MEASURE Rev. 6, 04/27/2006

TASK TITLE: Synchronize a D/G to a Bus and Load to 5400 KW (DG will not pick up load) JPM No.: Sim JPM f

TPO No: 4C.DG-02 K&A No.: 064A2.09 K&A IMP. 3.1/3.3

EXAMINEE:_____ DATE: ___/___/___

The Examinee: PASSED_____ this JPM TIME STARTED: _____

FAILED _____ TIME FINISHED: _____

EVALUATION METHOD: PERFORM_____ SIMULATE_____

LOCATION: IN PLANT_____ SIMULATOR__**X**___

MATERIALS:

1. Batch file mlsmetrostars
2. Copy of BOP DG-11

GENERAL REFERENCES:

1. BOP DG-11, Diesel Generator Startup (Rev. 19)

TASK STANDARDS:

Perform the actions necessary to synchronize and load the 1A Diesel Generator to it's ESF bus.

TASK CONDITIONS:

1. You are the extra NSO.
2. The unit's ESF busses are being supplied by the SATs.
3. The 1A Diesel Generator has been running unloaded for approximately fifteen minutes after a manual start.
4. Jacket water and lube oil temperatures are acceptable for loading the diesel generator.

INITIATING CUES:

The Unit Supervisor directs you to parallel and load the 1A Diesel Generator to 5400 KW per step F.5 of BOP DG-11.

CRITICAL ELEMENTS: (*) 6, 9, & 11

APPROXIMATE COMPLETION TIME: 15 minutes

Performance Checklist	Standard	SAT	UNSAT	N/A

RECORD START TIME _____

NOTE

If this JPM is given on the simulator, only the cues underlined are required to be given to the examinee.

1. Refer to BOP DG-11, Diesel Generator Startup ***Cue: <u>All prerequisites have been met</u>*** ***Cue: (If asked) <u>The 1A DG was started per step F.1</u>*** ***Cue: (If asked) <u>The 1A DG was started fifteen minutes ago</u>*** **Note: Provide the examinee a copy of BOP DG-11 and BOP DG-11T1.**	◦ LOCATE and OPEN BOP DG-11, step F.5	o	o	o
2. Notify Electric Operations of pending diesel generator parallel operation, estimated run time, and loading ***Cue: <u>Electric Operations has been informed</u>***	◦ Notify Electric Operations	o	o	o
3. Auto Re-close Circuit Arm Selector Switch	At 1PM01J: ◦ PLACE Auto Re-close Circuit Arm Selector Switch to SURV TEST	o	o	o

Performance Checklist	Standard	SAT	UNSAT	N/A
4. Verify DG operating properly	At 1PM01J, CHECK: • DG frequency • DG voltage	o	o	o
5. Verify the same voltage across each phase.	At 1PM01J, CHECK: • DG phase voltages	o	o	o
*6. Turn on the 1A DG Feed to 141 Sync Selector switch.	At 1PM01J: • TURN Sync Selector switch for DG 1A Feed to 4KV Bus 141 to ON	o	o	o
*7. Adjust the incoming voltage.	At 1PM01J: • ADJUST incoming voltage SLIGHTLY HIGHER than running voltage using DG 1A Volt Adj control	o	o	o
*8. Adjust 1A DG speed.	At 1PM01J: • Adjust speed so synchroscope rotates SLOWLY in FAST DIRECTION using DG 1A Gov Adj control	o	o	o

Performance Checklist	Standard	SAT	UNSAT	N/A
*9. Synchronize the DG ***Cue: (If requested) NLO is locally monitoring temperatures per notes in BOP***	At 1PM01J: • PLACE control switch for ACB 1413 to CLOSE when synchroscope is slightly before 12 o'clock	o	o	o
10. Verify the synchroscope is locked in.	At 1PM01J: • VERIFY synchroscope "locks in" at 12 o'clock	o	o	o
*11. Immediately load the 1A DG to 1000 KW. **Note: The governor adjust is failed such that the diesel generator will NOT load**	At 1PM01J: ° IMMEDIATELY load DG to 1000 KW by going to RAISE on Gov Adj Control • OPEN output breaker	o	o	o
12. Notify the US of the unsuccessful loading of the diesel ***Cue: The Unit Supervisor acknowledges the failure and will initiate an WR for maintenance to investigate*** ***Cue: This JPM is complete***	° NOTIFY Unit Supervisor of the unsuccessful loading of the diesel	o	o	o

RECORD STOP TIME _____
COMMENTS:

Job Performance Measure

Task Conditions:

1. You are an extra NSO in the control room during a LOCA event.

2. The crew has performed the actions contained in 1BEP-0, Reactor Trip or Safety Injection and is currently in 1BEP-1, Loss of Reactor or Secondary Coolant at step 11.d.

3. Containment Isolation Phase A has just been reset.

Initiating Cue:

> The Unit Supervisor has just ordered you to perform step 11.d of 1BEP-1, Loss of Reactor or Secondary Coolant to place the Hydrogen Monitors in service per BOP PS-9, Post LOCA Containment Hydrogen Monitoring System Operation.

Job Performance Measure

Task Conditions:

1. You are an extra NSO in the control room during a LOCA event.

2. The crew has performed the actions contained in 1BEP-0, Reactor Trip or Safety Injection and is currently in 1BEP-1, Loss of Reactor or Secondary Coolant at step 11.d.

3. Containment Isolation Phase A has just been reset.

Initiating Cue:

> The Unit Supervisor has just ordered you to perform step 11.d of 1BEP-1, Loss of Reactor or Secondary Coolant to place the Hydrogen Monitors in service per BOP PS-9, Post LOCA Containment Hydrogen Monitoring System Operation.

JOB PERFORMANCE MEASURE Rev. 0, 03/20/2008

TASK TITLE: Start Hydrogen Monitoring System per BOP PS-9 JPM No.: Sim JPM g

TPO No: K&A No.: 029A2.04 K&A IMP. 2.5/3.2

EXAMINEE:_____ DATE: ___/___/___

The Examinee: PASSED_____ this JPM TIME STARTED: _____

FAILED _____ TIME FINISHED: _____

EVALUATION METHOD: PERFORM_____ SIMULATE_____

LOCATION: IN PLANT_____ SIMULATOR__**X**___

MATERIALS:

1. Copy of BOP PS-9, Post LOCA Containment Hydrogen Monitoring System Operation
2. Copy of 1BEP-1, Loss of Reactor of Secondary Coolant

GENERAL REFERENCES:

1. BOP PS-9, Post LOCA Containment Hydrogen Monitoring System Operation

TASK STANDARDS:

Perform the actions necessary to align and start the Post LOCA Cnmt Hydrogen Monitoring System.

TASK CONDITIONS:

1. You are an extra NSO in the control room during a LOCA event.
2. The crew has performed the actions contained in 1BEP-0, Reactor Trip or Safety Injection and is currently in 1BEP-1, Loss of Reactor or Secondary Coolant at step 11.d.
3. Containment Isolation Phase A has just been reset.

INITIATING CUES:

The Unit Supervisor has just ordered you to perform step 11.d of 1BEP-1, Loss of Reactor or Secondary Coolant to place the Hydrogen Monitors in service per BOP PS-9, Post LOCA Containment Hydrogen Monitoring System Operation.

CRITICAL ELEMENTS: (*) 2, 5

APPROXIMATE COMPLETION TIME: 15 minutes

Record Start Time _____

Performance Checklist	Standard	Sat	Unsat	N/A
1. Obtain a copy of BOP PS-9	Review BOP PS-9, Post LOCA Cnmt Hydrogen Monitoring System Operation	___	___	___
***2**. Open the following valves on 1PM11J. • 1PS228A Pri Cnmt Isol to H_2 Monitor	OPEN 1PS228A on 1PM11J	___	___	___
• 1PS230A Return Cnmt Isol from H_2 Monitor	OPEN 1PS230A on 1PM11J	___	___	___
• 1PS228B Pri Cnmt Isol to H_2 Monitor	OPEN 1PS228B on 1PM11J	___	___	___
• 1PS229A Sec Cnmt Isol to H_2 Monitor	OPEN 1PS229A on 1PM11J	___	___	___
• 1PS229B Sec Cnmt Isol to H_2 Monitor	OPEN 1PS229B on 1PM11J	___	___	___
• 1PS230B Return Cnmt Isol from H_2 Monitor	OPEN 1PS230B on 1PM11J	___	___	___
Cue: EO reports that valves have been locally Opened				
3. Direct EO to locally open the following valves at 1PS47J & 1PS48J • 1PS232A Manual Inlet Isol to H_2 Monitor	1PS232A locally OPENED	___	___	___
• 1PS233A Manual Outlet Isol from H_2 Monitor	1PS233A locally OPENED	___	___	___
• 1PS232B Manual Inlet Isol to H_2 Monitor	1PS232B locally OPENED	___	___	___
• 1PS233B Manual Outlet from H_2 Monitor	1PS233B locally OPENED	___	___	___
Cue: ALARM SET / NORMAL switch is in the NORMAL position				

Performance Checklist	Standard	Sat	Unsat	N/A
4. Locally verify the ALARM SET / NORMAL switch is set to NORMAL on 1PS43J & 1PS44J	ALARM SET / NORMAL switch is set to NORMAL	___	___	___
***5**. Place the ON-OFF switch on 1HSU-PS345 & 1HSU-PS346 on 1PM12J to the ON position	ON-OFF switch on 1HSU-PS345 & 346 on 1PM12J are ON	___	___	___

Cue: Four minutes have elapsed.

6. Verify the H_2 & System Status Alarm lights on 1HSU-PS345 & 1HSU-PS346 are not ON	H_2 & System Status Alarm lights are ON	___	___	___

Cue: The LO RANGE lights are ON

7. Verify on 1PM06J 1EL-PS343 & 1EL-PS344 LO RANGE lights are ON	LO RANGE lights are ON	___	___	___

This Completes This JPM

Record Completion Time _____

Comments:

Job Performance Measure

Task Conditions:

1. You are an extra NSO in the control room.

2. Unit 1 Containment pressure is at 0.9 psig and needs to be reduced.

3. A Gaseous Effluent Release Form has been prepared and approved for use by the Unit 1 Unit Supervisor.

4. 1BOSR 11.b.6-1, Radioactive Gaseous Effluent Monitoring Instrumentation Surv. Cnmt Purge Effluent 1PR01J Source/Channel Check has been completed.

Initiating Cue:

The Unit Supervisor has just ordered you to release the Unit 1 Containment per the release package and BOP VQ-6 using the Mini-Purge Exhaust Fan 1VQ05C.

Job Performance Measure

Task Conditions:

1. You are an extra NSO in the control room.

2. Unit 1 Containment pressure is at 0.9 psig and needs to be reduced.

3. A Gaseous Effluent Release Form has been prepared and approved for use by the Unit 1 Unit Supervisor.

4. 1BOSR 11.b.6-1, Radioactive Gaseous Effluent Monitoring Instrumentation Surv. Cnmt Purge Effluent 1PR01J Source/Channel Check has been completed.

Initiating Cue:

The Unit Supervisor has just ordered you to release the Unit 1 Containment per the release package and BOP VQ-6 using the Mini-Purge Exhaust Fan 1VQ05C.

JOB PERFORMANCE MEASURE Rev. 0, 03/25/2008

TASK TITLE: Release Unit 1 Cnmt per BOP VQ-6 JPM No.: Sim JPM h

TPO No: K&A No.: 071A4.26 K&A IMP. 3.1/3.9

EXAMINEE:_____ DATE: ___/___/___

The Examinee: PASSED_____ this JPM TIME STARTED: _____

FAILED _____ TIME FINISHED: _____

EVALUATION METHOD: PERFORM_____ SIMULATE_____

LOCATION: IN PLANT_____ SIMULATOR__**X**___

MATERIALS:

1. BCP 400-TCNMT/ROUTINE, Gaseous Effluent Release Form
2. Copy of BOPVQ-6, Containment Mini-Purge System Operation
3. 1BOSR 11.b.6-1, Radioactive Gaseous Effluent Monitoring Instrumentation Surv. Cnmt Purge Effluent 1PR01J Source/Channel Check

GENERAL REFERENCES:

1. BCP 400-TCNMT/ROUTINE, Gaseous Effluent Release Form
2. Copy of BOPVQ-6, Containment Mini-Purge System Operation
3. 1BOSR 11.b.6-1, Radioactive Gaseous Effluent Monitoring Instrumentation Surv. Cnmt Purge Effluent 1PR01J Source/Channel Check

TASK STANDARDS:

Perform the actions necessary to align and start the Mini-Purge System to vent Unit 1 containment. The applicant will isolate the Mini-Purge System after the receipt of a high radiation alarm on 1PR01J.

TASK CONDITIONS:

1. You are an extra NSO in the control room.
2. Unit 1 Containment pressure is at 0.9 psig and needs to be reduced.
3. A Gaseous Effluent Release Form has been prepared and approved for use by the Unit 1 Unit Supervisor.
4. 1BOSR 11.b.6-1, Radioactive Gaseous Effluent Monitoring Instrumentation Surv. Cnmt Purge Effluent 1PR01J Source/Channel Check has been completed.

INITIATING CUES:

The Unit Supervisor has just ordered you to release the Unit 1 Containment per the release package and BOP VQ-6 using the Mini-Purge Exhaust Fan 1VQ05C.

CRITICAL ELEMENTS: (*) 9, 10, 11, 13, 18, 19

APPROXIMATE COMPLETION TIME: 15 minutes

Record Start Time _____

Performance Checklist	Standard	Sat Unsat N/A
1. Obtain Release Package with a copy of BOP VQ-6	**Obtain** Release Package with BOP VQ-6	___ ___ ___
2. Review Release Package	Review Release Package	___ ___ ___
3. Review BOP VQ-6 Prerequisites, Precautions, & Limitations and Actions	**Review** BOP VQ-6	___ ___ ___
4. Determine that steps F.8 & F.9 will be used	**Determine** that steps F.8 & F.9 are applicable	___ ___ ___
5. Verify the Gaseous Effluent Release Form is approved by the Shift Manager or designated SRO Licensed Assistant	**Verify** Release Form is approved by SM or designee	___ ___ ___
6. Perform Release Package Steps 6.1.1, 6.1.2, 6.1.3	• Affected CNMT: U-1 • Expiration Time: 0122 tomorrow • Initial CNMT pressure: 0.9	___ ___ ___
7. Verify that 0VA02CA/B, VA Exh Fan 0A **OR** 0B is in operation	**Verify** that 0VA02CB is in operation	___ ___ ___
8. N/A steps F.3, F.4, F.5, F.6, & F.7 of BOP VQ-6	N/A steps F.3, F.4, F.5, F.6, & F.7	___ ___ ___
*9. OPEN 1VQ005A, Mini flow Prg Exh Inside Isol	1VQ005A, Mini flow Prg Exh Inside Isol **OPEN**	___ ___ ___
*10. OPEN 1VQ005B, Mini flow Prg Exh Outside Isol	1VQ005B, Mini flow Prg Exh Outside Isol **OPEN**	___ ___ ___
*11. OPEN 1VQ005C, Mini flow Prg Exh Outside Isol	1VQ005C, Mini flow Prg Exh Outside Isol **OPEN**	___ ___ ___
12. Record time release began on Gaseous Effluent Release Form	**Record** time release began on Gaseous Effluent Release Form	___ ___ ___
*13. Start 1VQ05C, Cnmt Mini-Purge Exhaust Fan	1VQ05C, Cnmt Mini-Purge Exhaust Fan **Running**	___ ___ ___
14. Record start time of fan on Gaseous Effluent Release Form	**Record** start time of 1VQ05C on Gaseous Effluent Release Form	___ ___ ___
15. Monitor Containment Pressure	CNMT pressure is at 0.9#	___ ___ ___

Performance Checklist	Standard	Sat Unsat N/A
Note: Alternate Path of JPM begins here		
16. Respond to 1PR01J radiation alarm on RM-11	**Respond** to 1PR01J alarm on RM-11	___ ___ ___
17. Refer to BAR RM11-2-1PR01J	BAR RM11-2-1PR01J actions to stop the CNMT vent	
Note: Applicant can use BAR RM-11-2-1PR01J or Limitations and Actions E.2 as guidance to secure the Cnmt Vent		
*18. Secure the U-1 Cnmt Release per BOP VQ-6 step F.9	**Determine** that the U-1 Cnmt Release must be isolated	___ ___ ___
*19. Stop 1VQ05C, Cnmt Mini Flow Purge Exhaust Fan	1VQ05C, Cnmt Mini-Purge Exhaust Fan **Stopped**	___ ___ ___
20. Record fan stop time on Gaseous Effluent Release Form	Fan stop time **recorded** on Gaseous Effluent Release Form	___ ___ ___

That completes this JPM

Completion Time_____

Comments: