NRC REGION III

INITIAL LICENSE EXAM

JOB PERFORMANCE MEASURE

JPM: RO/SRO-I SYS A

TITLE: HOT LEG INJECTION USING P-66B AND SPLIT FLOW

CANDIDATE: _____

EXAMINER: _____

JOB PERFORMANCE MEASURE
DATA PAGE

Task: Establish Hot Leg Injection per in-use EOP

Alternate Path: NO

Facility JPM #: NEW

K/A: 006A2.02 Importance: RO:3.9 SRO: 4.3

K/A Statement: Ability to (a) predict the impacts of the following malfunctions or operations on the ECCS; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those malfunctions or operations: System leakage

Task Standard: Hot Leg Injection flow established via HPSI Pump P-66B using EOP Supplement 20 split flow method.

Preferred Evaluation Location: Simulator _X__ In Plant _____

Preferred Evaluation Method: Perform _X__ Simulate _____

References: EOP Supplement 20, “Hot Leg Injection Via PZR”
EOP Supplement 4, “HPSI and LPSI Flow Curves”
EOP-4.0, “Loss of Coolant Accident Recovery”

Validation Time: __15__ minutes Time Critical: NO

Candidate: _____

Time Start: _____ Time Finish: _____

Performance Time: _____ minutes

Performance Rating: SAT_____ UNSAT _____

Comments:

Examiner: _____ Date: _____
Signature

EXAMINER COPY ONLY

Tools/Equipment/Procedures Needed:

EOP Supplement 20, Hot Leg Injection Via PZR
EOP Supplement 4, HPSI and LPSI Flow Curves

Also see **Simulator Operator Instructions** (last page of this document).

READ TO CANDIDATE

DIRECTION TO CANDIDATE:

I will explain the initial conditions, and state the task to be performed. All control room steps shall be performed for this JPM, including any required communications. I will provide initiating cues and reports on other actions when directed by you. Ensure you indicate to me when you understand your assigned task. To indicate that you have completed your assigned task return the handout sheet I provided you.

INITIAL CONDITIONS:

- Plant was tripped from 100% power.
- EOP-4.0 (Loss of Coolant Accident) has been entered.
- Conditions for initiating Hot Leg Injection per Step 60 are met.
- The normal path for Hot Leg Injection per Step 60 is not available due to HPSI Train 2 to Cold Leg Valve, MO-3080, being failed in the open position.
- HPSI Pump P-66A tripped after SIAS initiated and could not be restarted.

INITIATING CUES:

The CRS has directed you to establish hot leg injection using EOP Supplement 20 section 2.0, the HPSI Pump P-66B and split flow method.

Proc. Step	TASK ELEMENT 1	STANDARD	Grade
---	Candidate locates EOP Supplement 20	EOP Supplement 20 is in hand	S U
Comment:			
Evaluator: Provide candidate with a working copy of EOP Supplement 20			

Proc. Step	TASK ELEMENT 2	STANDARD	Grade
1	Record each occurrence of PZR Spray operation with a ΔT greater than 200°F in the Reactor Logbook.	Operator notes this requirement for future action in this JPM. Operator notes current temperatures for vapor phase, spray lines, and charging: determines requirement is currently not applicable.	S U
Comment:			

Proc. Step	TASK ELEMENT 3	STANDARD	Grade
2	Ensure P-66B is operating within the limits of EOP Supplement 4.	Verifies P-66B flow is within EOP Supplement 4	S U
Comment:			

Proc. Step	TASK ELEMENT 4	STANDARD	Grade
3	Ensure open the following valves: Charging Line Stop, CV-2111 Auxiliary Spray, CV-2117 Charging Pump Discharge to Train 2, MO-3072 HPSI Pump B Discharge to Train 2, CV-3018	Verifies or places hand switches in OPEN and verifies associated Green light OFF and Red light ON.	**S U**
Comment: **CRITICAL STEP**			

Proc. Step	TASK ELEMENT 5	STANDARD	Grade
4	Stop ALL Charging Pumps	Candidate determines all three Charging Pumps are operating and have electrical power available. Candidate will stop P-55A, P-55B, and P-55C.	**S U**
Comment: **EVALUATOR NOTE: Candidate may also place Auto/Manual switches on Panel C-12 to MANUAL (this is not required to meet Standard).** **CRITICAL STEP**			

Proc. Step	TASK ELEMENT 6	STANDARD	Grade
5	CLOSE the following valves: Loop 1A, CV-2113 Loop 2A, CV-2115 Spray, CV-1057 Spray, CV-1059.	Places hand switches for CV-2113, CV-2115, CV-1057, and CV-1059 to CLOSE. Verifies Green lights ON and Red lights OFF for all the above valves.	**S U**
Comment: **CRITICAL STEP**			

Proc. Step	TASK ELEMENT 7	STANDARD	Grade
6	Ensure open the following HPSI Train 1 valves: HPSI Train 1 Loop 1A, MO-3007 HPSI Train 1 Loop 1B, MO-3009 HPSI Train 1 Loop 2A, MO-3011 HSPI Train 1 Loop 2B, MO-3013	Verifies MO-3007, MO-3009, MO-3011, and MO-3013 Red lights ON and Green lights OFF.	S U
Comment:			

Proc. Step	TASK ELEMENT 8	STANDARD	Grade
7	CLOSE the following valves: HPSI Train 2 Loop 2B, MO-3062 HPSI Train 2 Loop 2A, MO-3064 HPSI Train 2 Loop 1B, MO-3066 HSPI Train 2 Loop 1A, MO-3068	Places and holds hand switches for MO-3062, MO-3064, MO-3066, and MO-3068 to CLOSE until Green lights ON and Red lights OFF.	S U
Comment: **CRITICAL STEP**			

Proc. Step	TASK ELEMENT 9	STANDARD	Grade
8	Ensure HPSI flow of greater than or equal to 100 gpm to the Pressurizer through the charging line is indicated on FIA-0212.	Operator checks flow is indicated on FIA-0212 greater than 100 gpm.	S U
Comment:			

Proc. Step	TASK ELEMENT 10	STANDARD	Grade
---	Candidate informs the CRS that the Hot Leg Injection using P-66B and split flow has been established per EOP Supplement 20 section 2.0.	CRS informed.	S U
Comment:			

END OF TASK

SIMULATOR OPERATOR INSTRUCTIONS

- Initialize to any at power IC.
- Enter malfunction SI01A (HPSI Pump P-66A fail) on PID SI02.
- Enter malfunction RC01 (Hot Leg Rupture) on PID RC01.
- Enter Overrride for MO-3080 to ON on PNL C-03.
- Trip the Reactor and carry out the immediate actions of EOP-1.0 actions (including tripping of MFW Pumps).
- Trip all Primary Coolant Pumps.
- Take P-66A handswitch to START (to give a red flag = attempt to restart provided in initiating cue.)
- Perform Pre-RAS Actions of EOP Supplement 42.
- Allow to run long enough to bring in RAS, then complete RAS verifications per EOP-4.0 Step 52 and EOP Supplement 42.

CANDIDATE CUE SHEET

(TO BE RETURNED TO EXAMINER TO UPON COMPLETION OF TASK)

INITIAL CONDITIONS:

- Plant was tripped from 100% power.
- EOP-4.0 (Loss of Coolant Accident) has been entered.
- Conditions for initiating Hot Leg Injection per Step 60 are met.
- The normal path for Hot Leg Injection per Step 60 is not available due to HPSI Train 2 to Cold Leg Valve, MO-3080, being failed in the open position.
- HPSI Pump P-66A tripped after SIAS initiated and could not be restarted.

INITIATING CUES:

The CRS has directed you to establish hot leg injection using EOP Supplement 20 section 2.0, the HPSI Pump P-66B and split flow method.

NRC REGION III

INITIAL LICENSE EXAM

JOB PERFORMANCE MEASURE

JPM: RO/SRO-I SYS B

TITLE: SWAP PRESSURIZER PRESSURE CONTROL CHANNELS

CANDIDATE: _____

EXAMINER: _____

JOB PERFORMANCE MEASURE
DATA PAGE

Task: Swap Pressurizer Pressure Control channels

Alternate Path: YES

Facility JPM #: 2005 NRC Exam

K/A: 010A4.01 Importance: RO: 3.7 SRO: 3.5

K/A Statement: Ability to manually operate and/or monitor in the control room: PZR spray valve

Task Standard: PIC-0101A placed in service; applicant recognizes failure of PIC-0101A and then switches back to PIC-0101B.

Preferred Evaluation Location: Simulator __X__ In Plant _____

Preferred Evaluation Method: Perform __X__ Simulate _____

References: SOP-1A, Primary Coolant System
ARP-4, Pressurizer Pressure Off Normal Hi-Lo

Validation Time: 15 minutes Time Critical: NO

Candidate: _____

Time Start: _____ Time Finish: _____

Performance Time: _____ minutes

Performance Rating: SAT_____ UNSAT _____

Comments:

Examiner: _____ Date: _____
Signature

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Tools/Equipment/Procedures Needed: SOP-1A, section 7.2.2.b.3

Also see **Simulator Operator Instructions** (last page of this document).

READ TO CANDIDATE

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INITIAL CONDITIONS:

- The plant is at steady state 100% power.
- Pressurizer Pressure Controller PIC-0101B is selected and is in AUTO.
- Pressurizer Pressure Controller PIC-0101A is in MANUAL at 50% demand.

INITIATING CUES:

The Control Room Supervisor has directed you to switch Pressurizer Pressure Controllers per SOP-1A for normal rotation of controllers.

Proc.Step	TASK ELEMENT 1	STANDARD	Grade
---	Obtain a copy of SOP-1A, Primary Coolant System procedure.	Candidate locates SOP-1A, Primary Coolant System.	S U
Comment:			

EVALUATOR: provide candidate working copy of SOP-1A section 7.2.2.b.3.

Proc.Step	TASK ELEMENT 2	STANDARD	Grade
---	Determine that Section 7.2.2.b.3 of SOP-1A should be used to alternate PZR Press Controllers.	Reviews Section 7.2.2 PZR Press Control and determines section 7.2.2.b.3 needs to be performed.	S U
Comment:			

Proc.Step	TASK ELEMENT 3	STANDARD	Grade
3.a	Verify controller to be selected in MANUAL.	Verifies PIC-0101A is in MANUAL.	S U
Comment:			

Proc.Step	TASK ELEMENT 4	STANDARD	Grade
3.b	Adjust output signal on PIC-0101A to match output signal on PIC-0101B.	Adjusts output signal on PIC-0101A to match output signal on PIC-0101B for bumpless transfer.	S U
Comment:			

Proc.Step	TASK ELEMENT 5	STANDARD	Grade
3.c	Place Selector Switch 1/PRC-0101 to Channel 'A'.	Places Selector Switch 1/PRC-0101 to Channel 'A'.	**S U**

Evaluator: If asked, state that AUTO CONTROL IS DESIRED.

CRITICAL STEP

Proc.Step	TASK ELEMENT 6	STANDARD	Grade
3.d.1	Ensure Pzr Htr Control Channel Selector Switch in CHAN A & B.	Ensures Pzr Htr Control Channel Selector Switch in CHAN A & B.	**S U**
Comment:			

Proc.Step	TASK ELEMENT 7	STANDARD	Grade
3.d.2	Ensure PIC-0101A setpoint set at desired PCS pressure.	Ensures PIC-0101A setpoint set to 2060 psia.	**S U**
Comment:			

Proc.Step	TASK ELEMENT 8	STANDARD	Grade
3.d.3	Adjust PIC-0101A output to match indicated Pzr Press (red pointer) with setpoint press (Blue pointer).	Adjusts PIC-0101A output to match indicated Pzr Press (red pointer) with setpoint press (Blue pointer).	**S U**
Comment:			

Proc.Step	TASK ELEMENT 9	STANDARD	Grade
3.d.4	Depress the "A" pushbutton on PIC-0101A to place it in AUTO.	Depresses the "A" pushbutton on PIC-0101A to place it in AUTO.	**S U**
Comment: **CRITICAL STEP**			

NOTE: When PIC-0101A is placed in AUTO control, after ~ 10 seconds, its output will slowly start to fail high (to 100% output). This will cause Pzr Press. to lower (sprays open, heaters to minimum.)

Proc.Step	TASK ELEMENT 10	STANDARD	Grade
3.e	Place the unselected controller in MANUAL with a 50% output signal.	Places PIC-0101B in MANUAL with a 50% output signal.	**S U**
Comment:			

Proc.Step	TASK ELEMENT 11	STANDARD	Grade
----	Applicant should recognize the failure by observing the output of PIC-0101A failing high. EK-0753 Pzr Press Off Normal Hi-Lo alarm will also alert applicant of the problem.	Place PIC-0101A back to MANUAL and reduce controller output to restore Pzr Press to 2060 psia.	**S U**
Comment: **EVALUATOR NOTE: Candidate may place 1/PRC-0101 back to Channel 'B'. This is acceptable. If so, proceed with JPM at Task Element 15.** **CRITICAL STEP**			

Proc.Step	TASK ELEMENT 12	STANDARD	Grade
----	Refers to ARP-4 window 53 and informs CRS of the problem with PIC-0101A.	ARP-4 referenced for EK-0753 and CRS informed of the problem with PIC-0101A. Candidate will inform CRS to refer to ONP-18, Pressurizer Pressure Control Malfunctions.	S U
EVALUATOR: When informed to reference ONP-18, direct the operator to place PIC-0101B back in service in AUTO.			

Proc.Step	TASK ELEMENT 13	STANDARD	Grade
3.a	Verify PIC-0101B is in MANUAL.	PIC-0101B is in MANUAL.	S U
Comment:			

Proc.Step	TASK ELEMENT 14	STANDARD	Grade
3.b	Adjust output signal on PIC-0101B to match output signal on PIC-0101A.	Adjusts output signal on PIC-0101B to desired output.	S U
Comment:			

Proc.Step	TASK ELEMENT 15	STANDARD	Grade
3.c	Place selector switch 1/PRC-0101 to Channel 'B'.	Places selector switch 1/PRC-0101 to Channel 'B'.	S U
Evaluator: If asked, state that AUTO control is desired. **CRITICAL STEP**			

Proc.Step	TASK ELEMENT 16	STANDARD	Grade
3.d.1	Ensure Pzr Htr Channel Selector Switch in CHAN B.	Places Pzr Htr Channel Selector Switch in CHAN B.	**S U**
Comment:			

Proc.Step	TASK ELEMENT 17	STANDARD	Grade
3.d.2	Ensure PIC-0101B setpoint set at desired PCS pressure.	Ensures PIC-0101B setpoint set at 2060 psia.	**S U**
Comment:			

Proc.Step	TASK ELEMENT 18	STANDARD	Grade
3.d.3	Adjust PIC-0101B output to match indicated Pzr Press (red pointer) with setpoint press (Blue pointer).	Adjusts PIC-0101B output to match indicated Pzr Press (red pointer) with setpoint press (Blue pointer).	**S U**
Comment:			

Proc.Step	TASK ELEMENT 19	STANDARD	Grade
3.d.4	Depress the "A" pushbutton on PIC-0101B to place it in AUTO.	Depresses the "A" pushbutton on PIC-0101B to place it in AUTO.	**S U**
Comment: **CRITICAL STEP**			

END OF TASK

SIMULATOR OPERATOR INSTRUCTIONS

- Reset to IC-17.

- Build Event Trigger #1:
    - Event ZDI2P(308)

Place RX05A (PIC-0101A failed high), 10 second time delay, on Event Trigger 1.

CANDIDATE CUE SHEET

(TO BE RETURNED TO EXAMINER TO UPON COMPLETION OF TASK)

INITIAL CONDITIONS:

- The plant is at steady state 100% power.
- Pressurizer Pressure Controller PIC-0101B is selected and is in AUTO.
- Pressurizer Pressure Controller PIC-0101A is in MANUAL at 50% demand.

INITIATING CUES:

The Control Room Supervisor has directed you to switch Pressurizer Pressure Controllers per SOP-1A for normal rotation of controllers.

NRC REGION III

INITIAL LICENSE EXAM

JOB PERFORMANCE MEASURE

JPM: RO/SRO-I/SRO-U SYS C

TITLE: OPEN MAIN STEAM ISOLATION VALVES AFTER REACTOR IS CRITICAL

CANDIDATE: _____

EXAMINER: _____

JOB PERFORMANCE MEASURE
DATA PAGE

Task: Open MSIVs

Alternate Path: One MSIV will not open requiring ADV operation to open

Facility JPM #: 2007 CERT SRO JPM

K/A: 035 K6.01 Importance: RO: 3.2 SRO: 3.6

K/A Statement: Knowledge of the effect of a loss or malfunction of the following will have on the S/Gs: MSIVs

Task Standard: Both MSIVs Open, MSIV bypasses closed, ADVs and TBV in AUTO

Preferred Evaluation Location: Simulator _X__ In Plant _____

Preferred Evaluation Method: Perform _X__ Simulate _____

References: SOP-7, “Main Steam System”

Validation Time: __15__ minutes Time Critical: NO

Candidate: _____

Time Start: _____ Time Finish: _____

Performance Time: _____ minutes

Performance Rating: SAT_____ UNSAT _____

Comments:

Examiner: _____ Date: _____
Signature

EXAMINER COPY ONLY

Tools/Equipment/Procedures Needed:

SOP-7, Main Steam System

Also see **Simulator Operator Instructions** (last page of this document).

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INITIAL CONDITIONS:

The reactor is critical with power at the POAH. MSIV Bypass valves, MO-0501 and MO-0510 are open. Vacuum is established on the Main Turbine and the secondary plant is in the process of being started up.

INITIATING CUES:
The CRS directs you to open the MSIVs per SOP-7, step 7.2.2.c.

Proc. Step	TASK ELEMENT 1	STANDARD	Grade
---	Locate correct procedure	Candidate locates SOP-7, section 7.2.2	S U
Comment:			
Evaluator: Provide candidate with a working copy of SOP-7, section 7.2.2.			

Proc. Step	TASK ELEMENT 2	STANDARD	Grade
7.2.2.c	LATCH MSIV solenoid valves.	Candidate contacts Auxiliary Operator to latch all MSIV solenoids in the turbine building and 'D' bus area.	S U
Comment:			
SIM OPERATOR: ***Use MS36 on P&ID MS02, DO NOT latch 'A' MSIV (MS25) but report that it is complete.*** **CRITICAL STEP**			

Proc. Step	TASK ELEMENT 3	STANDARD	Grade
d	IF MSIVs opened after performance of Step 7.2.2c, THEN GO TO Step 7.2.2q.	Candidate determines that CV-0510, 'A' S/G MSIV, did not open. Proceeds to step 7.2.2.e	S U
Comment:			
Evaluator: Role play as CRS and direct candidate to proceed to step 7.2.2.e, if asked. **CRITICAL STEP**			

Proc. Step	TASK ELEMENT 4	STANDARD	Grade
e	ENSURE CV-0511, Turbine Bypass to Condenser, remains CLOSED by performing the following:	Candidate performs the following: ___ PLACEs PIC-0511, Turbine Bypass Valve Control to MANUAL. ___ Sets PIC-0511, Turbine Bypass Control Valve to CLOSE. ___ Has AO Close MV-CA390, Turbine Bypass CV-0511 A/S Isolation. ___ Has AO OPEN accumulator drain valve to bleed pressure from CV-0511 accumulator, THEN CLOSE the valve.	**S U**

Comment:

SIM OPERATOR: ***Use MS35 on PIDMS03 to close air supply to CV-0511, then notify as AO that air supply is closed and accumulator is bled down***

Proc. Step	TASK ELEMENT 5	STANDARD	Grade
f	PERFORM the following notifications of impending Steam Dump operation:	Candidate informs CRS to notify Chemistry and to refer to ADMIN 4.00.	**S U**

Comment:

Evaluator: Notify Candidate that the SE will perform this.

Proc. Step	TASK ELEMENT 6	STANDARD	Grade
g	CLOSE three of the four Steam Dump Air Supplies for the MSIV to be opened, listed below:	Candidate directs Auxiliary Operator to close the following valves in the ADV control cabinet: ___ MV-CA779 ___ MV-CA780 ___ MV-CA781 OR MV-CA782	**S U**

Comment:

SIM OPERATOR: ***Use MS18, MS19, MS20 (or MS21) on PID MS01 to close these valves***

CRITICAL STEP

Proc. Step	TASK ELEMENT 7	STANDARD	Grade
h, i	PLACE HIC-0780A, Steam Generator E-50B Steam Dump to MANUAL. OPERATE HIC-0780A toward 100% OPEN position to equalize DP across MSIV.	Candidate: ___ Places HIC-0780A in Manual ___ Operates manual output lever to open ADV until MSIV CV-0510 opens.	S U
Comment: **NOTE:** ***CV-0510 will latch when HIC-0780A reaches ~25% output.*** **CRITICAL STEP**			

Proc. Step	TASK ELEMENT 8	STANDARD	Grade
j	WHEN MSIV opens, THEN PLACE HIC-0780A to CLOSE position.	Candidate Operates manual output lever to close ADV.	S U
Comment: **CRITICAL STEP**			

Proc. Step	TASK ELEMENT 9	STANDARD	Grade
k	OPEN Steam Dump Air Supplies closed in Step 7.2.2g above.	Candidate has AO open: ___ MV-CA779 ___ MV-CA780 ___ MV-CA781 OR MV-CA782	S U
Comment: **SIM OPERATOR:** ***Use MS18, MS19, MS20 (or MS21) on PID MS01 to open the valves that were closed in Task Element #6.*** **CRITICAL STEP**			

Proc. Step	TASK ELEMENT 10	STANDARD	Grade
l	IF both MSIVs did NOT open, THEN REPEAT Steps 7.2.2g through 7.2.2k for affected MSIV.	Candidate determines this step is N/A because both MSIVs are now open.	S U
Comment:			

Proc. Step	TASK ELEMENT 11	STANDARD	Grade
m, n	CLOSE CV-0511 accumulator drain valve. OPEN MV-CA390, Turbine Bypass CV-0511 A/S Isol.	Candidate has AO: ___ CLOSE CV-0511 accumulator drain valve ___ OPEN MV-CA390, Turbine Bypass CV-0511 A/S Isol.	S U
Comment:			

SIM OPERATOR: ***Use MS35 on PIDMS03 to open air supply to CV-0511.***

CRITICAL STEP

Proc. Step	TASK ELEMENT 12	STANDARD	Grade
o, p	RETURN HIC-0780A to AUTO or the AS FOUND position. RETURN PIC-0511 to AUTO or the AS FOUND position.	Candidate places HIC-0780A and CV-0511 in AUTO by depressing the 'A' button on their controllers and verifying the 'A' button lights.	S U
Comment:			

EVALUATOR NOTE: If asked, inform candidate that PIC-0511 and HIC-0780A should be placed back in AUTO.

CRITICAL STEP

Proc. Step	TASK ELEMENT 13	STANDARD	Grade
q	CLOSE the following valves: • MO-0501, MSIV CV-0501 Bypass (MZ-3) • MO-0510, MSIV CV-0510 Bypass (MZ-2)	Candidate closes MO-0501 and MO-0510 by holding switch in the CLOSE position until associated Green light is ON and Red light is OFF.	S U
Comment: **CRITICAL STEP**			

Proc. Step	TASK ELEMENT 14	STANDARD	Grade
---	Candidate informs the CRS that the MSIVs are open and the MSIV bypasses are closed.	CRS informed.	S U
Comment:			

END OF TASK

SIMULATOR OPERATOR INSTRUCTIONS

- IC-12
- Open MSIV Bypass Valves
- Close MSIVs
- Trip 'A' MFP, start P-8A
- Ensure Reactor Power is < 2% (limit for MSIV Bypass valves open)[insert Group 4 rods to approximately 35”]
- Insert the following triggers:
  Trigger: 1
  Event: ZAO3F(62).gt.0.25
  Action: irf ms25 latch

CANDIDATE CUE SHEET

(TO BE RETURNED TO EXAMINER TO UPON COMPLETION OF TASK)

INITIAL CONDITIONS:

The reactor is critical with power at the POAH. MSIV Bypass valves, MO-0501 and MO-0510 are open. Vacuum is established on the Main Turbine and the secondary plant is in the process of being warmed up.

INITIATING CUES:

The CRS directs you to open the MSIVs per SOP-7 step 7.2.2.c.

NRC REGION III

INITIAL LICENSE EXAM

JOB PERFORMANCE MEASURE

JPM: RO/SRO-I/SRO-U SYS D

TITLE: WITHDRAW SHUTDOWN GROUP CONTROL RODS

CANDIDATE: _____

EXAMINER: _____

JOB PERFORMANCE MEASURE
DATA PAGE

Task: Withdraw Shutdown Group Control Rods

Alternate Path: YES - 1 rod sticks during withdrawal

Facility JPM #: NEW

K/A: 001K4.13 Importance: SRO: 3.4 RO: 3.4

K/A Statement: Knowledge of CRDS design features/interlocks which provide for the following: Operation of CRDS controls for withdrawing lingering rods and transferring rods and rod groups.

Task Standard: All Shutdown Group 'B' Control Rods withdrawn 66 inches.

Preferred Evaluation Location: Simulator __X__ In Plant _____

Preferred Evaluation Method: Perform __X__ Simulate _____

References: SOP-6, "Reactor Control System"
ARP-5, "Primary Coolant Pump Steam Generator and Rod Drives
Scheme EK-09 (C-12)"

Validation Time: __20___ minutes Time Critical: NO

Candidate: _____

Time Start: _____ Time Finish: _____

Performance Time: _____ minutes

Performance Rating: SAT_____ UNSAT _____

Comments:

Examiner: _____ Date: _____
Signature

EXAMINER COPY ONLY

Tools/Equipment/Procedures Needed:

SOP-6, Reactor Control System
ARP-5, Primary Coolant Pump Steam Generator and Rod Drives Scheme

Also see **Simulator Operator Instructions** (last page of this document).

READ TO CANDIDATE

DIRECTION TO CANDIDATE:

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INITIAL CONDITIONS:

Preparations for a critical approach are in progress per GOP-3, “Mode 3 ≥ 525°F To MODE 2.” GOP-3 is completed through step 2.1.a.

INITIATING CUES:

The Control Room Supervisor has directed you to perform Section 7.1.2 of SOP-6, "Reactor Control System" for withdrawal of Shutdown Group ‘B’ Control Rods. Section 7.1.1 has already been performed.

Proc.Step	TASK ELEMENT 1	STANDARD	Grade
---	Obtains current procedure.	Obtains and refers to SOP-6, Section 7.1.2.	S U
Comment:			
Evaluator: Provide a working copy of SOP-6, section 7.1.2 to candidate.			

Proc.Step	TASK ELEMENT 2	STANDARD	Grade
SOP-6 7.1.2.a	Ensure all rods of Group 'A' are withdrawn greater than or equal to 128 inches.	Candidate checks PPC (page 420) and/or Panel C-02 display to verify Group 'A' rods are above 128 inches.	S U
Comment:			

Proc.Step	TASK ELEMENT 3	STANDARD	Grade
SOP-6 7.1.2.b	Place Group Selector Switch to 'B' position.	Group Selector Switch placed in 'B' position.	S U
Comment:			
CRITICAL STEP			

Proc.Step	TASK ELEMENT 4	STANDARD	Grade
SOP-6 7.1.2.c	Place Mode Selector Switch to MG (Manual Group) position.	Mode Selector Switch placed in MG position.	S U
Comment:			
CRITICAL STEP			

Proc.Step	TASK ELEMENT 5	STANDARD	Grade
SOP-6 7.1.2.d	Operate Raise-Lower Switch to RAISE position.	Raise-Lower Switch place in RAISE position.	**S U**
Comment: **CRITICAL STEP**			

Proc.Step	TASK ELEMENT 6	STANDARD	Grade
SOP-6 7.1.2.e	Monitor Nuclear Instrumentation (NI) for response during rod movement.	NIs monitored as rods are moved.	**S U**
Comment: ***Evaluator Note: Group 'B' rods PIP/SPI difference alarms on PPC are expected alarms as described by SOP-6 section 5.3.***			

Proc.Step	TASK ELEMENT 7	STANDARD	Grade
SOP-6 7.1.2.f	Stop movement of rods approximately every 33 inches (should not exceed 37 inches) of rod movement.	Control Rod motion stopped prior to exceeding 37 inches of movement.	**S U**
Comment:			

Proc.Step	TASK ELEMENT 8	STANDARD	Grade
SOP-6 7.1.2.f.1	WHEN rod motion has stopped, THEN OBSERVE proper reduction in startup rate.	Candidate observes SUR indication on Panel C-02 and/or PPC.	**S U**
Comment:			

Proc.Step	TASK ELEMENT 9	STANDARD	Grade
SOP-6 7.1.2.f.2	PERFORM Control Rod alignment verification	Uses at least one of following methods to verify all Group 'B' rods are within 2 inches of each other: -TURN Rod Selector Switch for Group 'B' through all of its positions AND COMPARE Control Rod positions. - Use the PPC Control Rod position indication for Group 'B' rods.	**S U**
Comment: **NOTE:** ***IF candidate attempts to level Control Rod #15 after first 33-inch pull, as CRS inform them to follow procedure and not level rods until procedure criteria is met (i.e. more than 2 inches).***			

Proc.Step	TASK ELEMENT 10	STANDARD	Grade
SOP-6 7.1.2.d	Continue Group 'B' withdrawal: Operate Raise-Lower Switch to RAISE position.	Raise-Lower Switch place in RAISE position.	**S U**
Comment: **NOTE:** ***When Rod 18 is > 45 inches, it will become stuck.*** **CRITICAL STEP**			

Proc.Step	TASK ELEMENT 11	STANDARD	Grade
SOP-6 7.1.2.e	Monitor Nuclear Instrumentation (NI) for response during rod movement.	NIs monitored as rods are moved.	**S U**
Comment:			

Proc.Step	TASK ELEMENT 12	STANDARD	Grade
ARP-5 Window 11	Alarm EK-0911 "Rod Position 4 Inches Deviation," Annunciates	Control Rod motion stopped by releasing Raise-Lower switch. ARP-5 referenced for window 11	**S U**
Comment: **CRITICAL STEP**			

Proc.Step	TASK ELEMENT 13	STANDARD	Grade
ARP-5 Window 11	IDENTIFY affected Control Rod AND extent of its deviation.	On PPC display 420, Rod 18 identified OR confirm on Panel C-02 by placing Group 'B' Selector Switch to "18"	**S U**
Comment: **CRITICAL STEP**			

Proc.Step	TASK ELEMENT 14	STANDARD	Grade
ARP-5 Window 11	COMPARE affected rod position with secondary rod position.	Verifies Rod 18 position is 4 inches lower than remaining rods in Group 'B' using available indications. Also notes that Rod 15 is more than 2 inches different from remainder of group.	**S U**
Comment:			

Proc.Step	TASK ELEMENT 15	STANDARD	Grade
ARP-5 Window 11	REPOSITION Control Rod in Manual Individual as necessary to clear alarm per SOP-6	Refers to SOP-6, section 7.4.	**S U**
Comment:			

Proc.Step	TASK ELEMENT 16	STANDARD	Grade
SOP-6 7.4.a	REFER to Step 4.4.1	SOP-6 Step 4.4.1 reviewed.	**S U**
Comment:			

NOTE: ***Step 7.4.b is not applicable; step 7.4.c and d have already been performed in ARP-5 actions.***

Proc.Step	TASK ELEMENT 17	STANDARD	Grade
SOP-6 7.4.e	PLACE Rod Selector Switch in the position for the rod to be moved.	Rod Selector Switch for Group 'B' placed in position '18'	**S U**
Comment:			

CRITICAL STEP

Proc.Step	TASK ELEMENT 18	STANDARD	Grade
SOP-6 7.4.f	TURN Group Selector Switch to the position for the group containing the rod to be moved.	Group Selector Switch placed in 'Group B' position.	**S U**
Comment:			

CRITICAL STEP

Proc.Step	TASK ELEMENT 19	STANDARD	Grade
SOP-6 7.4.g	PLACE Mode Selector Switch to MI (Manual Individual) position.	Mode Selector Switch placed in 'MI' position.	**S U**
Comment:			

NOTE: ***This deletes the stuck rod malfunction.***

CRITICAL STEP

Proc.Step	TASK ELEMENT 20	STANDARD	Grade
SOP-6 **7.4.h**	Withdraw selected rod to clear 4-inch deviation alarm.	___ Operates ROD CONTROL joystick to RAISE. ___ Rod 18 withdrawn to be within 2.0" of other Group 'B' rods. ___ Observes 4-Inch Deviation alarm clears.	**S U**
Comment: **CRITICAL STEP**			

Proc.Step	TASK ELEMENT 21	STANDARD	Grade
SOP-6 **7.4.h**	Withdraw selected rod to level Rod 15.	___ Operates ROD CONTROL joystick to RAISE. ___ Rod 15 withdrawn to be within 2.0" of other Group 'B' rods.	**S U**
Comment:			

Proc.Step	TASK ELEMENT 22	STANDARD	Grade
SOP-6 **7.4.i**	PLACE the Group Selector Switch to desired position.	Group Selector Switch placed in 'Group B' position.	**S U**
Comment: **CRITICAL STEP**			

Proc.Step	TASK ELEMENT 23	STANDARD	Grade
SOP-6 7.4.j	PLACE the Mode Selector Switch in MS (Manual Sequential) or as directed by the Shift Manager.	Mode Selector Switch place in MG position	**S U**
Comment:			
EVALUATOR: If asked as Shift Manager: direct Mode Selector Switch be place in the Manual Group (MG) position.			
CRITICAL STEP			

Proc.Step	TASK ELEMENT 24	STANDARD	Grade
SOP-6 7.1.2.d	Continue withdrawal of Group 'B' rods: Operate Raise-Lower Switch to RAISE position.	Raise-Lower Switch place in RAISE position.	**S U**
Comment:			
CRITICAL STEP			

Proc.Step	TASK ELEMENT 25	STANDARD	Grade
SOP-6 7.1.2.e	Monitor Nuclear Instrumentation (NI) for response during rod movement.	NIs monitored as rods are moved.	**S U**
Comment:			

Proc.Step	TASK ELEMENT 26	STANDARD	Grade
SOP-6 7.1.2.f	Stop movement of rods approximately every 33 inches (should not exceed 35 inches) of rod movement.	Control Rod motion stopped prior to exceeding 35 inches of movement.	**S U**
Comment:			

Proc.Step	TASK ELEMENT 27	STANDARD	Grade
SOP-6 7.1.2.f.1	WHEN rod motion has stopped, THEN OBSERVE proper reduction in startup rate.	Candidate observes SUR indication on Panel C-02 and/or PPC.	**S U**
Comment:			

Proc.Step	TASK ELEMENT 28	STANDARD	Grade
SOP-6 7.1.2.f.2	PERFORM Control Rod alignment verification	Uses at least one of following methods to verify all Group 'B' rods are within 2 inches of each other: -TURN Rod Selector Switch for Group 'B' through all of its positions AND COMPARE Control Rod positions. - Use the PPC Control Rod position indication for Group 'B' rods.	**S U**
Comment:			

EVALUATOR: Stop JPM when Group 'B' reaches approximately 69" (i.e. after second 33-inch pull).

EVALUATOR: Inform candidate that task is complete.

END OF TASK

SIMULATOR OPERATOR INSTRUCTIONS

- Reset to IC-5.
- Insert Shutdown Group 'B' rods and part length rods to bottom of core using RD05B and RD05G. After these rods are fully inserted, then clear both malfunctions.
- Setup Event Trigger 1:
  Event: rdsr(18)>45
- Place malfunction RD16-18-5 (PIDRC02) *(=rod 18 stuck)* on Event Trigger 1
- Setup Event Trigger 2:
  Event: ZDI2P(267) *(this is Rod Control Mode Select Switch in MI position)*
  Action: dmf rd16-18
- Ensure Dropped Rod alarm NOT on.

CANDIDATE CUE SHEET

(TO BE RETURNED TO EXAMINER UPON COMPLETION OF TASK)

INITIAL CONDITIONS:

Preparations for a critical approach are in progress per GOP-3, “Mode 3 ≥ 525°F To MODE 2.” GOP-3 is completed through step 2.1.a.

INITIATING CUES:

The Control Room Supervisor has directed you to perform Section 7.1.2 of SOP-6, "Reactor Control System" for withdrawal of Shutdown Group ‘B’ Control Rods. Section 7.1.1 has already been performed.

NRC REGION III

INITIAL LICENSE EXAM

JOB PERFORMANCE MEASURE

JPM: RO/SRO-I SYS E

TITLE: PERFORM A DIESEL GENERATOR (D/G) VOLTAGE TEST ON 1-1 D/G

CANDIDATE: _____

EXAMINER: _____

JOB PERFORMANCE MEASURE
DATA PAGE

Task: Perform Diesel Generator Surveillance MO-7A-1 and MO-7A-2

Alternate Path: NO

Facility JPM #: PL-OPS-EDG-005J

K/A: 064A4.06 Importance: RO: 3.9 SRO: 3.9

K/A Statement: Manual start, loading, and stopping of the ED/G

Task Standard: 1-1 D/G Auto Voltage Regulator High and Low Limits verified.

Preferred Evaluation Location: Simulator __X__ In Plant _____

Preferred Evaluation Method: Perform __X__ Simulate _____

References:MO-7A-1, “Emergency Diesel Generator 1-1”

Validation Time:10 minutes Time Critical: NO

Candidate: _____

Time Start: _____ Time Finish: _____

Performance Time: _____ minutes

Performance Rating: SAT_____ UNSAT _____

Comments:

Examiner: _____ Date: _____
Signature

EXAMINER COPY ONLY

Tools/Equipment/Procedures Needed:

MO-7A-1, “Emergency Diesel Generator 1-1”, Section 5.6

Also see **Simulator Operator Instructions** (last page of this document).

READ TO CANDIDATE

DIRECTION TO CANDIDATE:

I will explain the initial conditions, and state the task to be performed. All control room steps shall be performed for this JPM, including any required communications. I will provide initiating cues and reports on other actions when directed by you. Ensure you indicate to me when you understand your assigned task. To indicate that you have completed your assigned task return the handout sheet I provided you.

INITIAL CONDITIONS:

- Diesel Generator 1-1 running unloaded at 60 Hz.
- MO-7A-1, "Emergency Diesel Generator 1-1" is in progress; all steps up to 5.6 are completed.
- Month is **January**.
- Plant is in Mode 1.
- Auxiliary Operator is stationed at EC-22, Diesel Generator 1-1 Local Panel.

INITIATING CUES:

- During performance of MO-7A-1, the Control Room Supervisor directs you to perform Section 5.6 "Voltage Regulator Test."

Proc. Step	TASK ELEMENT 1	STANDARD	Grade
n/a	Operator obtains a copy of MO-7A-1, Section 5.6	MO-7A-1, Section 5.6 obtained	**S U**
Comment: ***Evaluator: Provide a working copy of MO-7A-1, Section 5.6.***			

Proc. Step	TASK ELEMENT 2	STANDARD	Grade
5.6.1	**DETERMINE** the Voltage Regulator Mode Select switch position from the table for the month ….. AND **PERFORM** the following: Voltage Regulator Mode Select Switch Position is "AUTO" for month of January	Operator determines that the Voltage Regulator Mode Select switch position is "AUTO".	**S U**
Comment: **NOTE:** ***The Voltage Regulator Mode Select switch position is determined by the Month of the test.*** ***EVALUATOR: If asked as System Engineer what switch position to use, CUE that the procedure, MO-7A-1 is to be followed.***			

Proc. Step	TASK ELEMENT 3	STANDARD	Grade
5.6.1a	IF position is AUTO, THEN **ENSURE** Voltage Regulator Mode Select switch is in the AUTO position (location C-04 panel).	Voltage Regulator Mode Select switch is verified in AUTO position.	**S U**
Comment:			

Proc. Step	TASK ELEMENT 4	STANDARD	Grade
5.6.1b.1	IF position is MANUAL, THEN **PERFORM** the following: …	Operator determines that this step is not applicable.	**S U**
Comment:			

Proc. Step	TASK ELEMENT 5	STANDARD	Grade
5.6.1b.2	IF the plant is in Mode 1, 2, 3, or 4, THEN PERFORM off-site source checks.	Operator determines that this step is not applicable.	**S U**
Comment:			

Proc. Step	TASK ELEMENT 6	STANDARD	Grade
5.6.2	DETERMINE the switch from the table for the performance month …. AND PERFORM the Following:	Operator determines that the Field Rheostat switch on C-04 is to be used.	**S U**

Comment:

NOTE: ***The Field Rheostat switch on C-04 is determined by the Month of the test.***

EVALUATOR: If asked as System Engineer what switch to use, CUE The procedure, MO-7A-1 is to be followed.

CRITICAL STEP

Proc. Step	TASK ELEMENT 7	STANDARD	Grade
5.6.2a	Slowly raise generator voltage to between 2575 VAC and 2625 VAC on EVI-1107L, Local Volt Meter or as directed by the System Engineer.	Operator adjusts generator voltage between 2575 VAC and 2625 VAC on EVI-1107L with the Field Rheostat switch on C-04.	**S U**

Comment:

EVALUATOR: If asked as System Engineer what generator voltage limits to use, CUE that the procedure, MO-7A-1 is to be followed.

EVALUATOR: If asked as AO to report local generator voltage, USE voltage indication on C-04 for the local voltage reading.

CRITICAL STEP

Proc. Step	TASK ELEMENT 8	STANDARD	Grade
5.6.2b	**RECORD** generator voltage and field voltage (location EC-22 panel) ▪ Local Volt Meter (EVI-1107L) Volts: ____ ▪ Field Voltage (EVI-1107DC) Volts: ____	Recorded generator and field voltages (from EC-22 panel: Local Volt Meter (EVI-1107L) Volts: 2575 to 2625 Field Voltage (EVI-1107DC) Volts: __80V_	**S U**

Comment:

EVALUATOR: If asked as AO to report local generator voltage, USE voltage indication on C-04 for the local voltage reading.

EVALUATOR: If asked as AO to report field voltage, REPORT: field voltage reads 80 V on EVI-1107DC.

Proc. Step	TASK ELEMENT 9	STANDARD	Grade
5.6.2c	Slowly lower generator voltage to between 2275 VAC and 2325 VAC on EVI-1107L, Local Volt Meter or as directed by the System Engineer.	Operator adjusts generator voltage between 2275 VAC and 2325 VAC on EVI-1107L with the Field Rheostat switch on C-04.	**S U**

Comment:

EVALUATOR: If asked as System Engineer what generator voltage limits to use, CUE that the procedure, MO-7A-1 is to be followed.

EVALUATOR: If asked as AO to report local generator voltage, USE voltage indication on C-04 for the local voltage reading.

CRITICAL STEP

Proc. Step	TASK ELEMENT 10	STANDARD	Grade
5.6.2d	**RECORD** generator voltage and field voltage (location EC-22 panel) ▪ Local Volt Meter (EVI-1107L0 Volts: ____ ▪ Field Voltage (EVI-1107DC)n Volts: ____	Recorded generator and field voltages (from EC-22 panel: Local Volt Meter (EVI-1107L) Volts: 2275 to 2325 Field Voltage (EVI-1107DC) Volts: __70V_	**S U**

Comment:

EVALUATOR: If asked as AO to report local generator voltage, USE voltage indication on C-04 for the local voltage reading.

EVALUATOR: If asked as AO to report field voltage, REPORT: field voltage reads 70 V on EVI-1107DC.

Proc. Step	TASK ELEMENT 11	STANDARD	Grade
5.6.2e	**RAISE** generator voltage to 2400 VAC (2390 VAC – 2410 VAC) on EVI-1107L, Local Volt Meter.	Generator voltage raised to between 2390 VAC and 2410 VAC on EVI-1107L with the Field Rheostat switch on C-04.	**S U**
Comment: ***EVALUATOR: If asked as AO to report local generator voltage, USE voltage indication on C-04 for the local voltage reading.*** **CRITICAL STEP**			

Proc. Step	TASK ELEMENT 12	STANDARD	Grade
5.6.3	**ENSURE** Voltage Regulator Mode Select switch is in AUTO position (location C-04 panel). Performed By: Signed, Time and Dated Verified By: Signed, Time and Dated	Voltage Regulator Mode Select switch verified in the AUTO position Preformed By: N/A Verified By: Signed, Time and Dated	**S U**
Comment: ***EVALUATOR: Operator will not sign the Performed By line, the Verified By line will be signed (Voltage Selector switch in proper position and not manipulated)***			

Proc. Step	TASK ELEMENT 13	STANDARD	Grade
n/a	Notify CRS that 1-1 D/G Voltage Regulator Test has been completed per Section 5.6 of MO-7A-1, for 1-1 D/G.	CRS notified that Section 5.6 of MO-7A-1 for Voltage Regulator Test Complete.	**S U**
Comment:			

END OF TASK

SIMULATOR OPERATOR INSTRUCTIONS

- Any at power IC can be used.
- Start EDG 1-1 in UNIT.
- Clear Local Alarm guage board on PIDED08, using ED27.

CANDIDATE CUE SHEET

(TO BE RETURNED TO EXAMINER TO UPON COMPLETION OF TASK)

INITIAL CONDITIONS:

- Diesel Generator 1-1 running unloaded at 60 Hz.
- MO-7A-1, "Emergency Diesel Generator 1-1" is in progress; all steps up to 5.6 are completed.
- Month is **January**.
- Plant is in Mode 1.
- Auxiliary Operator is stationed at EC-22, Diesel Generator 1-1 Local Panel.

INITIATING CUES:

During performance of MO-7A-1, the Control Room Supervisor directs you to perform Section 5.6 "Voltage Regulator Test."

NRC REGION III

INITIAL LICENSE EXAM

JOB PERFORMANCE MEASURE

JPM: RO/SRO-I/SRO-U SYS F

TITLE: PLACE A CONTAINMENT RADIATION MONITOR IN SERVICE

CANDIDATE: _____

EXAMINER: _____

JOB PERFORMANCE MEASURE
DATA PAGE

Task: Operate the Area Radiation Monitoring System

Alternate Path: YES - Operate light fails to illuminate when tested

Facility JPM #: 2007 NRC SRO JPM

K/A: 072A4.01 Importance: RO: 3.0 SRO: 3.3

K/A Statement: Ability to manually operator and/or monitor in the Control Room: Alarm and setpoint checks and adjustments.

Task Standard: Candidate recognizes that the radiation monitor "operate" light will not illuminate and refers to attachment 2 to troubleshoot the monitor. Implementation of attachment 2 will restore the "operate" light.

Preferred Evaluation Location: Simulator _X_ In Plant _____

Preferred Evaluation Method: Perform _X_ Simulate _____

References:SOP-39, "Area Radiation Monitoring System"

Validation Time:_10_ minutes Time Critical: NO

Candidate: _____

Time Start: _____ Time Finish: _____

Performance Time: _____ minutes

Performance Rating: SAT_____ UNSAT _____

Comments:

Examiner: _____ Date: _____
Signature

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Tools/Equipment/Procedures Needed:

SOP-39 section 7.4.2
Marked up copy of CL 39 for placing RIA-1805 in service with one step applicable (RIA-1805 Operate Switch)

Also see **Simulator Operator Instructions** (last page of this document).

READ TO CANDIDATE

DIRECTION TO CANDIDATE:

I will explain the initial conditions, and state the task to be performed. All control room steps shall be performed for this JPM, including any required communications. I will provide initiating cues and reports on other actions when directed by you. Ensure you indicate to me when you understand your assigned task. To indicate that you have completed your assigned task return the handout sheet I provided you.

INITIAL CONDITIONS:

Plant is operating at 100% power.
I&C Department have just completed maintenance on Containment Radiation Monitor RIA-1805.

INITIATING CUES:

The Control Room Supervisor directs you to place Containment Radiation Monitor, RIA-1805, in service per SOP-39, step 7.4.2.
Another operator will answer any front panel alarms.

Proc. Step	TASK ELEMENT 1	STANDARD	Grade
n/a	Operator locates SOP-39, section 7.4.2	SOP-39, section 7.4.2 is located	**S U**
Comment:			
Evaluator: Provide candidate with a working copy of SOP-39, section 7.4.2.			

Proc. Step	TASK ELEMENT 2	STANDARD	Grade
7.4.2.a	REFER TO Attachment 3, Checklist CL 39, "Area Monitors System Checklist."	Receives applicable portion of CL 39.	**S U**
Comment:			
Evaluator: Provide candidate with a marked up copy of CL 39 for restoring RIA-1805 to service, all steps are N/A'd except for verifying RIA-1805 selector switch in ALL or OPERATE.			

Proc. Step	TASK ELEMENT 3	STANDARD	Grade
CL 39	Verify RIA-1805 selector switch in ALL or OPERATE	RIA-1805 selector switch is in OPERATE	**S U**
Comment:			

Proc. Step	TASK ELEMENT 4	STANDARD	Grade
7.4.2.b	CHECK operate light illuminated.	Operator recognizes that the OPERATE light is not illuminated.	**S U**
Comment:			
CRITICAL STEP			

Proc. Step	TASK ELEMENT 5	STANDARD	Grade
7.4.2.c	IF operate light NOT illuminated, THEN REFER TO Attachment 2, "System Malfunctions and Troubleshooting."	Operator refers to Attachment 2, section 4.1 for Containment Radiation Monitors Operate light not illuminated.	**S U**
Comment:			

Proc. Step	TASK ELEMENT 6	STANDARD	Grade
4.1.a	PRESS AND HOLD operate light.	Operate light pressed and held	**S U**
Comment: **CRITICAL STEP**			

Proc. Step	TASK ELEMENT 7	STANDARD	Grade
4.1.b	CHECK other three monitors not tripped.	Operator verifies Orange and Red (Trip 1 and Trip 2) lights not illuminated for RIA-1806, 1807 and 1808.	**S U**
Comment:			

Proc. Step	TASK ELEMENT 8	STANDARD	Grade
4.1.c	PLACE Selector Switch momentarily to CHECK position AND RELEASE.	RIA-1805 selector switch placed in CHECK position and released.	**S U**
Comment: **CRITICAL STEP**			

Proc. Step	TASK ELEMENT 9	STANDARD	Grade
4.1.d	RELEASE operate light.	Operate light is released	**S U**
Comment: **CRITICAL STEP**			

Proc. Step	TASK ELEMENT 10	STANDARD	Grade
4.1.e	RESET all alarms.	Operator resets: ____ AMBER Trip 1 ____ RED Trip 2 by depressing associated indicating light.	**S U**
Comment: **CRITICAL STEP**			

Proc. Step	TASK ELEMENT 11	STANDARD	Grade
4.1.f	IF operate light still not illuminated, THEN DECLARE the associated monitor inoperable AND REFER TO 4.2 below.	Operator determines this step is not applicable because Operate light is illuminated.	**S U**
Comment:			

Proc. Step	TASK ELEMENT 12	STANDARD	Grade
7.4.2.d	RESET all alarms.	Operator verifies all alarms reset.	**S U**
Comment:			

Proc. Step	TASK ELEMENT 13	STANDARD	Grade
7.4.2.e	IF operate light still NOT illuminated, THEN DECLARE the associated monitor inoperable. Refer to Attachment 2, "System Malfunctions and Troubleshooting.	Operator determines this step is not applicable because Operate light is illuminated.	**S U**
Comment:			

Proc. Step	TASK ELEMENT 14	STANDARD	Grade
n/a	Operator informs Control Room Supervisor that Containment Radiation Monitor RIA-1805 has been placed in service.	CRS Notified	**S U**
Comment:			

END OF TASK

SIMULATOR OPERATOR INSTRUCTIONS

- Reset to any IC
- Insert OR RIA-1805-G to off on panel C-11A rear
- Need SOP-39, CL 39, with 1 step applicable.
- Insert Event Trigger 1 as follows:

  for Event .not.ZDI4P(341).and.ZDI4P(339)
  for Action dor RIA-1805-G

CANDIDATE CUE SHEET

(TO BE RETURNED TO EXAMINER TO UPON COMPLETION OF TASK)

INITIAL CONDITIONS:

Plant is operating at 100% power.
I&C Department has just completed maintenance on Containment Radiation Monitor RIA-1805.

INITIATING CUES:

The Control Room Supervisor directs you to place Containment Radiation Monitor, RIA-1805, in service per SOP-39, step 7.4.2.
Another operator will answer any front panel alarms.

NRC REGION III

INITIAL LICENSE EXAM

JOB PERFORMANCE MEASURE

JPM: RO SYS G

TITLE: VENT THE QUENCH TANK TO THE WASTE GAS SURGE TANK

CANDIDATE: _____

EXAMINER: _____

JOB PERFORMANCE MEASURE
DATA PAGE

Task: Vent Quench Tank

Alternate Path: NO

Facility JPM #: 2007 AUDIT SRO JPM

K/A: 007A1.03 Importance: RO: 2.7 SRO: 2.9

K/A Statement: Ability to predict and/or monitor changes in parameters (to prevent exceeding design limits) associated with operating the PRTS control including: Maintaining quench tank pressure

Task Standard: Quench Tank pressure is 6 psig and Waste Gas Surge Tank pressure is maintained within limits.

Preferred Evaluation Location: Simulator _X__ In Plant _____

Preferred Evaluation Method: Perform _X__ Simulate _____

References:SOP-1A, “Primary Coolant System”

Validation Time:_15_ minutes Time Critical: NO

Candidate: _____

Time Start: _____ Time Finish: _____

Performance Time: _____ minutes

Performance Rating: SAT_____ UNSAT _____

Comments:

Examiner: _____ Date: _____
Signature

EXAMINER COPY ONLY

Tools/Equipment/Procedures Needed:

SOP-1A section 7.4.3

Also see **Simulator Operator Instructions** (last page of this document).

READ TO CANDIDATE

DIRECTION TO CANDIDATE:

I will explain the initial conditions, and state the task to be performed. All control room steps shall be performed for this JPM, including any required communications. I will provide initiating cues and reports on other actions when directed by you. Ensure you indicate to me when you understand your assigned task. To indicate that you have completed your assigned task return the handout sheet I provided you.

INITIAL CONDITIONS:

The plant is in MODE 1 full power. It is believed that there is a nitrogen leak into the Quench Tank. Quench Tank Pressure is currently 12 psig, and is rising very slowly (less than 1 psi per hour).

INITIATING CUES:

In preparation for troubleshooting and maintenance you are to vent the Quench Tank to the Waste Gas Surge Tank per SOP-1A, 7.4.3 to 6 psig. An Auxiliary Operator is stationed at Radwaste Panel C-40. The Waste Gas System is lined up for operation per SOP-18A, as required by SOP-1A, 7.4.3.b.

Proc. Step	TASK ELEMENT 1	STANDARD	Grade
---	Locate SOP-1A	Candidate locates SOP-1A, 7.4.3	S U
Comment:			
Evaluator: Provide a working copy of SOP-1A, Section 7.4.3.			

Proc. Step	TASK ELEMENT 2	STANDARD	Grade
7.4.3.a	*NOTE:* Waste Gas Surge Tank pressure should not exceed 18.5 psia during this evolution. Lifting of RV-1111, Waste Gas Surge Tank Relief is imminent if pressure in the Waste Gas Surge Tank exceeds 18.5 psia. STATION an Auxiliary Operator at C-40 Radwaste Panel to monitor T-67, Waste Gas Surge Tank pressure and Waste Gas Compressor operations	Candidate reads NOTE AO Stationed at C-40 per initial conditions	S U
Comment:			
SIM OPERATOR (as AO): Report that you are at Panel C-40 and will maintain WGST pressure <18.5 psia.			

Proc. Step	TASK ELEMENT 3	STANDARD	Grade
b	ENSURE Waste Gas System lined up for operation. Refer to System Operating Procedure SOP-18A, "Radioactive Waste System - Gaseous."	Per initial conditions	S U
Comment:			
SIM OPERATOR (as AO): Report that Waste Gas System is lined up.			

Proc. Step	TASK ELEMENT 4	STANDARD	Grade
c, d	*NOTE:* Waste Gas Surge Tank pressure will rise slightly when performing the next two steps. OPEN CV-1101, Containment Vent Header Isolation. OPEN CV-1102, Containment Vent Header Isolation.	Candidate reads note Candidate positions switches for CV-1101 and CV-1102 to OPEN. Verifies Red light ON, Green light OFF	S U
Comment: **SIM OPERATOR (as AO): Report that you understand WGST pressure will rise.** **CRITICAL STEP**			

Proc. Step	TASK ELEMENT 5	STANDARD	Grade
e	CAUTION Waste Gas Surge Tank pressure will rise rapidly when performing the next step. The Control Operator should be in constant communication with the Auxiliary Operator to control pressure in the Waste Gas Surge Tank during performance of the next step. OPEN CV-0152, Quench Tank Vent.	Candidate reads caution and ensures he has the AO on the phone Candidate takes CV-0152 to OPEN. Verifies Red light ON, Green light OFF.	S U
Comment: **SIM OPERATOR (as AO): Report that you are ready.** **CRITICAL STEP**			

Proc. Step	TASK ELEMENT 6	STANDARD	Grade
f	IF Waste Gas Surge Tank pressure reaches approximately 18 psia, THEN CLOSE CV-0152, Quench Tank Vent.	Candidate closes CV-0152 when AO informs that WGST pressure is 18 psia.	S U

Comment:

SIM OPERATOR (as AO): maintain constant communications:

- **After CV-0152 is opened AND when EK-1368 (C-40 Off-Normal alarm) comes in, inform candidate that WGST pressure is 16.5 psia and rising. Continue to monitor WGST pressure on Instructor Station and inform candidate when pressure reaches 18 psia.**
- **Continue monitoring WGST pressure on Instructor Station after CV-0152 is closed and inform candidate when WGST pressure is 15 psia.**

CRITICAL STEP

Proc. Step	TASK ELEMENT 7	STANDARD	Grade
g	REPEAT Steps e and f until PIA-0116, Quench Tank Pressure reaches 3 psig or as directed by the CRS.	Candidate repeats steps e. and f. as necessary to lower Quench Tank pressure to 6 psig.	S U

Comment:

CRITICAL STEP

Proc. Step	TASK ELEMENT 8	STANDARD	Grade
h	ENSURE CLOSED CV-0152, Quench Tank Vent.	Candidate verifies Green light ON for CV-0152.	S U

Comment:

Proc. Step	TASK ELEMENT 9	STANDARD	Grade
i, j	CLOSE CV-1101, Containment Vent Header Isolation. CLOSE CV-1102, Containment Vent Header Isolation	Candidate positions handswitches for CV-1101 and CV-1102 to CLOSE and verifies Green light ON, Red light OFF.	S U
Comment:			

Proc. Step	TASK ELEMENT 10	STANDARD	Grade
k	IF an Auxiliary Operator was stationed at C-40 Panel, THEN NOTIFY the Auxiliary Operator the vent is complete	Candidate notifies AO that vent is complete.	S U
Comment: **SIM OPERATOR (as AO): Report that you understand that vent is complete.**			

Proc. Step	TASK ELEMENT 11	STANDARD	Grade
---	Candidate notifies CRS that vent is complete and Quench Tank pressure is 6 psig.	CRS notified	S U
Comment:			

END OF TASK

SIMULATOR OPERATOR INSTRUCTIONS

- Any IC

- Create event trigger 2:
  Event: 0
  Action: set thksn2sup=26.0

- Activate trigger 2

- Raise Quench tank pressure to 12 psig utilizing CV-0150 and CV-1358

- Monitor Waste Gas Surge Tank pressure when requested by:
  - Start the Monitor program by clicking on "Monitor" on the instructor station control panel
  - Type "WPPPT67" into the input field and hit enter

  OR

  - Read WGST pressure on PIDWP01

CANDIDATE CUE SHEET

(TO BE RETURNED TO EXAMINER TO UPON COMPLETION OF TASK)

INITIAL CONDITIONS:

The plant is in MODE 1 full power. It is believed that there is a nitrogen leak into the Quench Tank. Pressure is currently at 12 psig, and is rising very slowly (less than 1 psi per hour).

INITIATING CUES:

In preparation for troubleshooting and maintenance you are to vent the Quench Tank to the Waste Gas Surge Tank per SOP-1A, 7.4.3 to 6 psig. An Auxiliary Operator is stationed at Radwaste Panel C-40. The Waste Gas System is lined up for operation per SOP-18A, as required by SOP-1A, 7.4.3.b.

NRC REGION III

INITIAL LICENSE EXAM

JOB PERFORMANCE MEASURE

JPM: RO/SRO-I SYS H

TITLE: INITIATE A CONTAINMENT PURGE

CANDIDATE: _____

EXAMINER: _____

JOB PERFORMANCE MEASURE
DATA PAGE

Task: Initiate a Containment Purge per SOP-24, Ventilation and Air Conditioning System

Alternate Path: YES

Facility JPM #: 2005 NRC JPM

K/A: 029A2.03 Importance: RO:2.7 SRO: 3.1

K/A Statement: Ability to (a) predict the impacts of the following malfunctions or operations on the Containment Purge System; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those malfunctions or operations: Startup operations and the associated required valve lineups

Task Standard: Initiate a Containment Purge. Subsequently terminate the Containment Purge based on plant ventilation fan status.

Preferred Evaluation Location: Simulator __X__ In Plant _____

Preferred Evaluation Method: Perform __X__ Simulate _____

References: SOP-24, Ventilation and Air Conditioning System
HP 6.14, Containment Purge
SOP-38, Gaseous Process Monitoring System
ARP-7, EK-1127, Main Exhaust Fan V-6A trip

Validation Time: __20___ minutes Time Critical: NO

Candidate: _____

Time Start: _____ Time Finish: _____

Performance Time: _____ minutes

Performance Rating: SAT_____ UNSAT _____

Comments:

Examiner: _____ Date: _____
Signature

EXAMINER COPY ONLY

Tools/Equipment/Procedures Needed:

SOP-24, section 7.2.5.

Also see **Simulator Operator Instructions** (last page of this document).

READ TO CANDIDATE

DIRECTION TO CANDIDATE:

I will explain the initial conditions, and state the task to be performed. All control room steps shall be performed for this JPM, including any required communications. I will provide initiating cues and reports on other actions when directed by you. Ensure you indicate to me when you understand your assigned task. To indicate that you have completed your assigned task return the handout sheet I provided you.

INITIAL CONDITIONS:

The plant is in MODE 5 with the PCS vented to Containment.

INITIATING CUES:

The Control Room Supervisor has directed you to initiate a Containment Purge per SOP-24, “Ventilation and Air Conditioning System” section 7.2.5. The CRS has also informed you that an AO has been briefed and is standing by awaiting your instructions. The CRS also informs you that the RGEM system is in operation per SOP-38, Gaseous Process Monitoring System.

Proc.Step	TASK ELEMENT 1	STANDARD	Grade
N/A	Obtain a copy of SOP-24, Ventilation and Air Conditioning System procedure.	Candidate obtains SOP-24, Ventilation and Air Conditioning System procedure.	**S U**

Comment:

Evaluator: When applicant indicates where to find a current copy of procedure provide a copy of SOP-24, Ventilation and Air Conditioning System procedure.

Evaluator: If candidate asks to see the Batch Card inform candidate that he doesn't need to see it, but to inform me of the start and stop times of the release so that it can be recorded.

Proc.Step	TASK ELEMENT 2	STANDARD	Grade
7.2.5.a	Notify the RETS/REMP Supervisor or Duty HP to ensure requirements of HP 6.14, Containment Purge, are met.	RETS/REMP Supervisor or Duty HP notified	**S U**

Comment:

Evaluator: Role play as CRS and notify candidate that RETS/REMP Supervisor has been informed.

Proc.Step	TASK ELEMENT 3	STANDARD	Grade
7.2.5.b	Ensure one Main Exhaust Fan operating.	Candidate verifies Main Exhaust Fan V-6A running on panel C-13.	**S U**

Comment:

Proc.Step	TASK ELEMENT 4	STANDARD	Grade
7.2.5.c	Ensure RGEM system is in operation per SOP-38, Gaseous Process Monitoring System.	From Initiating Cue.	**S U**
Comment:			

Proc.Step	TASK ELEMENT 5	STANDARD	Grade
7.2.5.d	Ensure the following Test Tap Valves are Locked Closed and capped: MV-VA506 MV-VA508 MV-VA505	Ensure the following Test Tap Valves are Locked Closed and capped: MV-VA506 MV-VA508 MV-VA505	**S U**
Comment: **SIM OPERATOR:** ***When candidate calls AO, role play as AO and report after approximately 2 minutes that MV-VA506, MV-VA508, and MV-VA505 are locked closed and capped.***			

Proc.Step	TASK ELEMENT 6	STANDARD	Grade
7.2.5.e	INSERT key and OPEN the following Purge Supply and Exhaust Valves: * CV-1805 (key 272) * CV-1806 (key 274) * CV-1807 (key 275) * CV-1808 (key 277) * CV-1813 (key 273) * CV-1814 (key 276)	Key inserted and the following Purge Supply and Exhaust Valves opened and verifies associated Red light ON and Green light OFF: * CV-1805 (key 272) ____ * CV-1806 (key 274) ____ * CV-1807 (key 275) ____ * CV-1808 (key 277) ____ * CV-1813 (key 273) ____ * CV-1814 (key 276) ____	**S U**
Comment: **CRITICAL STEP**			

Proc.Step	TASK ELEMENT 7	STANDARD	Grade
7.2.5.f	Record the time the valves were opened in the Control Room Logbook.	Record the time the valves were opened in the Control Room Logbook.	**S U**

Comment:

Evaluator: Role play as CRS and inform candidate that these times have been logged.

Proc.Step	TASK ELEMENT 8	STANDARD	Grade
7.2.5.g	START Air Room Purge Supply Fan V-46.	START Air Room Purge Supply Fan V-46.	**S U**

Comment:

NOTE: ***After Purge Supply Fan is started, the V-6A Main Exhaust Fan will TRIP, and V-6B Standby Fan will not start. This will require that the Containment Purge be manually terminated.***

CRITICAL STEP

Proc.Step	TASK ELEMENT 9	STANDARD	Grade
---	Main Exhaust V-6A trips.	Applicant refers to ARP-7, EK-1127, Main Exhaust Fan V-6A or B trip.	**S U**

Comment:

Proc.Step	TASK ELEMENT 10	STANDARD	Grade
ARP-7	ARP-7, EK-1127 directs starting the STANDBY Main Exhaust Fan V-6B.	Candidate attempts to start V-6B and determines it will not start.	**S U**

Comment:

Proc.Step	TASK ELEMENT 11	STANDARD	Grade
ARP-7	Per ARP-7, EK-1127, secure any radioactive waste gas batch per SOP-18A and shutdown any plant ventilation air flow per SOP-24.	Candidate stops Air Room Supply Fan V-46.	**S U**
Comment: **CRITICAL STEP**			

Proc.Step	TASK ELEMENT 12	STANDARD	Grade
---	Manually CLOSE all OPEN purge control valves. The Applicant may use EOP Supplement 6, Containment Isolation as a guide. * CV-1805 (key 272) * CV-1806 (key 274) * CV-1807 (key 275) * CV-1808 (key 277) * CV-1813 (key 273) * CV-1814 (key 276)	Candidate closes all OPEN purge control valves and verifies associated Red light OFF and Green light ON. The Applicant may use EOP Supplement 6, Containment Isolation as a guide. * CV-1805 (key 272) ____ * CV-1806 (key 274) ____ * CV-1807 (key 275) ____ * CV-1808 (key 277) ____ * CV-1813 (key 273) ____ * CV-1814 (key 276) ____	**S U**
Comment: ***Evaluator: Candidate may start securing other ventilation systems, but stop JPM when Containment Purge is isolated.*** **CRITICAL STEP**			

END OF TASK

SIMULATOR OPERATOR INSTRUCTIONS

Reset to IC-1

Ensure V-6A in service.

Create Event Trigger #1: Event: ZDI1P(524) *[this is Purge Fan V-46 HS to CLOSE]*

Place the following overrides on Panel PAL09M1 (C-13 left side) on Event Trigger #1 with a 10 second time delay:

V-6A-1, Main Exhaust V-6A Trip to **ON**
V-6B-1, Main Exhaust V-6B Trip to **ON**

CANDIDATE CUE SHEET

(TO BE RETURNED TO EXAMINER TO UPON COMPLETION OF TASK)

INITIAL CONDITIONS:

The plant is in MODE 5 with the PCS vented to Containment.

INITIATING CUES:

The Control Room Supervisor has directed you to initiate a Containment Purge per SOP-24, “Ventilation and Air Conditioning System” section 7.2.5. The CRS has also informed you that an AO has been briefed and is standing by awaiting your instructions. The CRS also informs you that the RGEM system is in operation per SOP-38, Gaseous Process Monitoring System.