Appendix C	Job Performance Measure Worksheet	Form ES-C-1

Facility: Indian Point 2 Task No: 0140040401

Task Title: Perform the required actions for a malfunction of rod position indicator

K/A Reference: 014A2.06 (2.6/3.0) 014A4.03 (2.6/2.7) Job Performance Measure No: Sim-A

Examinee: _____ NRC Examiner: _____

Facility Evaluator: _____ Date: _____

Method of testing:

Simulated Performance _____ Actual Performance X

Classroom _____ Simulator X Plant _____

READ TO THE EXAMINEE

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

Initial Conditions: Reactor is at indicated power, Xenon lowering, no equipment OOS. Tave is approximately 0.8°F higher than Tref, and Delta-Flux is slightly positive.

Task Standard: Plant stabilized with appropriate procedures completed

Required Materials: 2-AOP-ROD-1, Rod Control and Indication Systems Malfunctions
Graph RPC-3, Actual vs. Indicated Rod Position (All Rods)
2-SOP-16.1.1, Rod Control System Operation

General References: SOP-16.1.1, Rod Control System Operation
ARP SF 2-7, Control Rod or Power Distribution Trouble alarm

Initiating Cue: When I tell you to begin, you are to manually insert control rods 5 steps to return Tave to Tref and lower delta-flux per SOP 16.1.1 section 4.3

Time Critical Task: No

Validation Time: 20 minutes

PERFORMANCE INFORMATION

(Denote critical steps with a check mark)

---

1. Performance Step: Reviews 2-SOP-16.1.1, section 4.3

CUE: All initial conditions per SOP 16.1.1 are met

Standard: Procedures referenced

Comment:

√ **2. Performance Step: Places the Rod Control Bank Selector Switch on panel FB to the MAN position.**

CUE: If asked, CRS provides permission to place Rods in MANUAL

Standard: Rod Control Bank Selector Switch on panel FB in the MAN position

Comment:

√ **3. Performance Step: Places the Rod Control IN-OUT switch on panel FB to the IN position.**

Standard: Rod Control IN-OUT lever held in the IN position. Control Bank Delta rods begin inserting.

NOTE: After rod motion begins, malfunction XMT-CRF018A LVDT F-2 IRPI failure will actuate.

Comment:

PERFORMANCE INFORMATION

(Denote critical steps with a check mark)

---

4. Performance Step: Releases IN-OUT lever to stop rod motion. Observes IRPI indication and rod bottom light for control rod F-2

Standard: Rod Motion stopped.

CUE: Role play as the BOP RO and acknowledge 3 alarms: (Read the following aloud)
- SG 3-1, Metal Impact Monitoring, expected alarm
- SF 2-7, Control Rod or Power Distribution Trouble alarm
- SBF-1 4-6, Rod Bottom Rod Stop alarm

CUE: Provide the following cue if necessary: The CRS directs the candidate to perform AOP-ROD-1

Comment:

√ **5. Performance Step: Refers to procedure 2-AOP-ROD-1, Rod Control and Indication Systems Malfunctions**

Standard:. Correct procedure entered.

Comment:

---

6. Performance Step: Uses redundant indication to determine that the malfunction is a RPI malfunction.

CUE: If applicant requests SOP 15.5, provide cue that CRS does not consider it necessary to diagnose this event.

Standard: Determines that a RPI malfunction has occurred.

Comment:

PERFORMANCE INFORMATION

(Denote critical steps with a check mark)

√ **7. Performance Step:** **Places the Flight Panel DVM ROD GROUP SELECTOR switch on panel FB to BK D GR 1 position.**

Places the ROD SELECTOR switch to ROD 1

Depresses the VDC pushbutton (if necessary, selects the 0-20 V range)

Observes 0.000 VDC

References Graphs RPC-3 and observes 0.000VDC corresponds to actual rod position of 0

CUE: If necessary, CRS directs candidate to use the Flight Panel DVM

Standard: Determines that the LVDT output is zero, hence the nature of the malfunction is an RPI channel failure.

Comment:

8. Performance Step: Refers to Technical Specification 3.1.7, Rod Position Indication.

Standard: Determines that 3.1.7 Condition A applies.

Comment:

PERFORMANCE INFORMATION

(Denote critical steps with a check mark)

9. Performance Step: Returns to procedure and step in effect (manual rod insertion to lower Tave and Delta-flux)

CUE: CRS directs you to suspend control rod insertion until Reactor Engineering has verified rod position.

Standard: Monitors control bank delta step demand, delta-flux, Tave

Comment:

Terminating Cue: Completion of AOP-ROD-1 with return to procedure and step in effect.

VERIFICATION OF COMPLETION

Job Performance Measure No. Sim-A, Perform the required actions for a malfunction of rod position indicator

Examinee's Name:

Date Performed:

Facility Evaluator:

Number of Attempts:

Time to complete:

Question Documentation:

Question:

Response:

Result: SAT or UNSAT

Examiner's signature and date: _____ _____

Simulator Setup

Reset simulator to IC-126

Ensure that the flight panel DVM is OFF

Verify trigger 1 setup:

>sim-A.bat
TRGSET 1 "MCRFGNS(13).eq.219"
TRG 1 "IMF XMT-CRF018A (-1 0) 0.0000 0 222"

Use IC-3 EOL reactivity summary sheet

INITIAL CONDITIONS:

1. Reactor is at indicated power, Xenon lowering, no equipment OOS.
2. Tave is approximately 0.8°F higher than Tref, and Delta-Flux is slightly positive

INITIATING CUES:

1. When I tell you to begin, you are to manually insert control rods 5 steps to return Tave to Tref and lower delta-flux per SOP 16.1.1 section 4.3

RETURN THIS TO EXAMINER WHEN YOU HAVE COMPLETED

Appendix C	Job Performance Measure Worksheet	Form ES-C-1

Facility: Indian Point 2 Task No: 0060160401

Task Title: Align SI pump and header during LOCA with RCS temperature <350°F

K/A Reference: 006A4.07 (4.4/4.4) Job Performance Measure No: Sim-B

Examinee: _____ NRC Examiner: _____

Facility Evaluator: _____ Date: _____

Method of testing:

Simulated Performance _____ Actual Performance X

Classroom _____ Simulator X Plant _____

READ TO THE EXAMINEE

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

Initial Conditions: A LOCA has occurred while performing a plant cooldown to mode 5. The team is currently performing AOI-4.2.2, LOCA When RCS Temperature at Least 200°F and Less Than 350°F. SI pumps are caution tagged due to SOP 1.4.1 step 4.1.5.

Task Standard: SI system aligned per AOI-4.2.2 step 4

Required Materials: AOI-4.2.2 , LOCA When RCS Temperature at Least 200°F and Less Than 350°F

General References: AOI-4.2.2

Initiating Cue: The CRS has directed you to verify proper SI System alignment in accordance with AOI-4.2.2 step 4.

Time Critical Task: No

Validation Time: 20 minutes

PERFORMANCE INFORMATION

(Denote critical steps with a check mark)

1. Performance Step: Checks RWST level greater than 9.24 feet

Standard: RWST level verified

Comment:

2. Performance Step: Verifies SI Pump cold leg injection valves OPEN

CUE: If NPO dispatched, NPO reports 856A, E, C, D are all open.

Standard: Checks 856A, E, C, D all de-energized OPEN

Comment:

3. Performance Step: Verifies 22 SI pump suction stops OPEN

Standard: 887A and 887B position indication or two-is-true indication checked to verify valves OPEN

Comment:

PERFORMANCE INFORMATION

(Denote critical steps with a check mark)

4. Performance Step: Verifies 22 SI pump discharge valves OPEN

Standard:. 851A and 851B position indication or two-is-true indication checked to verify valves OPEN

Comment:

5. Performance Step: Checks RHR Hot Leg Suction stops – CLOSED
Determines MOV 730 and 731 are Closed

Standard: Checks 730 and 731 CLOSED

Comment:

6. Performance Step: Checks status of SI pumps

Standard: Determines none are running

Comment:

PERFORMANCE INFORMATION

(Denote critical steps with a check mark)

7. Performance Step: Checks the following:
PRZR Level < 14% (yes)
RCS Subcooling < 52°F (yes)

Standard: Answers 'yes' to at least one of the conditions checked

Comment:

√ **8. Performance Step: Start 21 SI pump**

Standard: Determines 21 SI pump will not start (Alternate Path)

Comment:

√ **9. Performance Step: Closes MOV-851B (Alternate Path)**

Standard: 851B CLOSED

Comment:

√ **10. Performance Step: Starts 22 SI Pump (Alternate Path)**

Standard: 22 SI pump started

Comment:

PERFORMANCE INFORMATION

(Denote critical steps with a check mark)

11. Performance Step: Places 21 and 23 SI pumps to PULL OUT

Standard: 21 and 23 SI pumps control switches in PULL OUT

Comment:

Terminating Cue: Step 4 of AOI-4.2.2 complete.

VERIFICATION OF COMPLETION

Job Performance Measure No. Sim-B, Align SI pump and header during LOCA with RCS temperature <350°F

Examinee's Name:

Date Performed:

Facility Evaluator:

Number of Attempts:

Time to complete:

Question Documentation:

Question:

Response:

Result: SAT or UNSAT

Examiner's signature and date: _____ _____

Reset simulator to IC-128
Place caution tags on All SI Pumps

INITIAL CONDITIONS:

1. A LOCA has occurred while performing a plant cool down to mode 5.
2. The team is currently performing AOI-4.2.2, LOCA When RCS Temperature at Least 200°F and Less Than 350°F
3. SI Pumps are caution tagged per SOP 1.4.1 step 4.1.5
4. 856A, E, C, D Cold Leg Injection Valves are de-energized OPEN

INITIATING CUE:

The CRS has directed you to verify proper SI System alignment in accordance with AOI-4.2.2 step 4.

RETURN THIS TO EXAMINER WHEN YOU HAVE COMPLETED

Appendix C	Job Performance Measure Worksheet	Form ES-C-1

Facility: Indian Point 2 Task No: 0100010401

Task Title: PZR PRESSURE CHANNEL FAILURE (Control pressure manually)

K/A Reference: 010A3.02 (3.6/3.5)
010A4.01 (3.7/3.5)
010A4.02 (3.6/3.4) Job Performance Measure No: Sim-C

Examinee: _____ NRC Examiner: _____

Facility Evaluator: _____ Date: _____

Method of testing:

Simulated Performance _____ Actual Performance X

Classroom _____ Simulator X Plant _____

READ TO THE EXAMINEE

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

Initial Conditions: Reactor is at indicated power, steady state, no equipment OOS

Task Standard: Plant stabilized with appropriate procedures completed

Required Materials: 2-AOP-INST-1, Instrument/Controller Malfunctions

General References:

Initiating Cue: When I tell you to begin, you are to respond to indications and annunciators

Time Critical Task: NO

Validation Time: 20 minutes

PERFORMANCE INFORMATION

(Denote critical steps with a check mark)

Note: Place simulator in RUN and activate malfunction Pressurizer Pressure Ch-1 (PT-455) fails low (XMT-RCS028A, severity 1700, ramp 0, delay 0)

---

1. Performance Step: Diagnose pressurizer pressure control malfunction.

Standard: Verbalizes pressurizer pressure control is not stable, or verbalizes Pressurizer Pressure Channel 1 has failed low.

Comment:

Cue: Perform the appropriate immediate actions.

---

2. Performance Step: Performs immediate operator actions of 2-AOP-INST-1, from memory.

Standard: May be performed in any order. After taking manual action in performance step 3, returns and checks remaining control systems.
Checks the following control systems to determine if any are affected:

- Rod Control
- Pressurizer Pressure Control
- Pressurizer Level Control
- MBFP Speed Control
- SG Level Control
- SP Pressure Control

Determines Pressurizer Pressure Control is affected

- Checks SG Level control inputs affected
- Checks Steam Dumps affected

Comment:

PERFORMANCE INFORMATION

(Denote critical steps with a check mark)

√ **3. Performance Step: Place pressurizer pressure master controller (or individually spray valve controllers) in manual and control to stabilize the plant**

Standard: Pressurizer pressure control in manual and Pressurizer pressure increase stopped.
Controls adjusted so that pressure is trending towards 2235psig.
PORVs do not auto open on high pressure.

Comment:

CUE: CRS directs you to continue in AOP-INST-1. Evaluator provide copy of AOP-INST-1 to candidate.

4. Performance Step: Manually operate PRZR heaters and sprays as necessary to maintain desired RCS pressure

CUE: After pressure is in manual control and trending towards 2235, provide cue that CRS has directed a spare operator to manually control pressure while the examinee continues in the procedure.

Standard: Pressure is in manual control and trending (under the operator's control) towards 2235 (or stable at 2235)

Comment:

PERFORMANCE INFORMATION

(Denote critical steps with a check mark)

√ **5. Performance Step: Place Pressurizer Pressure Defeat switch (P/455A in Rack B-6) to DEFEAT 1&4.**

Standard:. Switch P/455A in DEFEAT 1&4 Position.

Comment:

√ **6. Performance Step: Return Pressurizer Pressure Control to AUTOMATIC operation.**

CUE: CRS has directed you to place pressure control back in auto.

Standard: Adjusts pressurizer pressure to 2235(+/-20 psig), or adjusts set point dial until deviation indicates ~zero. Verifies deviation meter indicates ~zero. Places Auto/Manual selector on controller to Auto.

Comment:

7. Performance Step: Check Bistable Status Panel

Standard: Verifies that tripping bistables will not cause a reactor trip or SI.

Comment:

PERFORMANCE INFORMATION

(Denote critical steps with a check mark)

8. Performance Step: Refer to Technical Specifications for Required Actions

CUE: CRS has checked Technical Specifications and directs you to trip the applicable bistables as directed by the procedure.

Standard: Ensures that appropriate TS have been referenced.

Comment:

√ **9. Performance Step: Places Pressurizer Pressure Channel 1 Bistable Trips Switches to the TRIP position.**

Standard:. Goes to Foxboro Rack A-4 and places the following bistable trip switches in the tripped position:

- (Loop 1) Hi Press Trip (Alarm SA 2-2 actuates) (white light comes on)
- (Loop 1) Lo Press Trip (white lights stays off)
- (Loop 1) SI (white light stays off)
- (Loop 1) Unblock SI (white light comes on)
- (Loop 1) Over Temp Trip (white light stays off)

Comment:

Terminating Cue: Plant stabilized with appropriate procedures completed

VERIFICATION OF COMPLETION

Job Performance Measure No.: Sim-C, Perform the required action for PZR PRESSURE CHANNEL FAILURE (Control pressure manually)

Examinee's Name:

Date Performed:

Facility Evaluator:

Number of Attempts:

Time to complete:

Question Documentation:

Question:

Response:

Result: SAT or UNSAT

Examiner's signature and date: _____ _____

Reset simulator to IC-2,

Insert malfunction: XMT-RCS028A, severity 1700, ramp 0, delay 0

INITIAL CONDITIONS:

1. Reactor is at indicated power, steady state, no equipment OOS

INITIATING CUES:

When I tell you to begin, you are to respond to indications and annunciators.

RETURN THIS TO EXAMINER WHEN YOU HAVE COMPLETED

Appendix C	Job Performance Measure Worksheet	Form ES-C-1

Facility: Indian Point 2 Task No: 3000460501

Task Title: Perform the Required Actions to Identify and Isolate a Faulted Steam Generator with CST Level <2 Feet (22 SG)

K/A Reference: 035A4.06 (4.5/4.6) Job Performance Measure No: Sim-D Rev1

Examinee: _____ NRC Examiner: _____

Facility Evaluator: _____ Date: _____

Method of testing:

Simulated Performance _____ Actual Performance X

Classroom _____ Simulator X Plant _____

READ TO THE EXAMINEE

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

Initial Conditions: An event occurred a short time ago that resulted in a Safety Injection. All required actions of E-0 have been completed with transition to E-2, Faulted Steam Generator Isolation.

Task Standard: The faulted SG has been identified and isolated up to checking secondary radiation.

Required Materials: EOP E-2, Faulted Steam Generator Isolation

General References: EOP E-2, Faulted Steam Generator Isolation

Initiating Cue: The CRS has directed you to perform EOP E-2, Faulted Steam Generator Isolation

Time Critical Task: No.

Validation Time: 15 minutes

PERFORMANCE INFORMATION

(Denote critical steps with a check mark)

1. Performance Step: Obtain correct procedure

Standard: EOP E-2 obtained

Comment:

2. Performance Step: Review cautions prior to step 1

Standard: Cautions reviewed

Comment:

√ **3. Performance Step: Check MSIVs Closed**

Standard: Manually Close all 4 MSIVs

Comment:

4. Performance Step: Check if any SG Secondary Pressure Boundary is Intact

Standard:. Verify 21, 23, and 24 SG Pressures are Stable

Comment:

PERFORMANCE INFORMATION

(Denote critical steps with a check mark)

5. Performance Step: Review caution prior to step 3

Standard:. Caution reviewed

Comment:

√ **6. Performance Step: Identify Faulted SG**

Standard: Identify 22 SG Pressure Decreasing in uncontrolled manner or completely depressurized

Comment:

7. Performance Step: Review caution prior to step 4

Standard:. Caution reviewed

Comment:

8. Performance Step: Isolate Main Feed Line

Standard:. Verify 22 FW REGULATOR and 22 FW BYPASS valves CLOSED

Comment:

PERFORMANCE INFORMATION

(Denote critical steps with a check mark)

√ 9. Performance Step: Isolate AFW Flow

Standard: Close 22 SG AFW Reg Valve

Comment:

---

10. Performance Step: Isolate Flow to 22 AFW Pump

Standard:. Direct NPO to Shut MS-41

CUE: Acknowledge as NPO

Comment:

---

11. Performance Step: Verify SG Atmospheric Steam Dump Closed

Standard:. Check 22 SG Atmos Steam Dump Closed

Comment:

---

12. Performance Step: Verify SG Blowdown Valves Closed

Standard:. Check both B/D Valves for 22 SG Closed

Comment:

PERFORMANCE INFORMATION

(Denote critical steps with a check mark)

13. Performance Step: Direct Local Isolation of affected SG

Standard:. Direct NPO to Isolate 22 SG Upstream Traps and MSIV bypass valve

CUE: Acknowledge as NPO

Comment:

14. Performance Step: Check CST Level (Alternate Path)

Standard:. CST Level verified LESS THAN 2 ft

Comment:

√ **15. Performance Step: Open City Water Header Isolation Valve (Alternate Path)**

Standard:. FCV-1205A Open

Comment:

√ **16. Performance Step: Open AFW pump Suction valves. Note: Valves for the running pumps are required to be open (Alternate Path)**

Standard:. PCV-1187, 188, and/or 1189 Open

Comment:

PERFORMANCE INFORMATION

(Denote critical steps with a check mark)

17. Performance Step: Check Secondary Radiation

Standard:. Contacts Chemistry to request periodic activity samples of all SGs
Checks un-isolated secondary radiation monitors (R-28, R-30, R-31, R-45, R-49)
Checks secondary radiation – NORMAL

CUE: Acknowledge call to Chemistry to take activity samples of all SGs.

Comment:

18. Performance Step: Transitions to E-1, Loss of Reactor or Secondary Coolant

Standard: Determines that a transition to E-1 is required.

Comment:

Terminating Cue: Transition to E-1, Loss of Reactor or Secondary Coolant

VERIFICATION OF COMPLETION

Job Performance Measure No. Sim-D, Perform the Required Actions to Identify and Isolate a Faulted Steam Generator with CST Level <2 Feet (22 SG)

Examinee's Name:

Date Performed:

Facility Evaluator:

Number of Attempts:

Time to complete:

Question Documentation:

Question:

Response:

Result: SAT or UNSAT

Examiner's signature and date: _____ _____

Simulator Setup

Reset simulator to IC-155

Verify that CST level indicates < 2 feet prior to start of JPM

INITIAL CONDITIONS:

1. An event occurred a short time ago that resulted in a Safety Injection.

2. All required actions of E-0 have been completed with a transition to E-2, Faulted Steam Generator Isolation.

INITIATING CUES:

The CRS has directed you to perform E-2, Faulted Steam Generator Isolation.

RETURN THIS TO EXAMINER WHEN YOU HAVE COMPLETED

Appendix C	Job Performance Measure Worksheet	Form ES-C-1

Facility: Indian Point 2 Task No: 0610010301

Task Title: Start ABFPs and supply AFW flow to the SGs during plant shutdown

K/A Reference: 061A1.01 (3.9/4.2) 061A3.01 (4.2/4.2) Job Performance Measure No: Sim-E

Examinee: _____ NRC Examiner: _____

Facility Evaluator: _____ Date: _____

Method of testing:

Simulated Performance _____ Actual Performance X

Classroom _____ Simulator X Plant _____

READ TO THE EXAMINEE

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

Initial Conditions: Plant shutdown is in progress per POP-3.1, Plant Shutdown Mode 1 to Mode 3. Currently at step 4.34. Plant is at 3% power. The team is making preparations to shift from main feedwater to auxiliary feedwater. The CR has directed you to maintain SG levels 35-65%

Task Standard: AFW flow supplied to each SG with level being controlled between 9 - 73%

Required Materials: 2-AOP-FW-1, Loss of Main Feedwater

General References: POP-3.1, Plant Shutdown Mode 1 to Mode 3

Initiating Cue: Respond to plant conditions and alarms

Time Critical Task: NO

Validation Time: 20 minutes

PERFORMANCE INFORMATION

(Denote critical steps with a check mark)

1. Performance Step: Diagnose trip of 21 Main Boiler Feed Pump

Standard: Verbalizes 21 Main Boiler Feed Pump has tripped.

CUE: CRS directs you to perform immediate operator actions.
NOTE: If the candidate is an SRO, then allow the candidate to select the appropriate abnormal procedure to use. If the candidate is an RO, then provide a copy of AOP-FW-1.

Comment:

2. Performance Step: Checks if any MBFP is operating (no)
Checks reactor power < 4% (yes)

CUE: CRS directs you to continue in AOP-FW-1.

Standard: Checks no Feed Pumps running and reactor power less than 4%

Comment:

3. Performance Step: Checks level in any SG < 9% on two of three indicators (no)
Checks reactor critical (yes)

Standard: Checks SG levels greater than 9%

Comment:

PERFORMANCE INFORMATION

(Denote critical steps with a check mark)

4. Performance Step: Checks 21 and 23 ABFPs running (No, only 21)
Performs Attachment 1 (Feeding SGs With AFW Pumps)

Standard: ABFPs checked. Performs attachment 1

Comment:

5. Performance Step: Checks AFW flow required to all SGs (yes)

Standard: Determines that all SGs are steaming and AFW flow is required.

Comment:

√ **6. Performance Step:** **Start 21 and 23 ABFP**
Observes 21 is running and 23 is not running
Attempts manual start of 23 ABFP

Standard: Places control switch for 23 ABFP to start

Comment:

PERFORMANCE INFORMATION

(Denote critical steps with a check mark)

√ **7. Performance Step:** **Starts 22 ABFP as follows**

- **Set HCV-1118 (ABFP TURBINE SPEED CONTROL), to minimum speed (Panel SCF).**
- Checks PCV-1139 in AUTO (not critical)
- **Select PCV-1139 to ON**
- **Slowly increase 22 ABFP turbine speed using HCV-1118 (ABFP TURBINE SPEED CONTROL) as necessary to control discharge pressure and flow rate.**
- **Adjusts HCV 405 C and D to maintain desired auxiliary feed flow to SGs**

Standard: SG levels maintained between 9% to 73% using AFW flow to all SGs

Terminating Cue: All SGs being fed AFW Flow and levels maintained 9 – 73%

VERIFICATION OF COMPLETION

Job Performance Measure No.:Sim-E, Start ABFPs and supply AFW flow to the SGs during plant shutdown

Examinee's Name:

Date Performed:

Facility Evaluator:

Number of Attempts:

Time to complete:

Question Documentation:

Question:

Response:

Result: SAT or UNSAT

Examiner's signature and date: _____ _____

Simulator Setup

Reset simulator to IC-131 Rx power 3.5 percent

Insert malfunction: Trigger 1 trips 21 MBFP. 23 ABFP does not start

INITIAL CONDITIONS:

1. Plant shutdown is in progress per POP-3.1, Plant Shutdown Mode 1 to Mode 3, at step 4.34.
2. Plant is at 3.5% power.
3. The team is making preparations to shift from Main Feedwater to Auxiliary Feedwater.
4. The CRS directs you to maintain SG levels between 35-65%

INITIATING CUES:

Respond to plant conditions and alarms

RETURN THIS TO EXAMINER WHEN YOU HAVE COMPLETED

Appendix C	Job Performance Measure Worksheet	Form ES-C-1

Facility: Indian Point 2 Task No: 3000380502

Task Title: Manually initiate CS when actuation is required (Alternate path)

K/A Reference: 026 A4.01 (4.5/4.3) Job Performance Measure No: Sim-F

Examinee: _____ NRC Examiner: _____

Facility Evaluator: _____ Date: _____

Method of testing:

Simulated Performance _____ Actual Performance X

Classroom _____ Simulator X Plant _____

READ TO THE EXAMINEE

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

Initial Conditions: A LOCA has occurred. The team is performing EOP E-0, Reactor Trip or Safety Injection. You have been directed to perform Attachment 1, Automatic Action Verification.

Task Standard: All available containment spray and cooling equipment is operating, and containment isolation is complete.

Required Materials: EOP E-0, Attachment 1.

General References: EOP E-0, Attachment 1.

Initiating Cue: The CRS has directed you to perform E-0, Attachment 1 Automatic Action Verification

Time Critical Task: No

Validation Time: 20 minutes

PERFORMANCE INFORMATION

(Denote critical steps with a check mark)

1. Performance Step: Verify Proper Charging System Operation

Standard: Starts one charging pump in Manual at maximum speed
Aligns charging pump suction to RWST
- Opens LCV-112B
- Closes LCV-112C

Places RCS Makeup Control Switch to STOP

Comment:

2. Performance Step: Check 345 KV MO Disconnect Switch F7-9 OPEN

Standard: Verifies that Generator Output Breakers 7 and 9 are OPEN

Comment:

3. Performance Step: Checks status of 480V Buses

Standard: Checks all 480V buses energized by offsite power
Dispatches an NPO to reset lighting and MCCs 24A, 27A, and 29A
Stops all condensate pumps

CUE: Acknowledge call to NPO to reset lighting and MCCs

Comment:

PERFORMANCE INFORMATION

(Denote critical steps with a check mark)

---

4. Performance Step: Verify FW isolation

Standard:. Checks Main Boiler Feed Pumps TRIPPED
Main Boiler Feed Pump Discharge Valves CLOSED
FW regulating Valves CLOSED
FW Stop Valves CLOSED
SG Blowdown Valves CLOSED

Comment:

√ **5. Performance Step: Check if Main Steamlines should be isolated**

Standard:. Determines containment pressure has been greater than 24 PSIG
- Manually closes MSIVs (this is an alternate path step)

Comment:

---

6. Performance Step: Verify Proper Service Water System Operation

Standard: Checks three SW pumps on Essential Header
Checks SW valves from EDGs OPEN (1276 and 1276A)

Comment:

PERFORMANCE INFORMATION

(Denote critical steps with a check mark)

7. Performance Step: Verify SI System Pumps Running

Standard: Checks three pumps running
Checks MOV 851A and 851B OPEN
Checks two RHR pumps running

Comment:

8. Performance Step: Verify proper SI System valve alignment

Standard: Checks 822Aand B, RHR HX CCW Outlet valves OPEN
Checks 746 and 747, RHR HX MOVs OPEN

Comment:

√ **9. Performance Step: Verify Containment Fan Coolers IN-SERVICE**

Standard: Manually starts 21, 22, 23, 24 and 25 FCUs (Alternate Path)
Checks NORM OUT valves OPEN
Checks TCV-1104 and 1105 BOTH OPEN

Comment:

PERFORMANCE INFORMATION

(Denote critical steps with a check mark)

10. Performance Step: Verify AFW Flow to All SGs

Standard: Checks flow indicated to all SGs

Comment:

11. Performance Step: Verify Containment Ventilation Isolation

Standard: Checks Containment Purge valves CLOSED
Checks Containment Pressure Relief valves CLOSED

Comment:

12. Performance Step: Verify Containment Isolation Phase A

Standard: Checks CA1 and CA2 relays tripped above safeguards relay racks E/F
Checks Phase A Valves CLOSED
Checks IVSW Valves OPEN
Checks WCP Valves OPEN
Places personnel and equipment hatch solenoid switches to INCIDENT
Dispatches an NPO to periodically check IVSW tank level and pressure and WCP header pressures

CUE: NPO acknowledges order to monitor IVSW and WCP (IVSW tank <92% and pressure > 57# and WCP header pressure greater than 52#.)

Comment:

PERFORMANCE INFORMATION

(Denote critical steps with a check mark)

√ **13. Performance Step: Check if Containment Spray should be actuated**

Standard: Checks containment pressure ever greater than 24 psig (yes)
Verify spray pumps running (no) (Alternate Path)
Manually initiates spray (no effect, not critical) (Alternate Path)
Manually starts both spray pumps (Alternate Path)
Verify Spray Pump Discharge Valves OPEN (no) (Alternate Path)
Manually Opens MOV 866A and 866B (Alternate Path)
Manually Opens MOV 866C and 866D (Alternate Path)
Verify containment isolation Phase B Valves CLOSED (no)
Manually closes 769 and 797, RCP Cooling Inlet (Alternate Path)
Manually Closes 784 and 786, RCP Bearing Discharge (Alternate Path)
Manually Closes 625 and 789, RCP Thermal Barrier Discharge (Alternate Path)
Manually Closes 222, Seal Water Return (Alternate Path)
STOP all RCPs
Dispatches NPO to check OPEN IVSW isolation valves

CUE: NPO acknowledge request to check IVSW valves OPEN (7864, 7865, 7866, 7867)

Comment:

---

14. Performance Step: Verify CCR AC Train A and Train B in Incident Mode 2

Standard: Check dampers in correct position and all lamps illuminated on panel PY2

Comment:

PERFORMANCE INFORMATION

(Denote critical steps with a check mark)

15. Performance Step: Notifies CRS that Attachment 1 is complete

Standard: CRS notified and a summary of equipment issues provided.

Comment:

Terminating Cue: Attachment 1 completed.

VERIFICATION OF COMPLETION

Job Performance Measure No. Sim-F, Manually initiate CS when actuation is required (Alternate path)

Examinee's Name:

Date Performed:

Facility Evaluator:

Number of Attempts:

Time to complete:

Question Documentation:

Question:

Response:

Result: SAT or UNSAT

Examiner's signature and date: _____ _____

Simulator Setup

Reset simulator to IC-132, Post LOCA with VC Pressure >24 psig, no FCUs running, No auto CS, Phase B auto actuation failure, MSIV auto closure failure

INITIAL CONDITIONS:

1. A LOCA has occurred.
2. The team is performing EOP E-0, Reactor Trip or Safety Injection.

INITIATING CUE:

The CRS has directed you to perform Attachment 1, Automatic Action Verification.

RETURN THIS TO EXAMINER WHEN YOU HAVE COMPLETED

Appendix C	Job Performance Measure Worksheet	Form ES-C-1

Facility: Indian Point 2 Task No: 0660011601

Task Title: Energize 6.9 KV from 13.8 KV backup power

K/A Reference: 062A2.05 (2.9/3.3)
062A2.12 (3.3/3.6)
062A4.01 (3.3/3.1)

Job Performance Measure No: Sim-G

Examinee: _____ NRC Examiner: _____

Facility Evaluator: _____ Date: _____

Method of testing:

Simulated Performance _____ Actual Performance X

Classroom _____ Simulator X Plant _____

READ TO THE EXAMINEE

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

Initial Conditions: Plant is at 100% Power, MOL, Steady State. A fault has occurred on the Station Auxiliary Transformer resulting in a loss of offsite power. 13.8KV power is available from Feeder 13W92.

Task Standard: 6.9KV Bus 5 is energized

Required Materials: 2-AOP-138KV-1 Attachment 1; 4 Caution Tags

General References: 2-AOP-138KV-1 Attachment 1

Initiating Cue: The CRS has directed you to energize bus 5 from the 13.8 KV power supply in accordance with 2-AOP-138KV-1, Loss of Power to 6.9KV Bus 5 and/or 6 Attachment 1, Restoration of Power to 6.9KV Bus 5 and/or 6 (Buses 1-4 Energized)

Time Critical Task: NO

Validation Time: 15 minutes

PERFORMANCE INFORMATION

(Denote critical steps with a check mark)

1. Performance Step: Check for protective relay targets on the following:
   - 138KV Protection Relays (rear of Flight Panel)
   - 6.9 KV Bus 5 relays (locally)
   - 6.9 KV Bus 6 relays (locally)

Standard: Checks rear of Flight Panel for relay targets. Identifies a target for the Station Auxiliary Transformer Neutral Over-current relay.
Dispatches an NPO to check for protection relays actuated on 6.9KV buses 5 and 6
Notifies SM that only protection relay actuated is the SAT Neutral OC relay

CUE: NPO reports that there are no protective relays actuated on either Bus 5 or 6.

Comment:

2. Performance Step: Obtain determination from DO of expected time for 138KV restoration to Unit 2 SAT

Standard: DO contacted

CUE: If requested, DO reports that the fault is on the Unit 2 Station Aux Transformer and expected repair time is 10 days.

Comment:

PERFORMANCE INFORMATION

(Denote critical steps with a check mark)

3. Performance Step: Checks 13.8 KV power source available from 13W92 by checking:

- Checks breaker GT-1 Closed (on unit 1 GT panel)
- Checks breaker GT-2 Closed
- Check 13.8KV bus voltage on GT-1 (Dispatch NPO)
  NOTE: Alternate indication that may be used is Light and Power bus voltage located on the Unit 1 L&P panel in the rear of the unit 1 side of the control room.

CUE: NPO Reports 13.8 KV bus voltage indicated on GT-1 bus.

Standard: Breaker position and Bus voltage checked

Comment:

√ **4. Performance Step:** **Place the following breakers in Pull-out and apply Caution Tags:**

- **Bus 1-5 Tie BRKR UT1-ST5**
- **Bus 2-5 Tie BRKR UT2-ST5**
- **Bus 3-6 Tie BRKR UT3-ST6**
- **Bus 4-6 Tie BRKR UT4-ST6**

Standard: Breakers placed in Pull-Out and Caution Tags hung on switches

CUE: CRS Provides completed caution tags to the operator. A third RO will complete the required paperwork.

Comment:

PERFORMANCE INFORMATION

(Denote critical steps with a check mark)

√ **5. Performance Step:** **Place the following breakers in Pull-Out:**

- **6900V Bus 5 Normal Feed BRKR ST5**
- **STA Service XFMR 5 Supply BRKR SS5**
- **6900V Bus 6 Normal Feed BRKR ST6**
- **STA Service XFMR 6 Supply BRKR SS6**

Standard: Breakers placed in Pull-Out

Comment:

6. Performance Step: Green flag the control switches for 22 and 25 Circulators

Standard: 22 and 25 Circulators green flag shows in switch window and 6.9KV Motor trip alarm clears (SH window 3-3)

Comment:

√ **7. Performance Step:** **Close Breaker 52GT25**

CUE: If asked, SM provides permission to energize bus 5.
CUE If dispatched, NPO reports that 6.9KV Bus 5 lockout relay 86ST5 is reset
CUE DO provides permission to close 52GT25

Standard: Selects 6.9 KV bus 5 with the Voltmeter Selector Switch
Obtains DO permission to close 52GT25
Closes breaker 52GT25

Comment:

Terminating Cue: 6.9KV Bus 5 is energized

VERIFICATION OF COMPLETION

Job Performance Measure No. Sim-G, Energize 6.9 KV from 13.8 KV backup power

Examinee's Name:

Date Performed:

Facility Evaluator:

Number of Attempts:

Time to complete:

Question Documentation:

Question:

Response:

Result: SAT or UNSAT

Examiner's signature and date: _____ _____

Reset simulator to IC-3,

MAL-EPS001, Loss of Station Aux Transformer
Close 21 and 23 EDG breakers
Acknowledge alarms

INITIAL CONDITIONS:

1. Plant is at 100% Power, MOL, Steady State.
2. A fault has occurred on the Station Auxiliary Transformer resulting in a loss of offsite power.
3. 13.8KV power is available from Feeder 13W92.

INITIATING CUE:

The CRS has directed you to energize bus 5 from the 13.8 KV power supply in accordance with 2-AOP-138KV-1, Loss of Power to 6.9KV Bus 5 and/or 6 Attachment 1, Restoration of Power to 6.9KV Bus 5 and/or 6 (Buses 1-4 Energized)

RETURN THIS TO EXAMINER WHEN YOU HAVE COMPLETED

Appendix C	Job Performance Measure Worksheet	Form ES-C-1

Facility: Indian Point 2 Task No: 0151110401

Task Title: Remove an Intermediate Range Channel from service

K/A Reference: 015A2.02 (3.1/3.5)
015A4.03 (3.8/3.9)

Job Performance Measure No: Sim-H

Examinee: _____ NRC Examiner: _____

Facility Evaluator: _____ Date: _____

Method of testing:

Simulated Performance _____ Actual Performance X

Classroom _____ Simulator X Plant _____

READ TO THE EXAMINEE

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

Initial Conditions: Plant is at 100% Power MOL, Steady state conditions. Intermediate Range NI Channel N-35 has failed. The actions of 2-AOP-NI-1 are complete up to removing the channel from service.

Task Standard: N-35 Removed from service IAW approved procedure

Required Materials: SOP-13.1

General References: 2-AOP-NI-1, Nuclear Instrumentation Malfunction, step 4.20

Initiating Cue: The CRS has directed you to remove channel N-35 from service in accordance with SOP-13.1, Nuclear Instrumentation System Operation. The SM has directed that instrument power and control power fuses be removed to allow I&C to troubleshoot and repair.

Time Critical Task: **NO**

Validation Time: 15 minutes

PERFORMANCE INFORMATION

(Denote critical steps with a check mark)

1. Performance Step: Refers to Section 4.6 of SOP-13.1

Standard: Section 4.6, Removing an Intermediate Range Channel from Service located and referenced.

Comment:

√ **2. Performance Step** **Place the LEVEL TRIP Switch located on N-35 drawer on rack C-5 to the BYPASS position**

Standard: Switch in BYPASS

Comment:

3. Performance Step: Verify the following:

- Level Trip Bypass lamp (at IR drawer) is lit
- Intermediate Range Trip Bypass lamp (Panel FBF) is lit
- NIS Trip Bypass alarm (Panel FCF window 4-2) has annunciated.

Standard: Each lamp and alarm checked.

Comment:

PERFORMANCE INFORMATION

(Denote critical steps with a check mark)

√ **4. Performance Step:** **Place blocking strips across the back of the following relays:**
NC 35FX Rx Trip Located in Red Rack E6
NC 35 FX Rx Trip Located in Red Rack F6
NC 35EAX Rod Stop Located in Rear of Rack G4

Standard: Determines blocking strips will be applied.
Simulates/discusses application of blocking strips.

CUE: If asked, SM/CRS states that control power is to be removed.
When candidate locates correct rack, cue him to describe application of blocking strips on relays, and then cue him that the blocking strip is applied.

EVALUATOR NOTE: Cue Simulator Operator to activate trigger 1 if blocking strips have been installed on the correct relays.
SIMULATOR OPERATOR: Activate trigger 1 to block N35 relays.

Comment:

√ **5. Performance Step:** **REMOVE the instrument power fuses**

Standard: Both instrument power fuses on the N-35 drawer have been removed.

Comment: Take the fuses from the candidate so that they do not get misplaced for simulator reset. Give the fuses to the Simulator Operator.

PERFORMANCE INFORMATION

(Denote critical steps with a check mark)

6. Performance Step: Verify the following:
- Intermediate Range 35 Loss of Compensating Voltage alarm (Panel FCF window 2-2) is annunciated
- NIS Intermediated Range Loss of Detector Voltage alarm (Panel FCF window 3-2) is annunciated

Standard: Both alarms verified actuated.

Comment:

√ **7. Performance Step: REMOVE the Control power fuses**

Standard: Both control power fuses on the N-35 drawer have been removed.

Comment: Take the fuses from the candidate so that they do not get misplaced for simulator reset. Give the fuses to the Simulator Operator.

6. Performance Step: Verify the NIS TRIP BYPASS alarm is clear

Standard: NIS TRIP BYPASS alarm verified clear

Comment:

Terminating Cue: SOP 13.1 Section 4.6 completed with IR Channel N35 removed from service.

VERIFICATION OF COMPLETION

Job Performance Measure No. Sim-H, Remove an Intermediate Range Channel from service

Examinee's Name:

Date Performed:

Facility Evaluator:

Number of Attempts:

Time to complete:

Question Documentation:

Question:

Response:

Result: SAT or UNSAT

Examiner's signature and date: _____ _____

Simulator Setup

Reset simulator to IC-2, 100% MOL

Run bat SIM-H.bat

^ XMT-NIS003C NOISE FAILURE: N35 N35 COMPENSATED ION CHAMBER
IMF XMT-NIS003C (-1 0) 100.000000 0 0.000000
^ RLY-PPL280 RELAY FAILURES: NC-35F-X(A) N35 HIGH LEVEL TRIP RLY
IMF RLY-PPL280 (1 0) 2
^ RLY-PPL281 RELAY FAILURES: NC-35F-X(B) N35 HIGH LEVEL TRIP RLY
IMF RLY-PPL281 (1 0) 2
^ RLY-PCS041 RELAY FAILURES: NC-35E-AX INTRMED RANGE ROD STOP RELA
IMF RLY-PCS041 (1 0) 2

When directed by evaluator, activate trigger 1 to install blocking strips on N35 relays.

INITIAL CONDITIONS:

1. Plant is at 100% Power MOL, Steady state conditions.
2. Intermediate Range NI Channel N-35 has failed.
3. The actions of 2-AOP-NI-1 are complete up to removing the channel from service.

INITIATING CUE:

1. The CRS has directed you to remove channel N-35 from service in accordance with SOP-13.1, Nuclear Instrumentation System Operation.
2. The SM has directed control power and instrument power fuses removed to allow I&C to troubleshoot and make repairs.

RETURN THIS TO EXAMINER WHEN YOU HAVE COMPLETED

Appendix C	Job Performance Measure Worksheet	Form ES-C-1

Facility: Indian Point 2 Task No: 0640020204

Task Title: 21 EDG Emergency Start and Dead Bus Pickup (Alternate Path)

K/A Reference: 064A3.06 (3.3/3.4) Job Performance Measure No: Plant-I

Examinee: _____ NRC Examiner: _____

Facility Evaluator: _____ Date: _____

Method of testing:

Simulated Performance X Actual Performance _____

Classroom _____ Simulator _____ Plant X

READ TO THE EXAMINEE

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

Initial Conditions: The EDG system is aligned in accordance with COL. Bus 5A is deenergized. The CRS has directed you to perform an emergency start of 21 EDG and energize Bus 5A.

Task Standard: EDG 21 is running with bus 5A energized and operating normally.

Required Materials: SOP 27.3.1.1, 21 Emergency Diesel Generator Manual Operation

General References: SOP 27.3.1.1 Section 5.5
ARP-003, Diesel Generator, Window 1-1 Low Oil Pressure

Initiating Cue: When I tell you to begin, you are to *simulate* emergency start of 21 Emergency Diesel Generator and dead bus pickup of bus 5A in accordance with the SOP.

Time Critical Task: NO

Validation Time: 20 minutes

PERFORMANCE INFORMATION

(Denote critical steps with a check mark)

---

1. Performance Step: Obtain correct procedure

Standard: SOP 27.3.1.1 Section 5.5, Emergency Start and Dead Bus Pickup

Comment:

---

2. Performance Step: Perform the following at 21 EDG Control Board
Verify lockout relay RESET
Verify Voltage Regulator Unit-Parallel Switch in UNIT
Verify Voltage Regulator Transfer Control Switch in AUTO

CUE:
- When Lockout Relay is located, indicate that the relay is reset.
- When the Unit-Parallel switch is located, indicate that the switch is in Unit.
- When the Transfer Control Switch is located, indicate that the switch is in Auto.

Standard: Lockout relay located and position verified to be reset.
Voltage Regulator Unit-Parallel Switch located and position verified to be in UNIT
Voltage Regulator Transfer Control Switch located and potion verified to be in AUTO

Comment:

---

3. Performance Step: Notify CCR that 21 EDG will be started and loaded

CUE: CCR acknowledges that 21 EDG will be started and loaded.

Standard: CCR contacted (Note, the initiating cue states that the CCR has directed this action)

Comment:

PERFORMANCE INFORMATION

(Denote critical steps with a check mark)

√4. Performance Step: Place Engine Control Switch in Manual

CUE: After switch is located and candidate describes proper switch manipulation, cue that the Engine Control Switch is in Manual.

Standard: Locates Engine Control Switch and simulates placing in manual.

Comment:

√5. Performance Step: Press the Engine Start button

CUE: After Engine Start button is located and the candidate describes proper button manipulation, cue that the button has been pressed and the engine has started.

Standard: Locates Engine Start Button and simulates pressing the button to start the engine.

Comment:

---

6. Performance Step: Observe closure of 21 Emergency D/G Feed Bkr. To Bus 5A (Alternate Path)

- o Check Jacket Water Pressure Switch Energized illuminated
- o Check Generator Available Light illuminated

CUE:

- o After candidate locates 21 Emergency D/G Feed Bkr to Bus 5A indication, cue that the Green lamp is LIT and the Red lamp is OFF.
- o Jacket water pressure switch energized light (JWPS) is LIT
- o Generator Available light is LIT.

Standard: Determines that 21 Emergency D/G Feed Bkr. To Bus 5A is NOT closed.

Comment:

PERFORMANCE INFORMATION

(Denote critical steps with a check mark)

√7. **Performance Step:** **If the output breaker did not close, perform the following: (Alternate Path)**

Verify Normal Feed Bkr to Bus 5A OPEN

CLOSE Emergency Feed Bkr to Bus 5A

If the output breaker fails to close, notify the SM.

CUE:

- When Normal Feed Bkr to Bus 5A indication is checked, cue that the Red Lamp is LIT and the Green lamp is OFF.
- When the control I switch for the Normal Feed Bkr to Bus 5A is simulated placed to TRIP, cue that the Green lamp is LIT and the Red Lamp is OFF.
- When the Emergency Feed Bkr to Bus 5A control switch is simulated closed, cue that the Red Lamp is LIT and the Green lamp is OFF.

Standard: Simulates Opening Normal Feed Bkr to Bus 5A
Simulates Closing Emergency Feed Bkr to Bus 5A

Comment:

8. Performance Step: Adjust frequency to 60 Hz using the Governor Raise-Lower Switch

CUE: When the governor Raise-Lower switch is located and operation described, and generator frequency indication is observed, cue that the frequency is 60 Hz.

Standard: Observes generator Frequency indication
Locates Governor Raise-Lower Switch and describes actions to adjust frequency.

Comment:

PERFORMANCE INFORMATION

(Denote critical steps with a check mark)

9. Performance Step: Adjust voltage to 480 V using the Automatic Voltage Control Rheostat

CUE: When the Automatic Voltage Control Rheostat is located and operation described, and generator voltage indication is observed, cue that the voltage is 480 V.

Standard: Observes generator voltage indication
Locates Automatic Voltage Control Rheostat and describes actions to adjust voltage.

Comment:

10. Performance Step: Verify at least 1200 gpm Service Water flow indicated on FIC-5919

CUE: When FIC-5919 is located if necessary, cue that 1600 gpm is indicated.

Standard: FIC-5919 is located and verified SW flow > 1200 gpm.

Comment:

PERFORMANCE INFORMATION

(Denote critical steps with a check mark)

√11. Performance Step: Check the Following at 21 EDG Gauge Board:
Lube Oil Pressure (PI-5417) 70 to 85 psig (Alternate Path)
Diagnoses low lube oil pressure exists

CUE: After locating PI-5417, cue that it indicates 57 psig. If the candidate asks, cue that Low Oil Pressure lamp is illuminated.
Point to the annunciator and cue that it is audibly alarming
If the Control Room is contacted, cue that the CRS directs you to perform an emergency Shutdown of 21 EDG.
After locating and simulating operation of the Emergency STOP button, cue that the 21 EDG has stopped.

Standard: Simulates emergency shutdown of 21 EDG by actuating the Emergency STOP pushbutton. (Note: an acceptable alternate method of shutdown is to locally trip the fuel racks at the diesel.)

Comment:

---

12. Performance Step: Notify CCR that 21 EDG has been shutdown.

CUE: CCR operator acknowledges
CUE: JPM is concluded after emergency shutdown has been simulated.

Standard: Simulates CCR notification

Comment:

Terminating Cue: JPM is concluded after emergency shutdown has been simulated

VERIFICATION OF COMPLETION

Job Performance Measure No. Plant-I, 21 EDG Emergency Start and Dead Bus Pickup (Alternate Path)

Examinee's Name:

Date Performed:

Facility Evaluator:

Number of Attempts:

Time to complete:

Question Documentation:

Question:

Response:

Result: SAT or UNSAT

Examiner's signature and date: _____ _____

INITIAL CONDITIONS:

1. The EDG system is aligned in accordance with COL.
2. Bus 5A is deenergized.

INITIATING CUE:

The CRS has directed you to *simulate* performing an emergency start of 21 EDG and energize Bus 5A in accordance with the SOP.

RETURN THIS TO EXAMINER WHEN YOU HAVE COMPLETED

Appendix C	Job Performance Measure Worksheet	Form ES-C-1

Facility: Indian Point 2 Task No: 0060040404

Task Title: Line up alternate cooling to the SIS and RHR Pumps

K/A Reference: 026AK3.03 (4.0/4.2)
006K1.11 (2.8/3.2) Job Performance Measure No: Plant-J

Examinee: _____ NRC Examiner: _____

Facility Evaluator: _____ Date: _____

Method of testing:

Simulated Performance X Actual Performance _____

Classroom _____ Simulator _____ Plant X

READ TO THE EXAMINEE

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

Initial Conditions: A safety injection with loss of offsite power has occurred. The watch team is performing EOP E-0, Reactor Trip or Safety Injection. No CCW Pumps can be started. SI pumps and RHR pumps are operating.

Task Standard: Backup cooling to SIS and RHR pumps in service per procedure

Required Materials: SOP 4.1.2, Component Cooling System Operation.

General References: SOP 4.1.2, Component Cooling System Operation.

Initiating Cue: The CRS has directed you to *simulate* aligning backup cooling to the RHR pumps and SI pumps using SOP 4.1.2, Component Cooling System Operation.

Time Critical Task: NO

Validation Time: minutes

PERFORMANCE INFORMATION

(Denote critical steps with a check mark)

1. Performance Step: Determine need to establish backup cooling using primary water to SIS and RHR pumps, pumps running method.

CUE: IF CRS is asked whether Primary Water or City Water should be used, direct the use of Primary Water.
CUE: When SM is contacted, cue the candidate the SM has provided his signature.
CUE: Direct the candidate to simulate obtaining a key for the Alternate Safe Shutdown Cabinet.

Standard: Utilizes section 4.7.1 (page 28) of procedure 2-SOP-4.1.2. SM permission obtained. Key to ASSS cabinet obtained.

Comment:

√ **2. Performance Step: CLOSE PW-73, PW to Demineralizer Supply Header Telltale Drain Stop.**

Standard: PW-73 located and simulated motion of valve hand wheel in the clockwise direction until closed.

CUE After simulated motion, cue that the valve is closed.

Comment:

√ **3. Performance Step: OPEN PW-72, Filter/Demineralizer Primary Water Supply Header Stop**

Standard: PW-72 located and simulated motion of valve hand wheel in the counter-clockwise direction until open.

CUE After simulated motion, cue that the valve is open

Comment:

PERFORMANCE INFORMATION

(Denote critical steps with a check mark)

√ **4. Performance Step: OPEN PW-6, Primary Water Header Division Valve**

Standard: PW-6 located and simulated motion of valve hand wheel in the counter-clockwise direction until open.

CUE After simulated motion, cue that the valve is open

Comment:

5. Performance Step: Connect a hose at 734F, SI and RHR Pumps Emergency Cooling Outlet Stop

Route the hose to a floor drain

Standard: Simulated actions to connect a hose to 734F and discusses routing of hose to a floor drain.

CUE: After locating ASSS locker and simulated actions and discussion, cue the candidate that the hose is connected and routed.
CUE: Inform the candidate that he is directed to stay in attendance at the hose, rather than install Temp-Alt tags.

Comment:

√ **6. Performance Step: OPEN 734F, SI and RHR Pumps Emergency Cooling Outlet Stop**

CUE After simulated motion, cue that the valve is open

Standard: 734F located and simulated motion in counter-clockwise direction.

Comment:

PERFORMANCE INFORMATION

(Denote critical steps with a check mark)

√ **7. Performance Step: OPEN 734E, SI and RHR Pumps Emergency Cooling Outlet Stop**

CUE After simulated motion, cue that the valve is open

Standard: 734F located and simulated motion in counter-clockwise direction.

Comment:

√ **8. Performance Step: CLOSE 734B, Hi-Head Safety Injection and RHR Pumps Normal Outlet Stop**

CUE After simulated motion, cue that the valve is closed

Standard: 734B located and simulated motion in clockwise direction.

Comment:

9. Performance Step: Check CLOSED PW-115, PW to CCW Supply Telltale Drain Stop

CUE After simulated motion, cue that the valve is closed

Standard: PW-115 located and simulated motion in clockwise direction.

Comment:

PERFORMANCE INFORMATION

(Denote critical steps with a check mark)

√ 10. Performance Step: OPEN PW-114, PW to CCW Supply Isolation

CUE After simulated motion, cue that the valve is open

Standard: PW-114 located and simulated motion in counter-clockwise direction.

Comment:

√ 11. Performance Step: OPEN 733C, Hi-Head Safety Injection and RHR Pumps Primary Water Emergency Supply Stop

CUE After simulated motion, cue that the valve is open

Standard: 733C located and simulated motion in counter-clockwise direction.

Comment:

√ 12. Performance Step: CLOSE 734A, Hi-Head Safety Injection and RHR Pumps Normal Supply Stop

CUE After simulated motion, cue that the valve is closed

Standard: 734A located and simulated motion in clockwise direction.

Comment:

Terminating Cue: Backup cooling using PW placed in service.

VERIFICATION OF COMPLETION

Job Performance Measure No. Plant-J, Line up alternate cooling to the SIS and RHR Pumps

Examinee's Name:

Date Performed:

Facility Evaluator:

Number of Attempts:

Time to complete:

Question Documentation:

Question:

Response:

Result: SAT or UNSAT

Examiner's signature and date: _____ _____

INITIAL CONDITIONS:

1. A safety injection with loss of offsite power has occurred.
2. The watch team is performing EOP E-0, Reactor Trip or Safety Injection.
3. No CCW Pumps can be started.
4. SI pumps and RHR pumps are operating.

INITIATING CUE:

The CRS has directed you to *simulate* aligning backup cooling to the RHR pumps and SI pumps using SOP 4.1.2, Component Cooling System Operation.

RETURN THIS TO EXAMINER WHEN YOU HAVE COMPLETED

Appendix C	Job Performance Measure Worksheet	Form ES-C-1

Facility: Indian Point 2 Task No: 0710011604

Task Title: Align 24 Large Gas Decay Tank for start of discharge

K/A Reference: 071A4.05 (2.6/2.6) Job Performance Measure No: Plant-K

Examinee: _____ NRC Examiner: _____

Facility Evaluator: _____ Date: _____

Method of testing:

Simulated Performance X Actual Performance _____

Classroom _____ Simulator _____ Plant X

READ TO THE EXAMINEE

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

Initial Conditions: System is aligned in accordance with COL 5.2.1. The SM has directed 24 Large Gas Decay Tank is to be released. 24 Large Gas Decay Tank has been isolated, sampled, and the sample has been analyzed. Release Permit has been completed and approved to release 24 LGDT in accordance with SOP-5.2.1. Radiation monitor R-44 is in service. R_{TA} for the release permit is 3.525 E-06 μCi/cc

Task Standard: 24 LGDT Release has been started

Required Materials: SOP-5.2.1, Gaseous Waste Disposal System Operation

General References: SOP-5.2.1, Gaseous Waste Disposal System Operation

Initiating Cue: You have been directed to *simulate* lining up and starting a release on 24 Large Gas Decay Tank in accordance with SOP-5.2.1.

Time Critical Task: NO

Validation Time: 30 minutes

PERFORMANCE INFORMATION

(Denote critical steps with a check mark)

1. Performance Step: Obtain correct procedure

CUE: Provide candidate SOP 5.2.1.

Standard: SOP 5.2.1 section 4.4 and Attachment 4.

Comment:

√ **2. Performance Step: Verify RCV-014 Plant Stack Discharge Valve CLOSED**

CUE: After locating Valve indication on waste Disposal Panel, state valve is closed.

Standard: Valve indication on WDP located and position checked closed.

Comment:

√ **3. Performance Step: CLOSE 1644D, PCV-1039A Inlet Stop**

CUE: After valve located and position indication checked, cue valve closed.

Standard: Valve located and position checked.

Comment:

PERFORMANCE INFORMATION

(Denote critical steps with a check mark)

√ 4. Performance Step: CLOSE 1632, 24 LGDT Reuse Outlet

CUE: After After valve located and position indication checked, cue valve closed.

Standard: Valve located on WDP.

Comment:

√ 5. Performance Step: CLOSE PCV-1039B, Gas Analyzer Sample Inlet

CUE: After valve located, question candidate on method to determine its position. If candidate states that he would use the print, allow the candidate to use print 9321-2730. After appropriate discussion, cue that valve is CLOSED.

NOTE: Drawing indicates that the valve fails closed. Air supply is from under the diaphragm. Therefore, air to open, spring to close. Closed would be stem in the "down" position.

Standard: Valve located and methods for position verification discussed.

Comment:

√ 6. Performance Step: CLOSE 1617, 21 LGDT Outlet Stop

CUE: After valve located and proper motion simulated, cue valve closed.

Standard: Valve located and hand wheel turned clockwise until closed.

Comment:

PERFORMANCE INFORMATION

(Denote critical steps with a check mark)

√ 7. Performance Step: CLOSE 1618, 22 LGDT Outlet Stop

CUE: After valve located and proper motion simulated, cue valve closed.

Standard: Valve located and hand wheel turned clockwise until closed.

Comment:

√ 8. Performance Step: CLOSE 1619, 23 LGDT Outlet Stop

CUE: After valve located and proper motion simulated, cue valve closed.

Standard: Valve located and hand wheel turned clockwise until closed.

Comment:

√ 9. Performance Step: CLOSE 1652F, 21 SGDT Outlet Stop

CUE: After valve located and proper motion simulated, cue valve closed.

Standard: Valve located and hand wheel turned clockwise until closed.

Comment:

PERFORMANCE INFORMATION

(Denote critical steps with a check mark)

√ 10. Performance Step: CLOSE 1652E, 22 SGDT Outlet Stop

CUE: After valve located and proper motion simulated, cue valve closed.

Standard: Valve located and hand wheel turned clockwise until closed.

Comment:

√ 11. Performance Step: CLOSE 1652D, 23 SGDT Outlet Stop

CUE: After valve located and proper motion simulated, cue valve closed.

Standard: Valve located and hand wheel turned clockwise until closed.

Comment:

√ 12. Performance Step: CLOSE 1652C, 24 SGDT Outlet Stop

CUE: After valve located and proper motion simulated, cue valve closed.

Standard: Valve located and hand wheel turned clockwise until closed.

Comment:

PERFORMANCE INFORMATION

(Denote critical steps with a check mark)

√ **13. Performance Step: CLOSE 1652B, 25 SGDT Outlet Stop**

CUE: After valve located and proper motion simulated, cue valve closed.

Standard: Valve located and hand wheel turned clockwise until closed.

Comment:

√ **14. Performance Step: CLOSE 1652A, 26 SGDT Outlet Stop**

CUE: After valve located and proper motion simulated, cue valve closed.

Standard: Valve located and hand wheel turned clockwise until closed.

Comment:

√ **15. Performance Step: OPEN 1620, 24 LGDT Outlet Stop**

CUE: After valve located and proper motion simulated, cue valve open.

Standard: Valve located and hand wheel turned counter clockwise until open.

Comment:

PERFORMANCE INFORMATION

(Denote critical steps with a check mark)

√ **16. Performance Step: OPEN 1643D, 24 LGDT Stop (Inlet and PT)**

CUE: After valve located and proper motion simulated, cue valve open.

Standard: Valve located and hand wheel turned counter clockwise until open.

Comment:

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17. Performance Step: Manually select Waste Gas Release Line on Gas Analyzer per SOP-5.2.3

CUE: After Waste Gas Analyzer is located, cue Analyzer is in manual with WG RELEASE Switch in SAMPLE position.

Standard: Place Gas Analyzer in manual and select WG RELEASE SW to SAMPLE position.

Comment: DO NOT have operator perform SOP-5.2.3. Locating the Waste Gas Analyzer is sufficient.

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18. Performance Step: Prepare release permit

CUE: CCR has prepared the release. State that the permit number is 04-1

Standard: Check that a permit has been prepared and number recorded on attachment 1.

Comment:

PERFORMANCE INFORMATION

(Denote critical steps with a check mark)

√ 19. Performance Step: Verify PAB exhaust fan running

CUE: If necessary, cue that the fan is running.

Standard: Checks fan running.

Comment:

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20. Performance Step: Verify Iodine and Particulate Composite Collection device in service

CUE: Device is in service.

Standard: Checks device operating.

Comment:

√ 21. Performance Step: Commence Release

CUE: When CCR asked, direct the operator to commence the release.

CUE: When RCV-014 is simulated to be open, indicate that R-44 is slowly increasing but never gets to the Release Target Activity setpoint. (3.525 e-6)

Standard: Determine release target value
Record on checkoff
Open RCV-014 to indicated point.

Comment:

Terminating Cue: 24 LGDT release has been started.

VERIFICATION OF COMPLETION

Job Performance Measure No. Plant-K, Align 24 Large Gas Decay Tank for start of discharge

Examinee's Name:

Date Performed:

Facility Evaluator:

Number of Attempts:

Time to complete:

Question Documentation:

Question:

Response:

Result: SAT or UNSAT

Examiner's signature and date: _____ _____

INITIAL CONDITIONS:

1. System is aligned in accordance with COL 5.2.1.
2. The SM has directed 24 Large Gas Decay Tank is to be released.
3. 24 Large Gas Decay Tank has been isolated, sampled, and the sample has been analyzed.
4. Release Permit has been completed and approved to release 24 LGDT in accordance with SOP-5.2.1.
5. Radiation monitor R-44 is in service.
6. R_{TA} for the release permit is 3.525 E-06 μCi/cc

INITIATING CUE:

You have been directed to *simulate* lining up and starting a release on 24 Large Gas Decay Tank in accordance with SOP-5.2.1.

RETURN THIS TO EXAMINER WHEN YOU HAVE COMPLETED